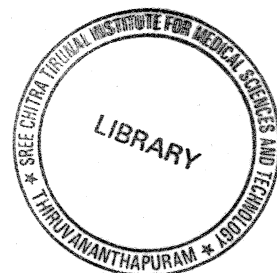


Factors associated with high case detection rate of RNTCP in Solan district, Himachal Pradesh, India 2008

Dr. Udit Kumar

(MAE-FETP Scholar 2007-2009)



Dissertation project submitted in partial fulfillment of the requirements for the degree of Master of Applied Epidemiology (MAE)

Of



Sree Chitra Tirunal Institute for Medical Sciences and Technology
Thiruvananthapuram, Kerala 695 011

This work has been done as part of the two year Field Epidemiology Training Programme (FETP) conducted at



National Institute of Epidemiology
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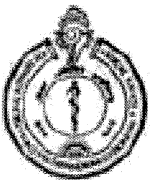
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CERTIFICATION

This is to certify that all the field projects submitted in this Dissertation are original works carried out by **Dr. Udit Kumar** during the two field postings of six months each under guidance of faculty of national Institute of Epidemiology (ICMR), Chennai and the local supervisor specially nominated for this purpose. This is in partial fulfillment of the requirements for the degree of Master of Applied Epidemiology and has not been submitted earlier by him in part or whole for any other (publication or degree) purpose.

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Chennai

Dr. Udit Kumar

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ABSTRACT

Minimum patient, provider and system delays in public health facility lead to high case detection rate in Solan district, Himachal Pradesh, India 2008

Background: District Solan with New Smear Positive (NSP) case detection rate of 95% was declared the best performing districts in Himachal Pradesh by central TB Division, to identify factors associated with high case detection rates in order to replicate it in other districts, hence such a study was undertaken.

Methods: We conducted analytical cross sectional study to look factors responsible for difference in case detection rates. We studied all NSP patients diagnosed in 4th quarter 2007 and 1st quarter 2008, all stakeholders in Solan and Bilaspur districts using interview schedule consisting of semi structured questionnaire and structured checklists. We analysed the data to look for favorable factors determining high case detection rate in Solan as compared to Bilaspur district. We sampled assuming proportion of 75% Case detection rate, $\pm 10\%$ confidence interval, 95% confidence coefficient, α error 5%, and non response rate 10%.

Results: We surveyed 172 patients with 63% males in Solan as compared 71% in Bilaspur with mean age of patients 37 ± 14 . Factors independently associated with high case detection in Solan district were higher literacy, gainful employment, preference for public health facility, less than two consultations before diagnosis, better knowledge of TB, short-distance between residence of patients and microscopy centre. This was statistically significant (p -value <0.05). Mean patient delay was 18, mean provider delay 3 and mean system delay 2 days in Solan as compared 47, 17 and 3 days in Bilaspur respectively. This was statistically significant (p -value <0.05).

Conclusions: High degree of awareness to health facility and early diagnosis due to effective IEC programme and committed workforce in Solan district, both of which are replicable in Bilaspur and other districts.

Key words: Tuberculosis, DOTS, NSP case detection, health seeking behavior, cross sectional study, interview schedule and semi structured questionnaire, IEC.

FACTORS ASSOCIATED WITH HIGH CASE DETECTION RATE OF RNTCP IN SOLAN DISTRICT OF HIMACHAL PRADESH 2008

1. INTRODUCTION

TB was declared a global emergency by WHO in 1993 for its toll on the health of individuals and impact on overall social and economic development. The global annual incidence of TB is growing at approximately 1.1% per year and number of cases at a rate of 2.4% per year¹, The South East Asia region countries contribute 38% of the global burden of TB with nearly 0.6 million deaths every year.

The TB burden of India is staggering. Its annual incidence is 1.9 million, accounting for 21% of global incidence due to which about 170 million workdays are lost leading to an annual economic loss of US\$ 3 billion¹. Despite the existence of National Tuberculosis Programme (NTP) since 1962, there was no decrease in incidence of the disease. To overcome the limitations of earlier NTP, India adopted WHO's Directly Observed Treatment –Short course (DOTS) strategy under Revised National Tuberculosis Control Programme (RNTCP) in the year 1997.¹

In Himachal Pradesh, annual risk of tuberculosis infection is 1.9% against a national average of 1.5%. RNTCP and DOTS was started in the state in the year 1995 in district Hamirpur as a pilot project. Subsequently, in the year 2000, three more districts of Shimla, Solan and Sirmour were included. By December 2001, whole of Himachal Pradesh was included under the DOTS strategy.¹

Solan is a border district of Himachal Pradesh with a population of 5, 00,557. DOTS was started in the district in July 2001². Since its launch the programme has been

achieving its targets of case detection rate of 70% and cure rate of 85%³. An internal evaluation carried out by the Central TB Division, Govt. of India New Delhi in 2005 declared Solan as one of the best performing districts in Himachal Pradesh, with DOTS quality of more than 90% and reporting accuracy of more than 98%¹. For the year 2007, selected programme performance indicators for Solan district included - case detection rate of 95%; cure rate of 86%⁴; For Bilaspur district viz. case detection rate was 85% and cure rate: 86%.

All these indicators indicate that the performance of RNTCP in Solan district is much better as compared to Bilaspur district and rest of the state of Himachal Pradesh.

In the context of the above findings, we conducted a study to identify the factors associated with high case detection rate in Solan district in comparison to Bilaspur district of the state.

1.1 Objective

The objectives of the study were to identify various factors associated with high case detection rate (CDR) in Solan district.

2. METHODOLOGY

2.1. Study area and target population

The whole of districts Solan and Bilaspur are the study area. Solan is a mostly hilly region situated in lower belt of Himalayas and is industrial hub district of Himachal Pradesh covering 5,00,557 population of the district. Likewise Bilaspur district is also hilly and situated in lower Himalayas. This is an adjoining district of Solan with almost same population and regional characteristics.

The population covered under RNTCP in district Solan is 5,00,575. Solan district has three Tuberculosis Units (Solan, Arki and Nalagarh), 15 Designated Microscopy Centers (DMCs) and 300 DOTS centers operating under the public sector. There are 22 DOTS Centres operational under the private sector.

The population covered under RNTCP in district Bilaspur is 3,40,885. Bilaspur district has two Tuberculosis Units (Bilaspur & Ghumarwin), 11 Designated Microscopy Centers and 300 DOTS centers operating under the public sector.

2.2. Study design

A comparative study of two districts similar in population characteristics (e.g. Solan and Bilaspur) but different in case detection rate (CDR) was carried out.

Solan district is a high performing district with high CDR (101%) while Bilaspur district, a comparatively low performing district with low CDR (85%). We conducted cross sectional surveys of TB patients, health care providers and health facilities/units in Solan and Bilaspur districts.

2.3. Study population / units

We considered patient related, health service provider related and health system related factors for study. All adult TB case patients of Solan and Bilaspur districts registered under RNTCP, who were diagnosed as new sputum smear positive for acid fast tuberculosis bacilli for initiation of treatment from first quarter of 2008 (1Q08), the doctors in-charge of the institutions looking after RNTCP, laboratory technicians working at DMCs for RNTCP and DOTS providers in all the public institutions and private health care facilities (who had signed in a written agreement with DTO Solan and Bilaspur) of Solan and Bilaspur districts.

2.4. Sample size and sampling

2.4.1 New Smear Positive Cases

Out of total 128 NSP cases in 1q08 we recruited 86 cases randomly as per the sample size estimation for similar quarter in Solan district. Bilaspur district had only 78 NSP cases in 1q08 and all were recruited for the study. To achieve the desired sample size of 86 in Bilaspur we recruited the rest of NSP patients from 2nd quarter 2008.

(Details in Annexure-I, page 44)

2.4.2 DOTS Providers

Out of total 300 DOTS providers (all public, private and NGO DOTS providers) in Solan we recruited 175 and in Bilaspur out of 222 public DOTS providers (no private and NGO DOTS providers in Bilaspur) we recruited 107 randomly as per the sample size estimation for similar quarter. *(Details in Annexure-II, page 45)*

2.4.3 Doctors

All the 47 doctors' in-charge of the PHIs looking after RNTCP in their institution in Solan and all the 32 doctors in Bilaspur were included in the study. (We paid a

maximum of three visits to interview study participant after which we recruited the next participant for interview from the line list to overcome the selection bias)

2.4.4 District TB Officers

One DTO in the DTC of Solan and Bilaspur was included in the study.

2.4.5 Medical Officer-Tuberculosis Control

All the three MOTCs in the three TUs of Solan district and two MOTCs from two TUs of Bilaspur district were included in the study.

2.4.6 Private Practitioners

All the 22 PPs who have signed written MOU with the DTO Solan and are involved under scheme 1 and or 2 were included in the study. In case of Bilaspur no PP has written MOU signed with DTO Bilaspur and or involved under any scheme.

2.4.7 Senior Treatment Supervisors

All the three STSs in the three TUs of Solan district two MOTCs from two TUs of Bilaspur district were included in the study.

2.4.8 Senior Tuberculosis Laboratory Supervisors

All the three STLSs in the three TUs of Solan district two STLSs from two TUs of Bilaspur district were included in the study.

2.4.9 Lab Technicians

All the 15 LTs in the fifteen DMCs in Solan district and 12 LTs from twelve DMCs in Bilaspur were included in the study.

2.4.10 Non Governmental Organizations

One NGO working exclusively for RNTCP under written MOU with the DTO in Solan district was included in the study. No such NGO working in Bilaspur district.

2.5. Data collection

Patients and health care providers were interviewed using interview schedule consisting of semi structured questionnaire to elicit information on identification particulars, demographic characteristics and socio-economic status including gainful employment, treatment details, delay in diagnosis and treatment, access to DOTS centres awareness, difficulties in getting DOTS medicines, any consequences of stigma and discrimination experienced by the patient direct and indirect at any given time during the course of treatment and suggestions for improvement in provision of DOTS were collected.

Observational visits were made to the health facility using checklists to verify the availability of infrastructure, availability of drugs, supervision, IEC material and activities, scrutiny of records and patient treatment cards.

Public and private DOTS providers were interviewed using interview schedule and their premises observed using checklists. Details of the factors studied are listed in *Annexure-III, Table 1, Page 46.*

2.6. Data analysis

Determinants in two districts were compared and their statistical significance verified using statistical tests. Frequencies of each variable were calculated. Univariate and multivariate analysis were done using Epi info (Version 3.4.3). Statistical comparison between groups in Solan and Bilaspur were calculated using Chi-square test / Fisher Exact test wherever applicable.

2.7. Recall bias

Patients may not remember the exact date(s) of onset of various symptoms, treatments taken before the confirmation of diagnosis. To overcome this bias the exact dates were cross verified with the TB registers and treatment cards of the patients.

2.8. Human subject protection

This study protocol was submitted to and approved by the Ethical Committee of National Institute of Epidemiology, Chennai.

3. RESULTS

3.1. PATIENT DETERMINANTS

Patients recruited for Solan were 86 and equal numbers of patients were recruited from Bilaspur district. Results of the study were calculated using Epi-info software version 3.4.3 and details given in *Annexure-VI, Table 2, page 117*.

3.1.1 Profile of study subjects

There were total 86 patients recruited for study in Solan and Bilaspur each. The 54% were males in Solan and 61% in Bilaspur out of which 76% were in the age group of 15 to 59 in Solan and 91% in Bilaspur. Forty six percent of the study subjects were from urban area as compared to 9% in Bilaspur. Eighty eight percent were literate (17% primary, 24% each middle and high, rest graduate and professionals) in Solan as against 50% (14% primary, 24% middle and 12% high) in Bilaspur. 68% of the study subjects were employed as against 59% in Bilaspur.

3.1.2 Factors associated with high case detection rate

Several patient related factors were found to be associated with high case detection rate. They are: place of residence viz. urban v/s rural, education, economic status, health facility preference, patient delays, health facility first contacted, private practitioners contacted, reason for choosing 1st health facility, after Private Practitioners level of Govt. Health Facility contacted, No. of consultations before TB diagnosis, cause of TB, work performance, distance between residence of patient and microscopy centre and perceived cause of delay with denial & concealment in Solan as compared to Bilaspur. These are described below in detail:

3.1.2.1 Urban/rural residents

A significant proportion (46.6%) of patients were from urban area in Solan compared to Bilaspur (10.5%). ($\chi^2 = 28.87$, $df = 1$, and p -value < 0.001).

3.1.2.2 Education

Significantly high proportion (70%) patients were literate in Solan compared to 50% in Bilaspur. ($\chi^2 = 23.52$, $df = 5$, and $p\text{-value} < 0.001$). Seventeen percent of patients were educated upto primary, 24% each upto middle and high and 11.6% graduate and professionals in Solan as compared to 14%, 24% and 12% upto primary middle and high school respectively in Bilaspur. None were graduate and professionals in Bilaspur district.

3.1.2.3 Employment status

Seventy nine percent of patients were gainfully employed in Solan compared 59% in Bilaspur. ($\chi^2 = 7.88$, $df = 1$, and $p\text{-value} = 0.004$). Out of which 30% were unskilled, 25% skilled, 14% semi skilled, 10% managerial and professionals in Solan as compared to 23% skilled, 12.8% semiskilled, 23% managerial and professionals in Bilaspur.

3.1.2.4 Health facility preference

Eighty eight percent preferred Govt. health facility in Solan compared to 45% in Bilaspur. ($\chi^2 = 19.67$, $df = 6$, and $p\text{-value} = 0.003$)

3.1.2.5 Health facility first contacted

Sixty four percent of patients first contacted a Govt. health facility at or below CHC level in the rural sector in Solan as compared to only 19% in Bilaspur. ($\chi^2 = 72.92$, $df = 6$, and $p\text{-value} < 0.001$).

3.1.2.6 Confidence of getting cured in choosing any first health facility

Forty six percent patients were confident of getting cured as the reason cited to choose any first health facility for treatment in Solan compared to 26% in Bilaspur. ($\chi^2 = 8.17$, $df = 1$, and $p\text{-value} = 0.004$).

3.1.2.7 No. of consultations before TB diagnosis (Doctor shopping)

In Solan 3% had taken three, none more than three with a mean consultations of 0.5 (SD=0.74) in Solan compared 11% taken three, 13% taken four and 32% taken more than four consultations with a means number of consultations 3.9 (SD= 3.36) in Bilaspur. Significantly higher proportion (97%) patients have taken ≤ 2 consultation before diagnosis of TB in Solan as compared to Bilaspur (38%). ($\chi^2 = 56.44$, $df = 1$ and $p\text{-value} < 0.001$).

3.1.2.8 Distance between Residence of patient and DOTS Centre

Sixty percent patients had to cover less than one km to take the DOTS day at the DOT centre in Solan as compared to 38% in Bilaspur. This was statistically significant ($\chi^2 = 9.38$, $df = 3$, and $p\text{-value} = 0.02$). The mean distance travelled by the patients in Solan is 1.9 kms (SD= 2.31) compared to 2.9 kms (SD= 3.89) in Bilaspur. This difference is statistically significant. ($T\text{-statistic}=2.0707$, $p\text{-value}= 0.03$)

3.1.2.9 Distance between Residence of patient and MC Centre

Forty eight percent patients had to travel only one KM distance between residence of patient and MC centre to get sputum examined in Solan as compared to 14% in Bilaspur. This was statistically significant ($\chi^2 = 52.52$, $df = 4$, and $p\text{-value} < 0.001$). The mean distance travelled by the patients in Solan is 3.2 kms (SD=4.61) compared to 11 kms (SD= 9.63) in Bilaspur. This difference is statistically significant. ($T\text{-statistic}=7.0331$, $p\text{-value}< 0.001$)

3.1.2.10 Work performance

Sixty four percent of patients in Solan reported that despite having TB, their work performance was not affected. In case of Bilaspur only 36% patients reported the same. This difference was found to be statistically significant ($\chi^2 = 53.77$, $df = 1$ and $p\text{-value} < 0.001$).

3.1.3 Patient delays

Delays at patient level from the onset of symptoms to any health facility contacted.

3.1.3.1. *Interval from onset of symptoms to any HF 1st contacted*

Mean patient delay from the onset of symptoms to contacting first health facility was 18 days and 47 days in Solan and Bilaspur respectively. (p-value < 0.001, T-statistic = 6.3336). With regard to factors associated interval include: age, education, employment, occupation, type of health facility and distance to Govt. microscopy centre. Details of these factors are described below:

AGE: Mean patient interval was shorter in all age groups in Solan compared to Bilaspur and was statistically significant ($\chi^2 = 116.2$, df = 3, and p-value < 0.001). Sex stratification shows less patient interval in health seeking behavior in both male and female in Solan as compared to Bilaspur ($\chi^2 = 7.09$, df = 1, and p-value < 0.007).

EMPLOYMENT: Looking at the employment aspect, shorter mean interval of 16 days was observed among unemployed in Solan as compared to 40 days in Bilaspur ($\chi^2 = 65.44$, df = 5, and p-value < 0.001).

OCCUPATION: Among patients who were employed, stratification of patient occupation, mean interval of 25 days was observed in semi-skilled patients compared to 66 days in Bilaspur ($\chi^2 = 16.62$, df = 1, and p-value < 0.001).

TYPE OF HEALTH FACILITY: Solan has short interval of 19 days in seeking Govt. health facility compared to 58 days in Bilaspur ($\chi^2 = 59.26$, df = 6, and p-value < 0.001).

DISTANCE TO MC CENTRE: Shorter mean interval of 17 days was observed in accessing GHF due to shorter distance of ≤ 10 kms from patient residence to microscopy centre in Solan as compared to 39 kms in Bilaspur. ($\chi^2 = 25.98$, df = 3, and p-value < 0.001). (*Annexure-VII, Table 3,4,5 Page 121 to 122*)

3.1.3.2. *Median delay from onset of symptoms to any HF 1st contacted*

The median patient delay in Solan is 15 (IQ range 0-30) range 0-365 and in Bilaspur is 22 (IQ range 10-60) range 1-244. AGE: stratification of median delay was 15 days in <45 and >45 years age groups in Solan while it was 18 in <45 and 31 in >45. AREA: Median interval in Solan is 15 (IQ range 0-30) range 0-45 in urban and 0-365 in rural while in Bilaspur is 15 (IQ range 14-22) range 14-168 in urban and 9-244 in rural. EMPLOYMENT: The median patient interval in Solan for employed was 15 days (IQ range 0-30) range 1-365 and for unemployed was 15 days (IQ range 0-30) range 1-45 while in Bilaspur for employed was 27 days (IQ range 10-69) range 10-244 and for unemployed was 18 days (IQ range 5-50) range 5-244. DISTANCE TO MC CENTRE: The median patient interval in Solan for ≤ 10 kms was 15 days (IQ range 0-30) range 0-365, 11-20 kms, 30 (IQ range 30-30) range 30-30 and for 21-30 kms was 15 (IQ range 15-15) range 15-15 while in Bilaspur for ≤ 10 kms was 17 days (IQ range 5-44) range 0-365, 11-20 kms, 34 (IQ range 12-65) range 30-30, for 21-30 kms was 22 (IQ range 13-73) range 15-15 and for >31 kms was 22 (IQ range 10-22) range 15-15.

3.1.3.3. *Mean excess delay in diagnosis at GHF due to any private health facility first contacted*

Mean patient excess delay in contacting Govt. health facility, after consulting any private health facility and diagnosis was 4 days in Solan as compared to 15 days in Bilaspur. (*T-statistic* = 2.5475, *p-value* = 0.01). (*Annexure-VII, Table 5 Page 122*)

The following factors were **not** found to be associated with high case detection rate in Solan such as denial, concealment and stigma. (*Annexure-XIII, Table 11, Page 126*)

3.2. PROVIDER DETERMINANTS

3.2.1 Doctors

There were 47 doctors in charge of the institutions working in Solan for RNTCP beside their work as Medical Officer. Out of 47 doctors 31 (66%) were male doctors. High proportion (83%) of doctors were from rural areas. The mean duration of service was 5.5 years (SD= 5.23). Similarly there were 32 doctors in charge of the institutions working in Bilaspur for RNTCP beside their work as Medical Officer. Out of 32 doctors 26 (81%) were males. High proportion (93%) of doctors were from rural areas. The mean duration of service was 3.5 years (SD ± 4.47).

Several provider related factors were found to be associated with high case detection rate in Solan, such as: Training, supervisory visits by RNTCP officials, delay in contacting first health facility and diagnosis at Govt. Health facility and delay from diagnosis to initiation of treatment. These are described in detail below:

(Annexure-VIII, Table 6, page 123)

3.2.1.1 Training

Significantly higher proportions (90%) of doctors were trained in RNTCP in Solan compared to only 72% in Bilaspur. ($\chi^2 = 5.40$, $df = 1$, and $p\text{-value} = 0.02$).

3.2.1.2 Supervisory visits by RNTCP officers

Eighty seven percent of doctors were supervised in the 1st quarter of 2008 by senior RNTCP officers in Solan compared to only 59% in Bilaspur. ($\chi^2 = 12.74$, $df = 1$, and $p\text{-value} < 0.001$).

3.2.1.3 Mean delay from any HF 1st contacted and diagnosis at GHF

As per the RNTCP norms the interval between any chest symptomatic patient being registered at GHF and confirmation of diagnosis should not exceed 3 days. Therefore an interval of > 7days is considered as delay. Mean patient delay in contacting first

health facility and diagnosis was 3 days and 17 days in Solan and Bilaspur respectively. This difference was statistically significant (T -statistic= 7.7049, p -value<0.001).

3.2.1.4 Mean delay from diagnosis to initiation of treatment

As per the RNTCP norms the treatment has to be initiated within 7 days on confirmation of diagnosis (no delay is acceptable beyond it). Mean patient delay from diagnosis and initiation of treatment was 2 and 3 days in Solan and Bilaspur respectively. (T -statistic = 2.3705, p -value =0.01).

3.2.2 DOTS providers

There were 175 DOTS providers working in Solan in RNTCP beside their additional duties. Out of 175 DOTS providers 129 (72%) were males. High proportion 163 (93%) of DOTS providers were from rural area. The mean duration of service was 14.6 years (SD= 6.21). Similarly 107 DOTS providers were working in Bilaspur in RNTCP beside their additional duties. Out of 107 DOTS providers 47 (44%) were males. High proportion 101 (94.4%) of DOTS providers were from rural area. The mean duration of service was 14.1 years (SD= 7.22).

Several providers related factors were found to be associated with high case detection rate in Solan, such as: Training, administrative level of DOTS provider. These are described in detail below: (*Annexure-IX, Table 7, page 123*)

3.2.2.1 Training

Hundred percent (175) of DOTS providers were trained in RNTCP in Solan compared to only 72% (n=103) Bilaspur. This was statistically significant ($\chi^2 = 5.53$, $df = 1$, and p -value = 0.01).

3.2.2.2 Administrative level of DOTS Provider

Forty percent of DOTS providers were at or above the CHC level of DOT centre in the rural sector in Solan compared to 20% in Bilaspur. ($\chi^2 = 20.35$, $df = 1$ and p -value < 0.001).

3.2.3 Lab technicians

There were 15 Lab Technicians (LTs) working in Solan in RNTCP beside their additional duties. Out of 15 LTs, 13 were males. Ten out of 15 LTs were from rural area. The mean duration of service was 8.6 years (SD= 7.13). Similarly 11 Lab technicians working in Bilaspur in RNTCP beside their additional duties. Out of 11 LTs 10 were males. Nine out of 11 LTs were from rural area. The mean duration of service was 15.1 years.

Factors examined with regard to lab technicians include training and time taken by LTs for reports (*Annexure-X, Table 8, page 124*). Both these factors were found to be not statistically associated with high case detection rate in Solan district. Details are discussed below:

3.2.3.1 Training

Thirteen out of 15 LTs were trained in RNTCP in Solan compared to 9 out of 11 in Bilaspur (72%). This was not statistically significant ($\chi^2 = 0.11$, $df = 1$, and p -value = 0.73).

3.2.3.2 Time taken for reports by LTs

73% of the lab technicians disseminated report information to patients on the same day (<1day) in Solan as compared 42% in Bilaspur. This was not statistically significant.

3.2.4 Private practitioners

There were twenty two private practitioners and all are involved in RNTCP by signing an agreement with the DTO in Solan. Out of 22 PPs 18 (82%) were specialist and 17 (77%) were male doctors. The mean age of doctors was 53 years (SD= 9.34). The mean duration of private practice is 13 years (SD=10.8). There were 9 (41%) clinics and 13 (59%) nursing homes and all located in urban area. *Although there were nine private practitioners in Bilaspur district, none were involved in RNTCP.*

3.2.4.1 Public Private Mix (PPM)

Private Practitioners (PPs) involvement under public private partnership (PPP) was started in 2002 in Solan district with only five private practitioners signing the contract for a period of one year with District Tuberculosis Officer under Public Private Partnership. All the five PPs willingly signed this contract under scheme 1 and or scheme 2 of involvement of private practitioners in the RNTCP. In the year 2004-05 the number of PPs increased to 15 and later to 18 in 2006-07 and to 22 for 2008. This was found that out of 22, nine (41%) are private clinics and thirteen (59%) were nursing homes. All were interviewed and their premises observed to see the effectiveness and dedication of their involvement in the RNTCP. *There is no PP involved in Bilaspur district.*

All the 22 private practitioners said that they willingly participated in RNTCP and were individually approached by the DTO. All 22PPs were trained prior to involvement in RNTCP. The monthly OPD of all the PPs involved RNTCP account to 17117 patients in one month and out of which 163 referred to Govt. hospital for sputum microscopy. Out of the 163 referred patients 13 have tested positive for TB which they are providing DOTS in their facilities. In 2008 private practitioners have provided DOTS to nearly 40 patients. 90% of the PPs said that they have benefitted from this

partnership and 95% said that they are satisfied with the partnership as it is, at present. Satisfaction criteria as told by them was containment of patient, free medicine to the poor patients, remuneration to the DOTS provider and seminars organized by the RNTCP.

3.2.5 NGO

One non-governmental organization Old Age Help Line Society was involved in RNTCP since 2006/2007. It has 11 active DOTS centres manned by trained DOTS providers. Out of 11 DOTS centres 10 are located in rural area. They refer the chest symptomatics to the concerned DMCs for sputum microscopy. They were very actively involved in IEC activities particularly in rural area of Solan district. Beside referring chest symptomatics they also provide treatment as per the directions of the DTC Solan. *There was no NGO involved with RNTCP in Bilaspur district.*

3.3. SYSTEM DELAY DETERMINANTS

3.3.1. IEC activities

All 222 (100%) health facilities (includes all 175 public DOTS centres and all 47 PHIs) were conducting IEC activities in Solan and all 142 health facilities (includes all 107 public DOTS centres and all 35 PHIs) in Bilaspur districts. Therefore the factor was not found to be statistically associated with high case detection rate in Solan district.

3.3.2. Manpower vacancy positions

In Solan all 47 PHIs were staffed with doctors and out of 15 DMCs 13 were staffed whereas in Bilaspur 6 out of 37 PHIs did not have a doctor in position and 2 DMCs out of 11 did not have LTs in position.

3.4. MULTIVARIATE ANALYSIS

Multivariate analysis was performed with unconditional logistic regression with the variables that were found to be significantly associated in Solan and Bilaspur in univariate analysis. Of the nineteen variables found to be significant in univariate analysis only seven were significant on multivariate analysis. These include: (i) higher urbanization (p-value < 0.001), (ii) gainful employment (p-value = 0.01), (iii) higher proportion of patients diagnosed within 5 days (p-value < 0.001), (iv) Less Patient level delay (p-value = 0.007), (v) confident of getting cured (p-value = 0.01), (vi) higher proportion of patients knew the exact cause of TB (p-value = 0.01), (vii) less than 10 kms distance from residence of patient to microscopy Centre (p-value = 0.007) statistically significant in Solan and Bilaspur. Results of the study are given in *Annexure-XII, Table 10, page 125.*

4. DISCUSSION

Solan district has a high case detection rate of 101% (96 per lac population) in 1q08 as verified by the local public health authorities. This study sought to identify factors associated with high case detection rate of NSP cases in Solan district of Himachal Pradesh. We examined patient, provider and system related factors.

4.1. Patient related factors

There were several patient related factors which were statistically significant such as place of residence viz. urban v/s rural, education, economic status, health facility preference, patient delays, health facility first contacted, private practioners contacted, reason for choosing 1st health facility, after Private Practioners level of Govt. Health Facility contacted, number of consultations before TB diagnosis, cause of TB, distance between residence of patient and microscopy centre in Solan.

In our study we found more patients residing in urban area compared to Chamba (7%), Shimla (18%), Kangra (22%) and Bilaspur (11%). This finding was not supported by other studies. In a study in Vietnam by Nguynt T et al majority of patients were residing in rural area⁵.

In our study we found employment among patients to be positively associated with high case detection in Solan compared to all the other evaluated districts. Similarly a study in south India by Jerard M et al reported 59% employed patients and among those 64% were daily wage earners⁶.

Interestingly, most of the patients prefer to seek health care at Govt. health facility in Solan compared to other districts which resulted in high case detection in Solan.

Short total mean patient delays, in seeking health care in Solan was associated with high case detection. In a study in Vietnam by Nguyen T Huong et al it was observed

that wherever having case detection rates are above WHO target delays were relatively short.

In Solan high proportion of patients first visited Govt. health facility. Similar findings were reported by a study in rural South Africa by Pronyk P M et al in 2001 where patients more often presented initially to public hospitals or clinics than to spiritual/traditional healers or private general practioners⁷. In the same study it was observed that half of the patients first went to the health centre, and one-third to a private clinic⁷.

Patient had to travel shorter distance, for sputum microscopy in Solan which could be due to well established health infrastructure in urban and rural areas of Solan district. Nagpaul et al observed that due to dense network of health facilities in industrialized and urban areas, the distance between residence or workplace and health-care facilities may be an unimportant factor in a patient's delay in seeking medical attention⁸ but in contrast, he also reported that it is conceivable that in resource poor countries the distance to next health care provider/facility may influence the patient attitude towards seeking medical attention⁹.

In Solan we observed that patients had taken upto two consultations before obtaining a diagnosis. Similar finding was reported by Uplekar M et al in their study private practioners and public health: weak links in tuberculosis, where 149 of 601 patients took more than two consultations before obtaining a diagnosis¹⁰.

Patients in Solan reported that despite having TB their work performance was not affected. The difference was because patients in Solan district were diagnosed and treated early and therefore perhaps did not suffer any complications which in turn had positive effect on their work performance.

4.2. Provider related factors

We observed higher number of trained doctors and public DOTS providers contributed to high case detection in Solan district. According to a study by Norval PY et al in Cambodia observed that the number of new smear-positive cases detection rate increased after training the staff of health facilities¹¹.

Regular supervision and more supervisory visits to the institutions by the superior officers and officials of RNTCP in Solan played a key role in motivating the field staff to involve in the RNTCP activities. The combination of physician education, support for and active surveillance of programme supervision is a promising approach to improving TB case detection¹²

Private sector participation was one of the factors associated with high case detection in Solan. In a study by Puneet K Dewan et al on PPM (PPS and NGOs) case notification rates were higher after implementation of a public-private mix project¹³. In another study by M.H.A. Kumar et al in Kerela observed that public-private partnership increased the TB case detection rate¹⁴.

5. CONCLUSIONS

In Solan district high case detection rate was significantly associated largely in to patient related factors directly to only one provider related factor.

However many of the patient related factors such as delays, greater awareness etc could be a result of IEC programme conducted by the local health authorities.

Likewise patient preference for Govt. health facilities consulted and confidence of being cured there along with shorter diagnostic intervals indicate more than one provider related factor is associated with high case detection rate in Solan.

Many of the factors associated with high case detection rate in Solan such as: high literacy, urban residence, employment, low patient delay, knowledge of disease as replicable in other districts of Himachal Pradesh such as Shimla¹⁵, Chamba¹⁶, Kangra¹⁷, and Bilaspur¹⁸. Though the districts have achieved the WHO targets of 70% of case detection rate, most of them have case detection rates well below that of Solan. It is therefore hoped that implementation of some or all of the above replicable factors in these districts would lead to further improvement in case detection rates.

6. RECOMENDATIONS

On the basis of the results of the study there is need to:

1. Forge partnership into private sector and NGOs to improve case detection rate in Bilaspur district as per the recommendations of RNTCP.
2. Improve manpower shortage, strengthen training in RNTCP for doctors and DOTS providers and carry out some supervisory visits in Bilaspur district to further improve case detection rate.

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REVIEW OF LITERATURE FOR TUBERCULOSIS

1. Burden of Tuberculosis

The 202 countries reporting for Tuberculosis to WHO notified 5.4 million new and relapse cases, of which 2.5 million (47%) were new smear-positive cases. Of these notifications, 5.3 million were from DOTS areas, including 2.5 million new smear-positive cases. A total of 31.8 million new and relapse cases, and 15.5 million new smear-positive cases, were notified by DOTS programmes in the 12 years between 1995 (when reliable records began) and 2006. The Stop TB Strategy launched by WHO in 2006 is designed to achieve the 2015 impact targets as well as the targets for case detection and treatment success. Progress in case detection decelerated globally between 2005 and 2006, stalled in China and India, and fell short of the Global Plan milestone of 65% for 2006. The African Region, China and India collectively account for 69% of undetected cases. In 2006, DOTS programmes detected 2, 496, 478 new smear-positive cases (99% of all new smear-positive cases that were notified) out of an estimated 4.1 million new smear-positive cases, giving a case detection rate of 61%. The point estimate of a 61% case detection rate for 2006 is still below the 70% target set for 2005¹. New smear-positive case detection rates by DOTS programmes in 2006 were highest in the Western Pacific Region (77%), the South-East Asia Region (67%). South-East Asia achieved more than 85% treatment success, and case detection was just under 70%. The European Region performed worst on both indicators. The South-East Asia Region is still behind that the 70% target. In the South-East Asia Region, the acceleration in case-finding after 2000 was attributable mostly to progress in Bangladesh, India, Indonesia and Myanmar. The more recent deceleration in detection is mainly a result of slowing DOTS expansion into India's northern states, as the Indian national TB control programme (RNTCP) reaches full

national coverage². The case detection exceeded 70% in 2006, and treatment success was only 0.3% below the target of 85% in the 2005 cohort.

2. National Tuberculosis Programme (NTP)

The National Tuberculosis Programme has been in operation since 1962. It is essentially a permanent countrywide programme, integrated with the general health services at both the rural and urban levels. The District Tuberculosis Programme (DTP) is the backbone of the National Tuberculosis Programme. It was evolved by the National Tuberculosis Institute, Bangalore, and was accepted by the Government of India for implementation, which started in 1962.

The long-term goal of the NTP is "to reduce the problem of tuberculosis in the community sufficiently quickly to the level where it ceases to be a public health problem". The short-term objectives were

1. To detect maximum number of TB cases among the outpatients attending any health institutions with symptoms suggestive of tuberculosis and treat them effectively.
2. To vaccinate newborns and infants with BCG
3. To undertake the above objectives in an integrated manner through all the existing health institutions in the country.

4. Revised National Tuberculosis Control Programme (RNTCP)

The Govt. of India, WHO and World Bank together reviewed the NTP in the year 1992. Based on the findings of that review a revised strategy for NTP was evolved and named as Revised National Tuberculosis Control Programme (RNTCP). This programme was launched in India in as a Pilot Project since 1993. During Phase I it has covered 2.35 million people, phase II 13.85 million people, and now in Phase III,

it is envisaged to extend the project area covering a total of 271.21 million people. The revised programme is now extended in a phased manner throughout the country during the 9th Five Year Plan.

The highest number of TB cases were detected from India (553797). The case detection rate of new smear positive cases in India is 64% in 2006 under DOTS programme, which is highest among all the high burden states².

The main pillars of the revised strategy are:

1. Achievement of not less than 85% cure rate amongst infectious cases of tuberculosis through short course chemotherapy involving peripheral health functionary.
2. Detecting 70 per cent of the estimated cases - through quality sputum microscopy.
3. Involvement of NGOs.
4. Direct Observed Therapy Short-term (DOTS) - a community-based TB treatment and care strategy.

The five major components of DOTS are:

1. Government commitment to sustained TB control activities
2. Case detection by sputum smear microscopy among symptomatic patients self-reporting to health services
3. Standardized regimens of six to eight months treatment at least for all confirmed sputum smear positive cases, with directly observed treatment (DOT) for the initial two months
4. A regular, uninterrupted supply of all essential anti-TB drugs
5. A standardized recording and reporting system that allows assessment of

treatment results for each patient and of the TB control programme overall

6. Performance of Solan

Solan district is a high performing district of Himachal Pradesh. The indicators for diagnosis and control of tuberculosis are one of the best in the state. The case detection rate for the year 2007 was 95% which is far ahead the WHO target of 70%. There were several factors responsible for the high case detection rate of Solan district. These factors are broadly classified into three groups viz, patient related factors, provider related factors and system related factors. The patient related factors were: place of residence viz. urban v/s rural, education, economic status, health facility preference, patient delays, health facility first contacted, private practitioners contacted, reason for choosing 1st health facility, after Private Practitioners level of Govt. Health Facility contacted, No. of consultations before TB diagnosis, cause of TB, work performance, distance between residence of patient and microscopy centre and perceived cause of delay with denial & concealment in Solan.

3. PATIENT RELATED FACTORS

3.1 Age

It is quoted in TBC India 2008 that the most affected age group (15–54 years) is the economically productive age. Over 70% of TB cases in India occur in this economically productive age group. It is one of the leading infectious diseases causing death².

A recent Indian study by Rajeshwari R et al in south India has shown that patients aged 45 years or above are likely to have longer patient delays³. According to another study by Xu B et al conducted in China concluded that elderly patients were perceived to be more reluctant to seek health care⁴

Globally the case notification rates age and sex wise are higher in males age groups from 25-65 while lower in age groups 0-24 according to Global Tuberculosis control, WHO report 2008. In female age groups 25-65 are higher while lower in age groups 0-24. The case notification in 25+ age group in males is 2.2 times higher as compared to females in the same age group⁵.

In south east asia region (SEAR) the case notification rates age and sex wise are higher in males in the age groups 25-65 while lower in age groups 0-24. The case notification in 25+ age group in males is 2.6 times higher as compared to females in the same age group. The adult age group male case notification is 2.4 times higher as compared to females while globally it is 2 times⁶.

3.2 Literacy and employment

According to a study by Jerard M et al in Tamilnadu among new adult smear-positive patients there were 73% were males, 61% were literate, 59% were employed and respectively 34% and 44% reported alcohol consumption and smoking. The mean age of the patients was 43 years. Among those employed, 64% were daily wage earners and 34% had discontinued their job due to their illness. Sixty per cent of the patients had to travel 5 kms to attend the health centre⁷.

In a study by Olle Goig JE et al in rural Haiti observed that by involving the community, the authors were able to demonstrate that directly observed treatment can be successful even in a scattered rural population with scarce economic resources, high HIV infection, high illiteracy rates, difficult access to transport, and unstable political conditions⁸.

3.3 Patient delay

According to a study in Vietnam by Nguyen T Huong et al observed that the estimated case detection rate of the NTP has been above the WHO target of 70%, one would thus expect diagnostic delays to be relatively short⁹.

Assessing health seeking behaviour among tuberculosis patients in rural South Africa. Median total delay to hospitalization was 10 weeks, with patient delay contributing a greater proportion than service provider delay. Patients more often presented initially to public hospitals (41%) or clinics (31%) than to spiritual/traditional healers (15%) or private GPs (13%). Total delay was shorter amongst those presenting to hospitals than those presenting to clinics, with a significantly smaller proportion of the total delay attributable to the health service provider (18% vs. 42%). Those exhibiting a conventional risk profile for TB (migrants, alcohol drinkers, history of TB) were diagnosed most quickly by health services, while women remained undiagnosed for longer¹⁰ According to study in Tamilnadu by Jerard M et al, the median patient delay was 28 days, and 35% had taken more than 28 days to seek care after the onset of symptoms. In univariate analysis, patient delay was significantly associated with difficulty in accessing government health facility, type of transport used, and smoking. The delay was not associated with sex, age, literacy, occupational status or the type of provider consulted¹¹.

in a study by Uplekar M, et al in private practitioners and public health: Weak links in tuberculosis control, the longer delay observed compared to the earlier study is probably due to inclusion of more rural areas and the fact that we defined provider delay from the point of contact to initiation of treatment. They found that many private practitioners ultimately refer patients to the government sector.

Uplekar M, et al observed that most patients had to take more than two actions before obtaining a diagnosis. This highlights the need to train providers to suspect TB, order appropriate investigations and reduce shopping around by patients for diagnosis/treatment¹².

In a study by Jerard M el al in Tamilnadu observed although the new smear-positive case detection rate had reached above 70% in the third and fourth quarters of 2004 nationally and in Tamil Nadu, it is important to assess whether these patients are diagnosed and initiated on treatment with minimum delay. In a passive case finding programme, this is dependent on the health seeking behaviour among individuals with chest symptoms and the interval between first contact with a provider and initiation of treatment¹³.

In a study by Mirsaeidi SM et al observed that the mean patient delay time was 15 +/- 13 days with a median of 13 days. The mean physician delay time was 93 +/- 72 days with a median of 75 days. The mean total delay time was 108 +/- 71 days with a median of 96 days. The patient delay was at an acceptable level compared with other countries, but physician delay time has not been shortened during the last eight years. Improving and upgrading the mycobacteriological courses for general physicians and specialists during their academic years should be accompanied by short-term teaching courses after the graduation¹⁴.

3.4 Information on knowledge / Awareness

Good general lay knowledge of TB is important for both health care seeking and adherence to treatment according to studies from Malaysia¹⁵ by Liam CK et al, China¹⁶ by Xu B et al and Vietnam have shown that treatment is often delayed due to poor knowledge, particularly in lower socioeconomic groups. Many in these groups

are not aware of the risks associated with long-standing cough, they are not reached by national programmes and they do not recognize the need for prompt case detection, follow-up and treatment.

3.5 Patient perception about health facility

According to a study by Wilkinson D et al, in Kenya, traditional treatment is considered an alternative to modern treatment. Initial symptoms such as cough and fever are often overlooked and/or confused with malaria or common cold. Prolonged self-treatment, consultation with the traditional health sector and social stigma are some of the factors associated with increased patient delay. The role of the traditional healer in the control tuberculosis has to be seen in the light of the fact that they have other socio-cultural and religious externalities, which may be beneficial to the communities concerned. Most tuberculosis programme interventions targeted towards traditional healers in the state seem to be in the form of I.E.C. (information, education and communication) materials that discourage the use of traditional healers, while numerous models from high burden countries show that they can be utilized in a more productive manner in tuberculosis control¹⁷.

The World Bank too reported that traditional healers could be important potential public health providers of essential clinical services if governments give them appropriate training, information and incentives¹⁸.

3.6 Stigma

According to a study in Bombay by Nair M et al have shown that patients hesitate to disclose their symptoms or disease to others like family members, friends, community, out of fear of being socially ostracized. Women with tuberculosis were

worried about rejection by husband, harassment by in-laws, dismissal from work, reduced chances of marriage for unmarried women, and difficulty in keeping the condition a secret, married women delayed seeking treatment or hide their diagnosis from their husbands out of fear of being deserted.¹⁹

According to a study by Carey et al on Vietnamese refugees in New York believed that the community would fear and avoid persons with TB²⁰.

Ngamvithayapong J et al observed that In Thailand, community's strong belief about TB transmission through eating and drinking seemed to have induced anxiety and stigma among female HIV negative TB patients; these women were not allowed to join social events when people came to know that they had tuberculosis²¹.

In Colombia, Jaramillo E et al observed that stigma, poor service quality and culture-based explanation are found to act as strong barriers to early diagnosis²².

Similarly, in Mexico, Alvarez-Gordillo GC et al observed that patients blamed social consequences of stigma for their long delays in seeking care and poor treatment adherence²³.

In Honduras too, fear of losing family and friends led some TB patients to report preferring death to social rejection²⁴.

Various studies in India have reported patient delay in seeking health care in the range of 28 days to 2 months^{25, 26} & have linked this behavior to their cultural practices, knowledge, beliefs and stigma.

3.7 Access awareness

Aeoki M et al in Japan observed that in industrialized countries with dense network for health provision, the distance between residence or workplace and health-care

facilities may be an unimportant factor in a patient's delay in seeking medical attention²⁷.

In contrast, Nagpaul DR et al in India observed that it is conceivable that in resource poor countries the distance to next health care provider may influence the patient attitude towards seeking medical attention²⁸.

A study conducted in South India Tamilnadu by Jerard M et al showed that patient and provider delay was significantly associated with the distance travelled and mode of transport²⁹.

In Japan the interval between the occurrence of symptoms and the first contact with health-care provider was 17days, but this varied remarkably between individual patients. Patient delay was also influenced by profession and location of residence³⁰.

According to a study by Gaja AA et al in Ethiopia, patient delay constituted 86% of the total delay. Having low biomedical knowledge on TB was significantly associated with prolonged patient delay, however, the only observed risk factor for very long patient delay was distance to health facility³¹

3.8 Perception on attitude, behavior, service and capability of DOT-Provider

Reports that the success of directly observed treatment in 30 programmes reviewed is due to a variety of factors. These include interventions such as incentives to patients, tracing of patients who interrupt treatment, staff motivation, and supervision. The authors note that effective services require “an actively managed programme of tuberculosis control, with a mixture of inputs to improve adherence that include incentives, defaulter actions, and patient-centered designs³².”

4. PROVIDER RELATED FACTORS

4.1 Provider delay (Health system delay)

According to a study by Norval PY et al in Cambodia observed that the number of new smear-positive cases detection rate increased by 121% in 14 years. This was possible because of commitment of the government, training and mobilization of health workers, a steady supply of drugs, free food for patients, collaboration with NGOs, decentralization of tuberculosis services, and adequate supervision³³.

health seeking behavior is known to be influenced in developing countries by factor like patient motivation, degree of diagnostic suspicion by health provider and quality of lab facility³⁴. Delay in diagnosis results from a variety of factors, including failure to perform sputum microscopy, over-reliance on chest radiographs, and a low level of clinical suspicion.

A retrospective survey by Lawn SD et al, of 100 Ghanaian adults detected a median delay to diagnosis of 4 months (mean 7.7 months). Delays were associated with failure to perform sputum microscopy and patients were also responsible for the delays, but provider practices resulted in twice the length of delay³⁵,

In Japanese study by Aoki M et al, the median patient delay was 17 days and median doctors delay was 31 days³⁶.

On a global scale, Uplekar et al have pointed out that a large proportion of patients in high prevalence countries such as India, Pakistan, Philippines and Uganda have their main contact with private practitioners, and that many of these tend to deviate from recommended tuberculosis management practices. Many of these practitioners are found in urban slums³⁷.

According to Reichmann³⁸ most influential factor for doctors delay was whether a radiographic examination was done or not done at the first visit. The median delay

was only 13 days for patients who had chest radiograph done at first visit, but 50 days for those who were not examined.

In various studies that evaluated the role of mass miniature radiography, it has been shown that more than 90% of sputum smear positive patients have symptoms, predominantly cough^{39, 40, 41}.

There is little doubt that with decreasing incidence of tuberculosis in most developed countries, physician will think less of tuberculosis as a differential diagnosis. According to a study in India by Jerard M et al provider delay was greater when the patient's first contact was with the private sector. A quarter of patients were not diagnosed even after two actions. The median provider delay when a patient consulted a government provider first was 9 days, compared to 50 days for those consulting a private provider or indigenous (non-allopathic) system first⁴².

According to Merciniuk DD et al observed that much patients, however, show symptoms typical of TB, the most common being cough (76%) and sputum production (64%)⁴³.

In the setting of a strong government TB programme, public-private partnership increased the TB case notification rate, achieved high levels of treatment success and established the foundation for ongoing cooperation with the private sector. The combination of physician education, support for and active surveillance of private laboratories, and programme supervision is a promising approach to improving TB case detection⁴⁴.

According to a study by Norval PY et al in Cambodia observed that the number of new smear-positive cases detection rate increased after training the staff of health facilities⁴⁵.

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ANNEXURE-I

Sample size calculation for recruitment of patients:

Based on lower CDR (85%) of Bilaspur (to have a larger sample size) we calculated the sample size as follows:

	Solan	Bilaspur
Total population size of NSP cases:	127	78
Lower CDR (Bilaspur):	85%	85%
Confidence limit:	95%	95%
Absolute precision:	± 5%	± 5%
α error:	5%	5%
Sample size	77	56 (took all 78)

A sample size of 86 was worked out. We over sampled the study participants taking into account of non response rate of 10%. We line listed all the patients in the 1q08 in all the three TUs of Solan and two TUs of Bilaspur in chronological order according to the date of diagnosis and chose 1-86 to include in to the study..

ANNEXURE-II

Sample size calculation for recruitment of DOTS providers:

Based on lower CDR (85%) of Bilaspur (to have a larger sample size) we calculated the sample size as follows:

	Solan	Bilaspur
Total population size of DOTS providers:	300	222
Lower CDR (Bilaspur):	85%	85%
Confidence limit:	95%	95%
Absolute precision:	± 5%	± 5%
α error:	5%	5%
Sample size	119	104

A sample size of 130 for Solan and 104 for Bilaspur was worked out. We over sampled the study participants in Solan and Bilaspur taking into account of non response rate of 10%. We line listed all the DOTS providers of all the three TUs of Solan and two TUs of Bilaspur in alphabetical order and chose 1-119 in Solan and 1-104 in Bilaspur, to include in to the study. The lower CDR of Bilaspur was taken to get higher sample size for study.

ANNEXURE-III

Table 1. Sample size of NSP patients, provider and system participants recruited in Solan and Bilaspur districts, Himachal Pradesh India 2008

Issues	Participant	Technique	Tool	Sampling frame Solan	Sample size Solan	Sampling frame Bilaspur	Sample size Bilaspur	Quality checks	Data collecting personnel
Patient issues	Adult NSP patients	Interview	1.Semi structured Questionnaire 2.Abstraction form	127	86	78	395	Double checking of data	Principal investigator
Provid er issues	Doctors	Interview	Interview schedule consisting of semi structured questionnaire	47	47	32	32	Double checking of data	Principal investigator
	Laboratory Technician	Interview	Interview schedule consisting of semi structured questionnaire	15	15	11	11	Double checking of data	Principal investigator
	DOTS Provider	Interview	Interview schedule consisting of semi structured questionnaire	300	175	222	107	Double checking of data	Principal investigator
System issues	DTO	Interview	Interview schedule consisting of semi structured questionnaire	1	1	1	1	Double checking of data	Principal investigator
	MOTC	Interview	Interview schedule consisting of semi structured questionnaire	3	3	2	2	Double checking of data	Principal investigator
	LTs	Interview	Interview schedule consisting of semi structured questionnaire	15	13*	11	9*	Double checking of data	Principal investigator
	STS	Interview	Interview schedule consisting of semi structured questionnaire	3	3	2	2	Double checking of data	Principal investigator
	STLS	Interview	Interview schedule consisting of semi structured questionnaire	3	3	2	5	Double checking of data	Principal investigator
	DOT Providers (Public)	Interview Abstraction	1.Semi structured Questionnaire 2.Abstraction form	300	175	107	286	Double checking of data	Principal investigator
	PP DOT Providers (Private)	Interview Abstraction	1.Semi structured Questionnaire 2.Abstraction form	22	22	0	0	Double checking of data	Principal investigator
	NGO	Interview	Interview schedule consisting of semi structured questionnaire	1	1	0	0	Double checking of data	Principal investigator

* Two posts of LTs in each districts were lying vacant at the time of study.

ANNEXURE-IV

Sampling Procedure:

We paid a maximum of three visits to interview study participant after which we recruited the next participant for interview from the line list to overcome the selection bias.

ANNEXURE-V

QUESTIONNAIRE - PATIENT (CONFIDENTIAL)

We are interested in knowing what is the situation of patients of Tuberculosis who have been put on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for NSP adult case patient (study subjects) of Tuberculosis registered during 4th quarter 2007 and 1st quarter 2008 in district Solan, Himachal Pradesh.

PART - A

I. Identification information from the DTC/TU

ID No. _____ Date of interview: _____

TB No. _____

Name and ID of the interviewer _____

Name of the interviewer _____

Name of the tuberculosis unit (TU) where registered _____

Name of the DOTS center providing treatment _____

Name of the microscopy center (MC)/other institution where diagnosed _____

Name of the Patient: _____

Phone no. _____, (Mobile) _____ (Off. /Resi.)

Father's/Husband's/Guardian's name: _____

Complete residential address _____

II. Identification information from the patient

1. ID. No.
2. Name
3. Area
- | | | |
|------------------------------|-----|----------------------|
| Urban | (1) | <input type="text"/> |
| Sub urban | (2) | |
| Rural | (3) | |
| Homeless/displaced/migratory | (4) | |
4. Age (calculated in years and months)
5. Date of birth
- | | | |
|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Day | Month | Year |
6. Marital statue
- | | | |
|-----------|-----|----------------------|
| Single | (1) | <input type="text"/> |
| Married | (2) | |
| Divorced | (3) | |
| Widowed | (4) | |
| Separated | (5) | |
7. Type of family
- | | | |
|---------|-----|----------------------|
| Nuclear | (1) | <input type="text"/> |
| Joint | (2) | |
8. Family size
- | | | |
|-----|-----|----------------------|
| < 3 | (1) | <input type="text"/> |
| 3-5 | (2) | |
| 6-7 | (3) | |
| >7 | (4) | |
9. Religion:
- | | | |
|----------------|------|----------------------|
| Hindu | (1) | <input type="text"/> |
| Christian | (2) | |
| Muslim | (3) | |
| Buddhist | (4) | |
| Sikh | (5) | |
| Other, specify | (89) | |
10. Caste:
- | | | |
|----------------|------|----------------------|
| SC | (1) | <input type="text"/> |
| ST | (2) | |
| OBC | (3) | |
| GC | (4) | |
| Other, specify | (89) | |
11. Address _____

12. Duration of stay at present address _____

13. Native Place _____

14. Frequency of visits to native place

- Frequently (1)
- Rarely (2)
- None (99)

15. Patient's Qualification

- Illiterate (0)
- Primary (1)
- Middle (2)
- High School (3)
- Graduate (4)
- Professional (5)

III. Socio-economic status

16. Place of living:

- Rented (1)
- Own (2)

17. Type of house:

- Kutcha (1)
- Semi Pucca (2)
- Pucca (3)
- Bungalow (4)

18. Occupation of the patient.....

- Presently not employed gainfully (0)
- Not Skilled (1)
- Semi Skilled (2)
- Skilled (3)
- Managerial (4)
- Professionals (5)

PART - B

IV. Treatment seeking behavior

19. Preference for health facility
- Indifference to ailments
 - Self medication
 - Pharmacy
 - Native medicines
 - Specialist care
 - Govt. Health facility
 - Others, specify _____
20. Which symptom(s) made you seek healthcare (please tick all that apply)
- Cough
 - Fever
 - Weight loss
 - Hemoptysis
 - Chest pain
 - Dyspnoea
 - Others symptoms (specify) _____
21. Health facility first contacted for above complaints.

Type of health facility	Date contacted
Government health facility	
Private health facility	
Charitable institution	
Tradition healer	
Drug stores (pharmacies)	
Self-medication	
Others (specify) _____	

22. If contacted government health facility, then the level of health facility

- District/state level (1)
- Sub-district hospital (2)
- Community health center (CHC) (3)
- Primary health center (PHC) (4)
- Civil dispensary (CD) (5)
- Health sub-center (HSC) (6)
- Ayurvedic hospital/dispensary (7)
- Others (specify) _____ (89)

23. If contacted a private practitioner, then the specialty of the practitioner:

- Chest specialist (1)
- Physician (2)
- General practitioner (MBBS) (3)
- Ayurvedic doctor (BAMS) (4)
- Others (specify) _____ (89)

24. Reasons for choosing first health facility (as mentioned in question no. 19)

- Easy accessibility (1)
- Confidence in getting cured (2)
- Services available anytime (3)
- Free services (4)
- Advised by somebody (5)
- Others specify _____ (89)

25. No. of consultations taken before the diagnosis of TB _____

26. Was your sputum examined during any one of these consultations?

27. Was x-ray examination of your chest done during any of these visits?

28. Date first seen by an institution covered by RNTCP _____

29. Date of diagnosis of tuberculosis (by sputum microscopy) _____

30. Health facility that made the initial TB diagnosis _____

31. Diagnosis¹ _____

32. Date of starting DOTS _____

33. Reasons for **not** choosing this facility (that diagnosed PTB) earlier?

- Too far (1)
- Too busy/long waiting time (2)
- Bad experience/bad attitude of staff (3)
- Others, specify (89)

34. Who advised you to consult the present facility?

- Referred by previous health provider consulted (1)
- Self referral (2)
- Family members/relatives (3)
- Advised by other TB patients (4)
- Health worker (5)
- Any other (please specify) (89)

35. Interval between appearance of symptoms and final diagnosis of PTB.

- < 3 days (1)
- > 3 days (2)

36. Interval between diagnosis and initiation of DOTS (days)

- Immediate (1)
- On DOTS day only (2)

¹ Although the target population is new smear positive pulmonary tuberculosis, the items have been deliberately included to check errors in selection and data entry

V. Information on Knowledge / Awareness

37. Have you heard of TB (1)
 Yes (2)
 No (2)
38. If yes, what do you know? Give details
-

39. What is the cause of TB? (1)
 TB germs (2)
 Lack of proper food (3)
 Addiction to smoking (4)
 Overwork (5)
 Worries (6)
 God's curse (7)
 Fate (8)
 Poor hygiene (99)
 Don't know

40. What are the symptoms of TB?
- Cough _____
 - Fever _____
 - Weight loss _____
 - Hemoptysis _____
 - Chest pain _____
 - Dyspnoea _____
 - Others symptoms (specify)..... _____

41. What tests were carried out by the health facility?
- Sputum examination
 - X-ray chest
 - Blood test
 - Physical examination
 - Monteux Test
 - Urine examination
 - Others, specify
 - None

VI. Patients perception about Health facility

42. Perception about health facility
- Hospitable (1)
 - Long waiting hours (2)
 - Inconvenient working hours (3)
 - Too costly/bribe (4)
 - Non availability of (5)
 - a. Equipments
 - b. Manpower
 - c. Drugs

VII. Stigma

43. Tuberculosis stigma (No/disagree=0; Can't say =1; Yes/agree=2)

- Do you feel ashamed for having TB?
- Do you have to hide TB diagnosis from other people?
- Does TB affect relation with the others?
- Is TB very costly due to long duration of the disease?
- Do you prefer to live isolated since you got TB diagnosis?
- Does the TB affect your work performance?
- Does TB affect marital relation?
- Does TB affect family responsibilities?
- Do you think there is less chances of marriage due to TB diagnosis?
- Does TB affect your family relations?
- Does TB cause female infertility?
- Does TB lead to serious complications during pregnancy?
- Does TB affect breast feeding?
- Does TB affect pregnancy outcome?
- Is a girl unable to decide for getting TB treatment?

44. Distance between:
Nearest DOTS Center and residence of patient (kms) _____
Microscopy center and residence of patient (kms) _____

45. Distance covered each time to take DOTS
By Bus (kms) _____
On foot (kms) _____
Other means (please specify) _____

VIII. Access awareness

46. Transport home to Health Centre
- By walk (1)
 - By bus (2)
 - By train (3)
 - By cycle (4)
 - By auto (5)
 - Other, specify (89)
47. Time taken to reach DOTS center
- <1/2 hour (1)
 - 1/2 to 1 hour (2)
 - >1 hour (3)
48. Patient's knowledge of TB
- Had you ever heard of TB before you were diagnosed as having TB?
(Yes=1; No=0)
- When should one suspect that he/she has TB? _____
- Is TB curable? (Yes=1; No=2)
- Do you know the approximate duration of treatment of TB?
(Correct=1; Wrong=2)
- Is TB hereditary? (Correct=1; Wrong=2)
- Is TB contagious?(Correct=1; Wrong=2)
- Do you know if there is a vaccine for TB? (Correct=1; Wrong=2)
49. Source of information about TB.
- Health department campaigns (1)
 - TV (2)
 - Radio (3)
 - Print media (4)
 - TB disease amongst Friends/Relatives (5)
 - None (6)
 - Others (specify)_____ (89)
50. Have you been told by health service providers about the duration of treatment you have to take?
- Yes (1)
 - No (2)
51. If yes, for how long?(write the duration as told by the patient)_____
52. Have you been told by the DOTS provider about the common side effects of medicines that you are taking?
- Yes (1)
 - No (2)
53. If yes, what are those side effects? _____

PART - C

IX. Perception on attitude, behavior, services and capability of DOTS provider

54. Administrative level of DOT provider

- | | |
|---|------|
| District level | (1) |
| Sub-district hospital | (2) |
| CHC level | (3) |
| PHC level | (4) |
| Civil dispensary | (5) |
| Sub-center level | (6) |
| Below sub-center level (e.g. PRIs, volunteers). | (7) |
| Private Hospital/clinic | (8) |
| NGO | (9) |
| Others (specify) _____ | (89) |

55. Satisfaction with care

- | | |
|---|--|
| Availability of staff/DOTS provide (Unsatisfactory=0; can't say=1; Satisfactory=2) | <input type="text"/>
<input type="text"/>
<input type="text"/>
<input type="text"/> |
| Behavior of DOTS provider (Unsatisfactory=0; can't say=1; Satisfactory=2) | |
| Availability of medicines (Unsatisfactory=0; can't say=1; Satisfactory=2) | |
| Waiting time at DOTS center ($\leq 15\text{min}=3$; $15-<30\text{ min}=2$; $30\text{ mn}-1\text{ hr}=1$; $>1\text{ hr}=0$) | |

56. Perceived causes of delay in diagnosis/treatment initiation

- | | |
|---|------|
| No delay | (1) |
| Poor knowledge of the disease | (2) |
| Fear of what would be found on diagnosis | (3) |
| Hoped symptoms would go away (denial & concealment) | (4) |
| Fear of social isolation | (5) |
| Economic constraints | (6) |
| Symptoms were mild | (7) |
| Distance of facility not convenient (too far) | (8) |
| Inadequate staff attitude | (9) |
| Poor quality of health services | (10) |
| Others (specify) _____ | (89) |

X. Symptoms and Duration

57. Date of onset of various symptoms of pulmonary tuberculosis.

Symptom	Date of onset
Cough	_____
Fever	_____
Weight loss	_____
Hemoptysis	_____
Chest pain	_____
Dyspnoea	_____
Others symptoms(specify).....	_____

58. How patient understood the symptoms

May be a cold	(1)	
Vague worry about symptoms	(2)	
May be tuberculosis	(3)	
May be asyhma	(4)	
Others specify	(89)	
None	(99)	

59. Symptoms

Cough	Expectoration	Blood in sputum	Chest pain	Breathlessness	Others

Codes for duration of symptomatics

No symptom	(0)	
1 < 21 days	(1)	
22 days < 1 month	(2)	
1 month < 2 months	(3)	
2 month < 3 months	(4)	
3 month < 6 months	(5)	
6 month < 12 months	(6)	
>12 months	(7)	

QUESTIONNAIRE - DTO
(CONFIDENTIAL)

We are interested in knowing what is the situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for DTO in the health facilities reporting for NSP case patients during 4th quarter 2007 and 1st quarter 2008 in district Solan Himachal Pradesh.

Please answer all the questions. Do not leave any question unanswered.

PART - A

I. Identification information

1. ID. No.
2. Name of DTO _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. No. of service years in the district _____
5. Total length of service _____
6. Qualification _____
7. Name of institution _____
8. Name of TU of Distt _____

II. Health facility particulars

9. When was the RNTCP launched in District Solan of Himachal Pradesh?

10. What is the population coverage under RNTCP? _____
11. How many TUs are there in your district? _____
12. How many DMCs are there in your district? _____
13. How many MOTC are there in place in the TUs?
One (1)
Two (2)
Three (3)
14. How many PPs are there in your district? _____
15. How many DMCs have LTs? _____
16. Do all the DMCs have recommended infrastructure?
Yes (1)
No (2)

17. Do all the DMCs have binocular microscope?
Yes (1)
No (2)

18. Has there been any drug stock out in the district in the past one year?
Yes (1)
No (2)

19. Is an updated DOT directory available?
Yes (1)
No (2)

III. Training and meetings

20. Are you trained in RNTCP?
Yes (1)
No (2)

21. If yes, How long ago? _____

22. Where were you trained? _____

23. Who trained you? _____

24. Has training enabled you to perform your duty?
Yes (1)
No (2)

25. How many MOTC are there in your district? _____

26. How many MOTC are in place in your district? _____

27. How many MOTC are trained? _____

28. How many PPs are there under PPM? _____

29. How many PPs are trained? _____

30. How many STS are there in your district? _____

31. How many STS are in place in your district? _____

32. How many STS are trained? _____

33. How many STLS are there in your district? _____

34. How many STLS are in place in your district? _____

35. How many STLS are trained? _____

36. How many LTs are there in your district? _____

37. How many LTs are there in place? _____
38. How many LTs are trained? _____
39. How many DOT providers are there in public sector in your district? _____
40. How many DOT providers in public sector are trained in your district? _____
41. How many DOT providers are there in private sector in your district? _____
42. How many DOT providers in private sector are trained in your district? _____
43. Is any RNTCP training for Medical Officers and health workers organized? _____
44. How many meetings were held with PPs in the district in 2008? _____
45. How many technical and administrative review meetings do you hold with MOTC and all STS/STLS in a year? _____

PART – B

IV. Description of RNTCP

Why was RNTCP project launched in your area?

What are the goals of the RNTCP?

What are the objectives of RNTCP?

What are the treatment regimens under RNTCP?

Why is TB kept under Integrated Disease Surveillance Project?

Under RNTCP how many reporting units do you have?

What is the job of the health workers of subcentres in RNTCP?

What is the job of medical officers in RNTCP?

What is the job of medical colleges in RNTCP?

How do you suspect a case of TB under the RNTCP?

How do you confirm a TB case?

Do the staff lookout for cases house to house or just wait for cases to come to hospital under RNTCP?

Is the list of cases sent to the higher level, or just the number?

What reports are to be sent?

How often are the reports to be sent?

What data analysis is done on the forms at various levels?

PART – C

V. Knowledge / Awareness

46. Why was RNTCP started in your district?

47. What are the objectives of RNTCP

48. What are the treatments regimens prescribed under RNTCP?

49. In your opinion what is the time taken by a TB patient to seek first help from the time of onset of symptoms? (Enter exact no. in days)

50. Is there any delay in seeking health care? _____

51. What do you think could be the reasons for the delay if any? _____

52. In your opinion what is the average time taken for diagnosis from The time patient first visits your health facility? (Enter the exact no. in days)

53. Give reason for your answer.

54. In your opinion what is the average time taken from date of diagnosis to initiation of a treatment? Enter the exact no. in days? _____

55. Give reason for your answer. _____

56. What are the indicators for the 1st Quarter of 2008 for RNTCP in your district?

- Case Detection Rate _____
- Cure Rate _____
- Sputum Conversion Rate _____
- Default Rate _____
- Failure Rate _____

57. During last year how many patients were examined

New cases.....

Follow up cases

58. During last year how many cases were positive?

New cases.....

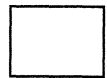
Follow up cases

59. How would you rate the performance of your district with respect to RNTCP?

Satisfactory (achieved targets set out by RNTCP) (1)

Unsatisfactory (did not achieve targets set out by RNTCP) (2)

Could do better (achieved targets but can do better) (3)



60. Please give reason for your answer in Q 59.

61. In your opinion what further steps can make the programme more successful?

VI. Compliers (NSP)

62. During intensive phase proportion of patients have taken regular DOTS?

1Q08 _____

63. During continuation phase proportion patients have taken regular DOTS?

1Q08 _____

VII. Defaulters (NSP)

64. How many initial defaulters were there in the 1st quarter of 2008?

65. What was the action taken?

66. Who retrieved these defaulters?

67. After how many days of diagnosis he was registered for treatment?

VIII. NSN

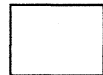
68. What was done when the three sputum samples were negative?

69. How do you follow a patient with three negative sputum samples?

70. Was he put on DOTS trial?

Yes (1)

No (2)



71. If not, then what was done?

72. How many NSN pts put on DOTS in 1Q08?

1Q08 _____

IX. Supervision

73. How often do you visit Tuberculosis Unit of your district in a quarter? _____

74. How often do you visit the Microscopic Centers of your district? _____

75. Do you have supervisory visits schedule? _____

76. Out of all PHIs how many of each category was paid supervisory visits during 1Q08?

Type of PHI	Number	No. visited	Total no. implemented
DMC
PHC (X-ray)
DOT Centres

77. How often does the District Magistrate review the programme and facilitates coordination with other sectors including PPs / programmes?

78. How often does the Chief Medical Officer review the programme?

79. Has there been any expiry of drugs in the District in the past one year?

80. If yes please list the drugs that have been expired. _____

81. Please also indicate how much time was taken to replace the expired drugs?

X. Referral

82. How is the information about the patients referred for treatment to other districts / TU compiled and conveyed

83. No. of patients referred to other district / TU in the first quarter 2008?

4q07 _____ 1q08 _____

84. Out of these number whose feedback was received?

4q07 _____ 1q08 _____

85. Out of these no. put on DOTS?

4q07 _____ 1q08 _____

86. What is the system for sending feedback for the diagnosed TB patients received from other districts?

XI. Constraints

87. Please list any specific problem you encountered in implementing RNTCP in Solan district?

88. Would suggest could you prepare to tackle the problems included above?

89. Is there anything you could like to add regarding performance of RNTCP in your district?

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

OBSERVATIONAL CHECKLIST – DTO
(CONFIDENTIAL)

Name of the DTO _____

DTC _____ Distt. _____

<i>S. No.</i>	<i>Questions</i>	<i>Yes / No</i>	<i>Number Trained</i>	<i>Total</i>
1	Are all the MOs in the TU/DMC/PHI trained in RNTCP?			
2	Are all the LTs in the TU/DMC/PHI trained in RNTCP?			
3	Is the copy of last monthly PHI report available in the DTC?			
4	Does all the MOs review patients treatment activities with health worker on a fortnightly basis			
5	Do the MO visit regular / defaulting patients to bring them back on treatment?			
6	Is the supervisory register available and maintained?			
7	Is there any visible IEC material in the DTC campus			
8	Does the DTC have adequate drug stock to last one month?			
9	Are sufficient funds available with the DTO?			
10	Are sufficient stocks of medicines available?			
11	Are sufficient stocks of lab regents available?			
12	Are sufficient stocks of binocular MCs available?			
13	Is data entry operator in place?			
14	Are quarterly reports being sent regularly to the higher ups?			
15	Do superiors visit your DTC on regular basis?			

QUESTIONNAIRE - MOTC
(CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for MOTC in the health facilities reporting for NSP patients during 4th quarter 2007 and 1st quarter 2008 in district Solan Himachal Pradesh.

Please answer all the questions. Do not leave any question unanswered.

PART – A

I. Identification information

1. ID. No.
2. Name of MOTC _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. No. of service years in the district _____
5. Name of institution _____
6. Name of block _____
7. Name of TU _____
8. Name of the DOTS centre _____
9. Area
Rural (1)
Urban (2)

II. Health facility particulars

10. What is the population of the area served by this TU? _____
11. What are the numbers of outpatients for last one year? _____
12. How many sputum examination done for TB suspects? _____
13. How many tested positive? _____
14. What is the staff available in the institution? _____

III. Training

15. Are you trained in RNTCP? If "No" go to question 20.

Yes (1)

No (2)

16. When were you trained in RNTCP?

17. Where were you trained?

18. Who trained you?

19. Did you undergo refresher training in RNTCP?

Yes (1)

No (2)

20. Did the STS undergo refresher training in RNTCP?

Yes (1)

No (2)

21. Did the STLS undergo refresher training in RNTCP?

Yes (1)

No (2)

22. How often health workers trained?

Once in 6 months (1)

Once a year (2)

PART - B

IV. Description of RNTCP

Why was RNTCP project launched in your area?

What are the goals of the RNTCP?

What are the objectives of RNTCP?

What are the treatment regimens under RNTCP?

Why is TB kept under Integrated Disease Surveillance Project?

Under RNTCP how many reporting units do you have?

What is the job of the health workers of subcentres in RNTCP?

What is the job of medical officers in RNTCP?

What is the job of medical colleges in RNTCP?

How do you suspect a case of TB under the RNTCP?

How do you confirm a TB case?

Do the staff lookout for cases house to house or just wait for cases to come to hospital under RNTCP?

Is the list of cases sent to the higher level, or just the number?

What reports are to be sent?

How often are the reports to be sent?

What data analysis is done on the forms at various levels?

PART – C

IV. Knowledge / Awareness

23. What definition do you use for TB suspect?

24. Where does screening of TB suspect take place?

25. Who does the screening of TB suspect?

26. How is the screening of TB suspect done?

27. What routine investigation is advised for TB suspects?

28. How many new patients do you see per day?

29. How many sputum smear examinations are advised for a TB suspect?

30. Where does patient get their treatment?

31. What treatment categories, regimens and dosage are used?

32. Who directly observe treatment?

33. What quantity of medicines is dispensed in the intensive phase?

34. What quantity of medicine is dispensed in the continuous phase?

35. Who gives patient education and counseling?

36. How often are patients called for follow up during treatment?

Once (1)

Twice (2)

Thrice (3)

37. How often are smear examinations ordered during treatment?

Once (1)

Twice (2)

Thrice (3)

38. How would you rate the performance of your district with respect to RNTCP?

Satisfactory (achieved targets set out by RNTCP) (1)

Unsatisfactory (did not achieve targets set out by RNTCP) (2)

Could do better (achieved targets but can do better) (3)

39. Please give reason for your answer to the above question

40. In your opinion what further steps can make the programme more successful?

VI. Compliers (NSP)

41. During intensive phase proportion of patients have taken regular DOTS?

4q07 _____ 1q08 _____

42. During continuation phase proportion of patients have taken regular DOTS?

4q07 _____ 1q08 _____

VII. Defaulters (NSP)

43. How many initial defaulters were there in the 4th quarter 2007 & 1st quarter of 2008?

4q07 _____ 1q08 _____

44. What was the action taken?

45. Who retrieved these defaulters?

46. After how many days of diagnosis he was registered for treatment?

VIII. NSN

47. What was done when the three sputum samples were negative?

48. How do you follow a patient with three negative sputum samples?

49. Was he put on DOTS trial?

Yes (1)

No (2)

50. If not, then what was done?

VI. Supervision

51. How often are patients called for follow up during treatment?

Once (1)

Twice (2)

Thrice (3)

52. How often are smear examinations ordered during treatment?

Once (1)

Twice (2)

Thrice (3)

53. By whom, when and how is the late patient tracing done?

DOT provider (1)

Health Worker (2)

STS (3)

All (4)

54. Who maintains treatment cards and TB registers?

55. Who prepares the quarterly reports?
 DTO (1)
 MOTC (2)
 STS (3)
 Data entry operator (4)

56. Is there a system for cross checking the TB registers with the laboratory register?
 Yes (1)
 No (2)

57. How often do RNTCP supervisors visit the institution?
 Monthly (1)
 Quarterly (2)
 Half yearly (3)
 Yearly (4)

58. Do supervisors use a supervision checklist?
 Yes (1)
 No (2)

59. Is feedback verbal or written provided by the supervisors?
 Verbal (1)
 Written (2)
 Both (3)

60. How often do supplies of medicines come?
 Monthly (1)
 Quarterly (2)
 Half yearly (3)
 Yearly (4)

61. Are quantities sufficient?
 Yes (1)
 No (2)

62. Has there been any expiry of drugs in the District in the past one year?

63. If yes please list the drugs that have been expired.

64. Please also indicate how much time was taken to replace the expired drugs?

65. How many supervisory visits have you made in last one month to the Peripheral Health Institutions?

- Less than 10 (1)
- More than 10 (2)

66. What was the smear conversion rate reported for the TU in the first quarter of 2008?

67. What was the cure rate reported for the TU in the last quarter?

68. What are the IEC activities done during the last one year?

VII. Referral

69. How is the information about the patients referred for treatment to other districts / TU compiled and conveyed

70. No. of patients referred to other district / TU in the 4th quarter 2007 & 1st quarter 2008?

71. Out of these number whose feedback was received?

72. Out of these no. put on DOTS?

73. What is the system for sending feedback for the diagnosed TB patients received from other districts?

XI. Constraints

74. Please list any specific problem you encountered in implementing RNTCP in your TU?

75. Would suggest could you prepare to tackle the problems included above?

76. Is there anything you could like to add regarding performance of RNTCP in your TU?

Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

OBSERVATIONAL CHECKLIST - MOTC
(CONFIDENTIAL)

Name of the MOTC _____

TU _____ Distt. _____

<i>S. No.</i>	<i>Questions</i>	<i>Yes / No</i>	<i>Number</i>	<i>Total</i>
1	Are all the MOs in the TU trained in RNTCP?			
2	Is the copy of last monthly PHI report available in the TU?			
3	Does the MO review patients treatment activities with health worker on a fortnightly basis			
4	Does the MO visit regular / defaulting patients to bring them back on treatment?			
5	Is the supervisory register available and maintained?			
6	Is there any visible IEC material in the TU level?			
7	Does the TU have adequate drug stock to last one month?			

QUESTIONNAIRE – MO (DMC)
(CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for MO (DMC) in the health facilities reporting for NSP case patients in 4th quarter 2007 and 1st quarter 2008 in district Solan Himachal Pradesh.

Please answer all questions. Don't leave any question unanswered.

PART – A

I. Identification information

1. ID. No.
2. Name of MO (DMC) _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. No. of service years in the district _____
5. Name of institution _____
6. Name of block _____
7. Name of TU _____
8. Name of the DOTS centre _____
9. Area
Rural (1)
Urban (2)

II. Health facility particulars

10. What is the population of the area served by this DMC? _____
11. What is the population of the area served by this DMC? _____
12. What are the numbers of outpatients for last one year? _____
13. How many sputum examination done for TB suspects? _____
14. How many tested positive? _____
15. What is the staff available in the institution? _____

III. Training

16. Are you trained in RNTCP? If "No" go to question 21.
Yes (1)
No (2)

17. When were you trained in RNTCP? _____
18. Where were you trained? _____
19. Who trained you? _____
20. Did you undergo refresher training in RNTCP?
- Yes (1)
- No (2)
21. Did the STS undergo refresher training in RNTCP?
- Yes (1)
- No (2)
22. When was the last RNTCP training held for health workers in the institution?
- _____
23. How often are health workers trained?
- Monthly (1)
- Quarterly (2)
- Half yearly (3)
- Yearly (4)

PART – B

IV. Description of RNTCP

Why was RNTCP project launched in your area?

What are the goals of the RNTCP?

What are the objectives of RNTCP?

What are the treatment regimens under RNTCP?

Why is TB kept under Integrated Disease Surveillance Project?

Under RNTCP how many reporting units do you have?

What is the job of the health workers of subcentres in RNTCP?

What is the job of medical officers in RNTCP?

What is the job of medical colleges in RNTCP?

How do you suspect a case of TB under the RNTCP?

How do you confirm a TB case?

Do the staff lookout for cases house to house or just wait for cases to come to hospital under RNTCP?

Is the list of cases sent to the higher level, or just the number?

What reports are to be sent?

How often are the reports to be sent?

What data analysis is done on the forms at various levels?

PART – C

V. Knowledge / Awareness

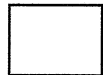
24. What are the numbers of outpatients for last one year?

25. What is the definition used for TB suspect?

26. Where does screening of TB suspect take place?

27. Who does the screening of TB suspect?

- | | |
|-----------------|-----|
| DTO | (1) |
| MOTC | (2) |
| MO (DMC) | (3) |
| MOs in the OPDs | (4) |
| All | (5) |



28. How is the screening of TB suspect done?

- 29. What routine investigation is advised for TB suspects? _____
- 30. How many sputum smear examinations are advised for a TB suspect? _____
- 31. What treatment categories, regimens and dosage are used? _____
- 32. Who directly observe treatment? _____
- 33. What quantity of medicines is dispensed in the intensive phase? _____
- 34. What quantity of medicine is dispensed in the continuous phase? _____
- 35. Who gives patient education and counseling? _____

- 36. How often are patients called for follow up during treatment?

Once	(1)	
Twice	(2)	
Thrice	(3)	

- 37. How often are smear examinations ordered during treatment?

Once	(1)	
Twice	(2)	
Thrice	(3)	

VI. Compliers (NSP)

- 38. During intensive phase proportion of patients have taken regular DOTS?
 4q07 _____ 1q08 _____

- 39. During continuation phase proportion of patients have taken regular DOTS?
 4q07 _____ 1q08 _____

VII. Defaulters (NSP)

- 40. How many initial defaulters were there in the 1st quarter of 2008?
 4q07 _____ 1q08 _____

- 41. What was the action taken?

- 42. Who retrieved these defaulters?

- 43. After how many days of diagnosis he was registered for treatment?

VIII. NSN

44. What was done when the three sputum samples were negative?

45. How do you follow a patient with three negative sputum samples?

46. Was he put on DOTS trial?
Yes (1)
No (2)

47. If not, then what was done?

48. How many patients put on DOTS in the 1st quarter of 2008?

4q07 _____ 1q08 _____

IX. Supervision

49. How often are patients called for follow up during treatment?

Once (1)
Twice (2)
Thrice (3)

50. How often are smear examinations ordered during treatment?

Once (1)
Twice (2)
Thrice (3)

51. What was the number of sputum smears examined last month in the MC? _____

52. What percentages of sputum smears examined last month in the MC were positive? _____

53. By whom, when and how is the late patient tracing done?

DOT provider (1)
Health Worker (2)
STS (3)
All (4)

54. Who maintains treatment cards and TB registers?

55. Who prepares the quarterly reports?

DTO (1)
MOTC (2)
STS (3)
Data entry operator (4)

56. Is there a system for cross checking the TB registers with the laboratory register?
 Yes (1)
 No (2)
57. How often do RNTCP supervisors visit the institution?
 Monthly (1)
 Quarterly (2)
 Half yearly (3)
 Yearly (4)
58. Do supervisors use a supervision checklist?
 Yes (1)
 No (2)
59. Is feedback verbal or written provided by the supervisors?
 Verbal (1)
 Written (2)
 Both (3)
60. How often do supplies of medicines come?
 Monthly (1)
 Quarterly (2)
 Half yearly (3)
 Yearly (4)
61. Are quantities sufficient?
 Yes (1)
 No (2)
62. Has there ever been shortage of anti TB medicines?
 Yes (1)
 No (2)
63. Has there been any expiry of drugs in the District in the past one year? _____
64. If yes please list the drugs that have been expired.

65. Please also indicate how much time was taken to replace the expired drugs? _____
66. How many supervisory visits have you made in last one month to the Peripheral Health Institutions?
 Less than 10 (1)
 More than 10 (2)
67. How often do you review patient treatment activities with Multi Purpose Worker?
 Monthly (1)
 Quarterly (2)
 Half yearly (3)
 Yearly (4)

68. What was the smear conversion rate reported for the DMC in the 1Q08?

4q07 _____ 1q08 _____

69. What was the cure rate reported for the DMC in the 1Q08?

4q07 _____ 1q08 _____

70. What are the IEC activities done during the last one year?

X. Referral

71. How is the information about the patients referred for treatment to other districts / TU compiled and conveyed?

72. No. of patients referred to other district / TU in the 1Q08?

4q07 _____ 1q08 _____

73. Out of these number whose feedback was received?

74. Out of these no. put on DOTS?

75. What is the system for sending feedback for the diagnosed TB patients received from other districts?

XI. Constraints

76. Please list any specific problem you encountered in implementing RNTCP in Solan district?

77. Would suggest could you prepare to tackle the problems included above?

78. Is there anything you could like to add regarding performance of RNTCP in your district?

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

OBSERVATIONAL CHECKLIST – MO (DMC)
(CONFIDENTIAL)

Name of the DMC _____ Distt. _____

<i>S. No.</i>	<i>Questions</i>	<i>Yes / No</i>	<i>Number</i>	<i>Total</i>
1	Are all the MOs in the DMC trained in RNTCP?			
2	Is the copy of last monthly PHI report available in the DMC?			
3	Does the MO review patients treatment activities with health worker on a fortnightly basis			
4	Does the MO visit regular / defaulting patients to bring them back on treatment?			
5	Is the supervisory register available and maintained?			
6	Is there any visible IEC material in the DMC campus			
7	Does the DMC have adequate drug stock to last one month?			

QUESTIONNAIRE – BMO / MO (PHI)
(CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Doctors / MO (PHI) in the health facilities reporting for NSP patients during 4th quarter 2007 and 1st quarter 2008 in district Solan Himachal Pradesh.

Please answer all questions. Don't leave any question unanswered.

PART – A

I. Identification information

1. ID. No.
2. Name of MO (PHI) _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. No. of service years in the district _____
5. Name of institution _____
6. Name of block _____
7. Name of TU _____
8. Name of the DOTS centre _____
9. Area
Rural (1)
Urban (2)

II. Health facility particulars

10. What is the population of the area served by this PHI? _____
11. What are the numbers of out-patients for last one year? _____
12. How many sputum examination referred for TB suspects? _____
13. How many tested positive? _____
14. What is the total staff available in the institution? _____

III. Training

15. Are you trained in RNTCP? If "No" go to question 20.
Yes (1)
No (2)

16. When were you trained in RNTCP? _____
17. Where were you trained? _____
18. Who trained you? _____
19. Did you undergo refresher training in RNTCP?
 Yes (1)
 No (2)
20. When was the last RNTCP training held for health workers in the institution?

21. How often are health workers trained?
 Monthly (1)
 Quarterly (2)
 Half yearly (3)
 Yearly (4)
 None (99)

PART – B

IV. Description of RNTCP

Why was RNTCP project launched in your area?

What are the goals of the RNTCP?

What are the objectives of RNTCP?

What are the treatment regimens under RNTCP?

Why is TB kept under Integrated Disease Surveillance Project?

Under RNTCP how many reporting units do you have?

Do they report to you or directly to the MOTC at TU level?

What is the job of the health workers of subcentres in RNTCP?

What is the job of medical officers in RNTCP?

How do you suspect a case of TB under the RNTCP?

How do you confirm a TB case?

Do the staff lookout for cases house to house or just wait for cases to come to hospital under RNTCP?

What reports are to be sent?

How often are the reports to be sent?

PART – C

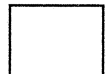
V. Knowledge / Awareness

22. What is the definition used for TB suspect?

23. Where does screening of TB suspect take place?

24. Who does the screening of TB suspect?

- | | |
|-----------------|-----|
| DTO | (1) |
| MOTC | (2) |
| MO (DMC) | (3) |
| MOs in the OPDs | (4) |
| All | (5) |



25. How is the screening of TB suspect done?

26. What routine investigation is advised for TB suspects?

27. How many sputum smear examinations are advised for a TB suspect?

28. What treatment categories, regimens and dosage are used?

29. Who directly observes treatment?

30. What quantity of medicines is dispensed in the intensive phase?

31. What quantity of medicine is dispensed in the continuation phase?

32. Who gives patient education and counseling?

33. How often are patients called for follow up during treatment?

- Once (1)
- Twice (2)
- Thrice (3)
- Four (4)

34. How often are smear examinations ordered during treatment?

- Once (1)
- Twice (2)
- Thrice (3)
- Four (4)

VI. Compliers (New Smear Positives)

35. During intensive phase proportion of NSP patients have taken regular DOTS?
(Total NSP pts/Total pts on DOTS x 100)

36. During continuation phase proportion of patients have taken regular DOTS?
(Total NSP pts/Total pts on DOTS x 100)

VII. Defaulters (New Smear Positives)

37. How many initial defaulters were there in the 1st quarter of 2008?

38. What was the action taken?

39. Who retrieved these defaulters?

40. After how many days of diagnosis he was registered for treatment?

VIII. New Smear Negatives

41. What was done when the three sputum samples were negative?

42. How do you follow a patient with three negative sputum samples?

43. Was he put on DOTS / ATT trial?

Yes (1)

No (2)

44. If not, then what was done?

IX. Supervision

45. How often are patients called for follow up during treatment?

Once (1)

Twice (2)

Thrice (3)

46. How often are smear examinations ordered during treatment?

Once (1)

Twice (2)

Thrice (3)

47. By whom is the late patient tracing done?

DOT provider (1)

Health Worker (2)

STS (3)

All (4)

48. Who maintains treatment cards?

Medical Officer (1)

DOT provider (2)

Health Supervisor (3)

Staff nurse (4)

Pharmacist (5)

Any one of the above (6)

49. Who prepares the monthly reports?

MO (1)

Pharmacist (2)

Health Supervisor (3)

Staff Nurse (4)

Any one of the above (5)

50. How often do RNTCP supervisors visit the institution?

Monthly (1)

Quarterly (2)

Half yearly (3)

Yearly (4)

51. Do supervisors use a supervision checklist?

Yes (1)

No (2)

52. Is feedback verbal or written provided by the supervisors?
 Verbal (1)
 Written (2)
 Both (3)
53. Do the medicine box you receive for patient has all the doses?
 Yes (1)
 No (2)
54. Has there ever been shortage of anti TB medicines boxes for NSP patients?
 Yes (1)
 No (2)
55. How many supervisory visits have you made in last one month to each of the Peripheral Health Institutions under your jurisdiction?
 Once (1)
 Twice (2)
 Thrice (3)
 None (99)
56. How often do you review patient treatment activities with Multi Purpose Worker?
 Monthly (1)
 Quarterly (2)
 Half yearly (3)
 Yearly (4)
 None/Never (99)
57. What are the IEC activities done during the last one year in 2007?
-

X. Constraints

58. Please list any specific problem you encountered in implementing RNTCP in Solan district?
-
59. Would suggest could you prepare to tackle the problems included above?
-
60. Is there anything you could like to add regarding performance of RNTCP in your district?
-

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

QUESTIONNAIRE –PRIVATE PRACTITIONERS (PP) (CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Private Practitioners involved in RNTCP in district Solan Himachal Pradesh.

Please answer all the questions. Do not leave any question unanswered.

PART – A

I. Identification information

1. ID. No.
2. Name of PP _____ Age _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. Duration in years of PP _____
5. Type of facility _____
6. Area
Urban (1)
Sub urban (2)
Rural (3)

II. Health facility particulars

7. Are you involved in PPM under RNTCP?
Yes (1)
No (2)
8. If yes, under which scheme?
Scheme 1 (1)
Scheme 2 (2)
Scheme 3a (3)
Scheme 3b (4)
Scheme 4a (5)
Scheme 4b (6)
9. Whether timely honorarium is being given to you as per the schemes under which you work?
Yes (1)
No (2)
10. Have you received any kind of training in RNTCP?

11. If yes, please give details.

12. What is your daily OPD in last one month?

13. What is the number of patients with cough more than 3 weeks reported to you in the last month?

14. How do you confirm the diagnosis?

15. How many TB patients are taking DOTS from your health facility?

16. What is the schedule of sputum follow up?

17. How default action is taken?

III. Particulars of previous experience with Government health programme

18. Have you been involved in any Govt. Health Programmes? If "Yes" go to question 19; If "No" go to question 23.

Yes (1)

No (2)

19. Name the Govt. Health Programme you were involved with.

20. What was the nature of involvement in each of the programme(s) mentioned in Q 19?

21. Give the duration of involvement for each of the programme(s) mentioned in Q 19.

22. Were you satisfied with the involvement?

Yes (1)

No (2)

23. If yes, state your reasons for the answer to Q 22.

24. Has your previous experience motivated you to participate?

Yes (1)

No (2)

IV. Criteria for and processes adopted for identification and selection of PPs

25. List the reason(s) for your being selected as a partner for RNTCP by the Govt.?
Willingness to participate: (1)
Previous experience with Govt. Health Programmes (2)
Large and varied clientele load (3)
Wide geographic coverage (4)
Others (Specify) (5)
26. Did the government official approach you directly?
Yes (1)
No (2)
27. Were you approached by the government through a professional association? If "Yes" go to question 28; If "No" go to question 29.
Yes (1)
No (2)
28. Name the professional association(s) who approached / encouraged you to participate

29. List your reasons for participating in the RNTCP?

V. Training for RNTCP

30. Were you provided any training prior to participation? If "Yes" go to question 31; If "No" go to question 33.
Yes (1)
No (2)
31. Give the following details on the training undergone:
Institution conducting training _____
Duration of training (in days) _____
32. Do you think the training enabled you to participate in the RNTCP effectively? Give reasons

33. Are your familiars with the following?
- | | | |
|---------------------------------------|---------|--------|
| RNTCP manual: | Yes (1) | No (2) |
| Case definition: | Yes (1) | No (2) |
| Reporting formats | Yes (1) | No (2) |
| Frequency of reporting required | Yes (1) | No (2) |
| Person to whom reports are to be sent | Yes (1) | No (2) |

PART – B

VI. Particulars of reporting by provider

34. Have reporting formats been provided to you? (Collect sample format) If “Yes” go to question 35; If “No” go to question 38.

- Yes (1)
No (2)

35. Are the formats provided in adequate numbers?

- Always adequate (1)
Sometimes adequate (2)
Sometimes Inadequate (3)
Always inadequate (4)
Other (specify) (89)

36. Are the reporting formats user friendly?

- Yes (1)
No (2)

37. Has the person (s) responsible for filling the formats undergone any training?

- Yes (1)
No (2)

38. Whom do you send the reports to? _____

39. How do you send the report? (tick all that apply)

- Email (1)
Telephone (2)
Courier (3)
Post (4)
Other (specify) (89)

40. Have you been provided any assistance to send your reports? If “Yes” go to question 41, If “No” go to question 44.

- Yes (1)
No (2)

41. Please describe the type and adequacy of assistance provided?

42. If assistance provided is “Nil “or inadequate please explain how do you manage to send your reports

43. Does lack or inadequate assistance affect the regularity of your reporting? Please explain your answer.

- Yes (1)
No (2)

44. How do you maintain records of your clients?

VII. Particulars on feedback

45. Do you been receiving feedback from the government agency?
Regularly (1)
Irregularly (2)
Rarely (3)

46. Have you taken any action to improve the situation in Q 45?

47. Please state the outcomes of the actions initiated by you.

VIII. Expectations and /or gains accrued through participation in RNTCP

48. When you decided to participate in the RNTCP? _____

49. What were your expectations?

50. Have your expectations been fulfilled?
Fully (1)
Partially (2)
Not at all (3)

51. Give reasons for your response

52. Have you benefited from this partnership?
Yes (1)
No (2)

53. Explain your answers

54. How would you rate the level of benefit accrued by you?
Very high (1)
High (2)
Moderate (3)
Low (4)
Very low (5)
Other (specify) (89)
None (99)

55. Are you satisfied with the partnership as it is at present?
Yes (1)
No (2)

56. Give reasons for your response

57. What are your suggestions to improve your satisfaction with the partnership?

58. List the major problems you have encountered during this partnership?

59. What measures would you suggest to resolve and reduce the problems mentioned in Q58?

60. How would you describe the role played by professional agencies, e.g. IMA/IAP/API etc in facilitating partnership?

61. Are there anything else that you would like to comment about?

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

QUESTIONNAIRE – STS
(CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Senior Treatment Supervisor in the health facilities in district Solan Himachal Pradesh.

PART – A

I. Identification information

1. ID. No.
2. Name of STS _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. No. of service years in the district _____
5. Name of institution _____
6. Name of block _____
7. Name of TU _____
8. Area
Rural (1)
Urban (2)

PART – B

II. Knowledge / Awareness

9. How do you confirm that sputum positive patient has been put on treatment?

10. How do you manage the contacts of sputum positives?

11. How often do you visit each DOT center in your TU area?
Weekly (1)
Monthly (2)
Quarterly (3)
Yearly (4)
12. What do you do to bring irregular patient/defaulters back on treatment?
Contact the contact person (1)
Inform MPW of the area (2)
Perform home visits (3)
All (4)

13. How often do you review patient treatment activities with Multi Purpose Worker?
- | | | |
|-----------|-----|--------------------------|
| Weekly | (1) | <input type="checkbox"/> |
| Monthly | (2) | |
| Quarterly | (3) | |
| Yearly | (4) | |
14. How do you maintain details of your field activities?
- | | | |
|-------------------------|-----|--------------------------|
| Keeping record in file | (1) | <input type="checkbox"/> |
| Keeping record in diary | (2) | |

15. Details of the IEC activities done in the last one year?

16. Do you visit house of patient within one week of initiation of treatment?
- | | | |
|-----|-----|--------------------------|
| Yes | (1) | <input type="checkbox"/> |
| No | (2) | |

17. What is the purpose of home visit?

III. Compliers (NSP)

18. During intensive phase proportion of patients have taken regular DOTS?

4q07 _____ 1q08 _____

19. During continuation phase proportion of patients have taken regular DOTS?

4q07 _____ 1q08 _____

IV. Defaulters (NSP)

20. How many initial defaulters were there in the 4th quarter 2007 and 1st quarter of 2008?

4q07 _____ 1q08 _____

21. What was the action taken?

22. Who retrieved these defaulters?

23. After how many days of diagnosis he was registered for treatment?

V. NSN

24. What was done when the three sputum samples were negative?

25. How do you follow a patient with three negative sputum samples?

26. Was he put on DOTS/ATT trial?

Yes (1)

No (2)

27. If not, then what was done?

VI. Supervision

28. How often do RNTCP supervisors visit the institution?

Monthly (1)

Quarterly (2)

Half yearly (3)

Yearly (4)

29. Do supervisors use a supervision checklist?

Yes (1)

No (2)

30. Is feedback verbal or written provided by the supervisors?

Verbal (1)

Written (2)

Both (3)

VII. Constraints

31. Please list any specific problem you encountered in implementing RNTCP in your TU?

32. Would suggest could you prepare to tackle the problems included above?

33. Is there anything you could like to add regarding performance of RNTCP in your TU?

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

QUESTIONNAIRE – STLS (CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Senior Treatment Laboratory Supervisor in the health facilities reporting for NSP case patients during 4th quarter 2007 and 1st quarter 2008 in district Solan Himachal Pradesh.

Please answer all the questions. Do not leave any question unanswered.

PART – A

I. Identification information

1. ID. No.
2. Name of STLS _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. No. of service years in the district _____
5. Name of institution _____
6. Name of block _____
7. Name of TU _____
8. Area
Rural (1)
Urban (2)

II. Training

9. Are you trained in RNTCP?
Yes (1)
No (2)
10. Do you provide on spot / retraining to LTs?
Yes (1)
No (2)

PART – B

III. Knowledge / Awareness

11. What is adult OPD of your TU during last quarter?
12. How many DMCs are in your TU?

13. How many suspected cases examined?
14. How many were sputum positive?
15. What is the positivity rate of your TU during last quarter?

IV. Supervision

16. How do you maintain details of your field activities?
 - Keeping record in file (1)
 - Keeping record in diary (2)
17. What is your supervisory visit schedule?
 - Weekly (1)
 - Monthly (2)
 - Quarterly (3)
 - Yearly (4)
18. Any DMC without Lab Technician? _____
19. What is the smear positivity rate of your TU? _____

V. External quality assurance (EQA)

20. How often on site evaluation of DMC is done?
 - Weekly (1)
 - Monthly (2)
 - Quarterly (3)
 - Yearly (4)
21. How do you review the slides? _____
22. When do you review the slides?
 - Weekly (1)
 - Monthly (2)
 - Quarterly (3)
 - Yearly (4)
23. How often Random blind rechecking (RBRC) of slides done?
 - Weekly (1)
 - Monthly (2)
 - Quarterly (3)
 - Yearly (4)
24. Where RBRC does takes place?
 - DTC (1)
 - TU (2)
 - DMC (3)
25. Who does the blinding and coding of slides in RBRC?
 - DTO (1)
 - MOTC (2)
 - STLS (3)
 - LT (4)

26. Has the feedback by DTO based on RBRC report and TU on site evaluation check list from STLS sent to DMC?

- Yes (1)
- No (2)

27. Has the RBRC report and monthly lab summary of the district being sent to IRL / STDC?

- Yes (1)
- No (2)

VI. Constraints

77. Please list any specific problem you encountered in implementing RNTCP in your TU?

78. Would suggest could you prepare to tackle the problems included above?

79. Is there anything you could like to add regarding performance of RNTCP in your TU?

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

QUESTIONNAIRE – LAB TECHNICIAN
(CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Laboratory Technicians (DMC) in the health facilities reporting for NSP case patients during 4th quarter 2007 and 1st quarter 2008 in district Solan Himachal Pradesh.

Please answer all the questions. Do not leave any question unanswered.

PART – A

I. Identification information

1. ID. No.
2. Name of LT _____
3. Phone no. _____ (Mobile) _____ (Off. /Resi.)
4. No. of service years in the district _____
5. Name of institution _____
6. Name of block _____
7. Name of TU _____
8. Area
Rural (1)
Urban (2)

PART – B

II. Knowledge / Awareness

9. When you get the samples how much time did you take to process them?
Same day (1)
1-3 days (2)
>3 days (3)
10. When did you give report?
Next day (1)
1-3 days (2)
>3 days (3)
11. When did you disseminate the information to the patient?
Same day (1)
1-3 days (2)
>3 days (3)

12. What are the numbers of staff working in the laboratory?
 One (1)
 Two (2)
 Three (3)
13. What is the number of staff who does smear examination?
 One (1)
 Two (2)
 Three (3)
14. What are number of sputum smears examined each day for AFB?
 < 10 (1)
 10 - 20 (2)
 20 - 30 (3)
 > 30 (4)
15. What are number of sputum smears examined each month for AFB?
 < 200 (1)
 200 - 300 (2)
 300 - 400 (3)
 > 400 (4)
16. What are number of sputum smears examined each year for AFB?
 < 2000 (1)
 2000 - 3000 (2)
 3000 - 4000 (3)
 > 4000 (4)
17. How many days in the last year the binocular microscope was not in a working condition?
 < 15 (1)
 15 - 30 (2)
 30 - 45 (3)
 > 45 (4)
18. Are there adequate supplies of reagents, slides and other consumables for the next one-month?
 Yes (1)
 No (2)
19. Who prepares the reagents?

20. How are they prepared?

21. Where are they prepared?

22. Are reagents labeled?
 Yes (1)
 No (2)
23. How long are reagents used for?
 One month (1)
 Two months (2)
 Three months (3)

24. Where do patients cough up their sputum specimens?
 In open (1)
 In closed room (2)
25. Does anyone observe them?
 Yes (1)
 No (2)
26. How are sputum containers labeled?
 On the top of cup (1)
 On the side of cup (2)
27. How many sputum specimens are collected for each TB suspect?
 One (1)
 Two (2)
 Three (3)
28. How frequently slides are prepared?
 Daily (1)
 Bi-weekly (2)
 Weekly (3)
29. Who prepares the smears?
 Sweeper (1)
 Peon (2)
 Lab Tech (3)
30. Who stains them?
 Sweeper (1)
 Peon (2)
 Lab Tech (3)
31. How long does it take to examine a negative smear?
 < 1 minutes (1)
 1 – 3 minutes (2)
 3 – 5 minutes (3)
 > 5 minutes (4)
32. Do you have a smear examination form?
 Yes (1)
 No (2)
33. Who fills it in?
 Doctor (1)
 Pharmacist (2)
 Lab Tech (3)
34. Do you have an RNTCP laboratory register?
 Yes (1)
 No (2)

35. Who fills it in?
Doctor (1)
Pharmacist (2)
Lab Tech (3)

36. Are slides kept for quality control after examination?
Yes (1)
No (2)

37. How do you preserve slides for review by STLS?

38. How often are slides sent for quality control?
Monthly (1)
Quarterly (2)
Yearly (3)

39. Has the laboratory received any feedback on quality of smear examination?
Yes (1)
No (2)

40. How the reports smear examination of referred cases from the PHI are conveyed?

41. What is the importance of 3 sputum exams for diagnosis and 2 sputum exams for follow up?

42. What is the schedule of sputum examination at intensive phase?

43. What is the schedule of sputum examination at continuation phase?

44. How the sputum cups, slides and infective material are disposed?

III. Constraints

45. Please list any specific problem you encountered in implementing RNTCP in your TU?

46. Would suggest could you prepare to tackle the problems included above?

47. Is there anything you could like to add regarding performance of RNTCP in your TU?

*“Thank you very much for your precious time and valuable contribution in
the interest of Patients and public”*

OBSERVATIONAL CHECKLIST – LABORATORY TECHNICIAN

(CONFIDENTIAL)

Name of the DMC _____

TU _____, Distt. _____

S. No.	Questions			Yes / No
1	Population of DMC			
2	No. of new adult OPD patients in the last quarter			
3	No. of TB suspects in the quarter.			
4	Out of the above 3 No of diagnosed sputum + patients in the quarter			
5	Out of the above 3 No of diagnosed sputum + patients referred outside the district.			
6	No. of initial defaults in the quarter.			
7	Proportion of TB suspects for whom 3 sputum smear were done for diagnosis.	N	D	%
8	Proportion of TB patients for whom 2 sputum smear were done during follow up examination.			
9	Is there a functional binocular microscope in the DMC			
10	Is a trained LT doing the sputum microscopy?			
11	Are there adequate supply of the reagents, slides and other consumables?			
12	Are the lab reagents freshly prepared?			
13	If yes, where are they prepared (MC/TU/District)			
14	Are the names and addresses in the lab TB register written legibly?			
15	Are the positive results written in red and negative in blue and black?			
16	Is there a summary of the microscopy activities at the end of each month			
17	Is the LT preserving slides for review by the STLS as per the quality assurance protocol			
18	Is the STLS reviewing slides preserved by the LT during the on sight evaluation			
19	Is the DMC getting feedback on the results of RBRC done at district level?			
20	Check one randomly selected + and one – slide. Is the quality of slides prepared are satisfactory in terms of smear thickness, evenness, size and staining?			
21	Is the bio medical waste from the DMC disposed as per bio medical waste (management and handling) rules 1998?			

QUESTIONNAIRE – PUBLIC DOTS PROVIDERS (CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Public DOTS provider reporting for NSP cases in 4th quarter 2007 and 1st quarter 2008 in the public health facilities in district Solan Himachal Pradesh.

Please answer all questions. Don't leave any question unanswered.

PART – A

I. Identification information

1. ID. No.
2. Name of DOT Provider _____
3. Designation _____
4. Phone no. _____ (Mobile) _____ (Off. /Resi.)
5. No. of service years in the district _____
6. Name of institution _____
7. Name of block _____
8. Name of TU _____
9. Name of the DOTS centre _____
10. Area
Rural (1)
Urban (2)
11. Are you trained in RNTCP?
Yes (1)
No (2)
12. Where were you trained? _____
13. Who trained you? _____

PART – B

II. Knowledge / Awareness

14. What is the total population covered by you?

No. of adult persons _____

No. of households _____

15. Have you been trained in TB case finding?

Yes (1)

No (2)

16. How often do you visit each household in a year? _____

17. What signs and symptoms and duration most often make you suspect TB in a patient and lead you to refer him/her for TB diagnosis to MO?

18. How many KMs away is the TB clinic or Hospital where you refer patients for diagnosis?

19. Do you record somewhere that you have referred a patient for diagnosis?

Yes (1)

No (2)

20. How many chest symptomatics do you estimate you have referred for TB diagnosis?

21. Validate with record in the last month

In the last one month _____ in the last one year _____

22. If the patient refuses to go to the Primary Health Centre for TB diagnosis, do you make sputum smears in the field and post them to your PHC for diagnosis of TB?

Yes (1)

No (2)

23. How are you informed that you should initiate ambulatory chemotherapy for a TB patient?

24. How many TB patients do you currently provide ambulatory therapy to?

25. Any supervisory visit done from the DTO, MOTC or any RNTCP supervisory official relating to TB case finding and / or treatment?

26. Have you experienced any shortages or interruptions in drug supplies or logistics?

27. What do you think are the major problems you face in

Identifying TB suspects _____

In treating TB patients _____

28. Are patient wise drug boxes being marked and maintained for each patients?
Yes (1)
No (2)
29. Do patients receive every dose of drugs under direct observation in intensive phase?
Yes (1)
No (2)
30. Are patients receiving at least one dose a week under direct observation in continuation phase?
Yes (1)
No (2)
31. Are the facilities (Clean water, disposable cups, privacy) for DOTS are available?
Yes (1)
No (2)
32. Do the treatment cards being marked at the time of giving each dose?
Yes (1)
No (2)
33. Do the patients bringing back blister packs when they collect weekly drugs?
Yes (1)
No (2)
34. Do there consistency between number of doses and treatment card and drug box?
Yes (1)
No (2)
35. Does the treatment observer make home visits to verify the address of patients?
Yes (1)
No (2)
36. Does the treatment observer make prompt home visits to bring irregular patients back on treatment?
Yes (1)
No (2)
37. Does the treatment observer know at what dose in intensive phase he is supposed to give the sputum container for follow up examination?
Yes (1)
No (2)
38. Does the treatment observer know at what dose in continuation phase he is supposed to give the sputum container for follow up examinations?
Yes (1)
No (2)

III. Constraints

39. Please list any specific problem you encountered in implementing RNTCP in your DOT centre?

40. Would suggest could you prepare to tackle the problems included above?

41. Is there anything you could like to add regarding performance of RNTCP in your DOT centre?

Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

OBSERVATIONAL CHECKLIST – PUBLIC DOT PROVIDER (CONFIDENTIAL)

Name of the Public DOT Provider _____
Under TU/DMC _____, Distt. _____

S. No.	Questions	Yes / No
1	Are patient wise drug boxes being marked and maintained for each patient	
2	Are the facilities (Clean water, disposable cups, privacy) for DOTS are available?	
3	Is there adequate arrangement available for providing Inj. SM (for CAT II patients)	
4	Is there consistency between the no. of doses on treatment card and drug box? (check any two boxes)	
	Box 1 (Name:.....TB No.)	
	Box 2 (Name:.....TB No.)	
5	Are the prompt home visits made to bring irregular pts back on treatment?	
6	Have any of the drugs in the patient-wise boxes (PWB) cross the date of expiry?	
	Box 1 (Name:.....Date of expiry)	
	Box 2 (Name:.....Date of expiry)	
7	Is home address verification done for patients before the start of Treatment? (check Treatment Card)	%

Observe the DOT Centre and Pt. Wise Boxes and records
(Complete one form for each DOT Centre)

If this DOT centre is a PHI and has other DOT centers' attached to it then ask the following regarding monitoring (Please look at original cards maintained with the MO)

S. No.	Questions	Yes / No
8	Are the original cards available for all DOT centres at in the PHI?	
9	Do the original Treatment cards have the basis for the type and categorization of the pt.	
10	Were these updated with in the last one month?	
11	Does the PHI staff update these cards?	
12	Does the PHI staff prepare the monthly PHI report?	
13	Is there any IEC material visible at the DOT centre?	

QUESTIONNAIRE – PRIVATE DOT PROVIDERS (CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Private DOT provider in the private health facilities reporting for NSP case patients during 4th quarter 2007 and 1st quarter 2008 in district Solan Himachal Pradesh.

Please answer all the questions. Do not leave any question unanswered.

PART – A

I. Identification information

42. ID. No.

43. Name of Private DOT Provider _____

44. Designation _____

45. Phone no. _____ (Mobile) _____ (Off. /Resi.)

46. No. of service years in the district _____

47. Name of institution _____

48. Name of TU _____

49. Name of the DOTS centre _____

50. Area
Rural (1)
Urban (2)

51. Are you trained in RNTCP?
Yes (1)
No (2)

52. Where were you trained? _____

53. Who trained you? _____

PART – B

II. Knowledge / Awareness

54. What is the population covered by you?

No. of persons _____

No. of households _____

55. Have you been trained in TB case finding and treatment?

Yes (1)

No (2)

56. What signs and symptoms and duration most often make you suspect TB in a patient and lead you to refer him/her for TB diagnosis?

57. Do you record somewhere that you have referred a patient for diagnosis?

Yes (1)

No (2)

58. How are you informed that you should initiate ambulatory chemotherapy for a TB patient?

59. How many TB patients do you currently provide ambulatory therapy to?

60. Any supervisory visit from the Govt. DTO or supervisory officer relating to TB case finding and / or treatment?

61. What do you think are the major problems you face in treating TB patients?

62. Are patient wise drug boxes being marked and maintained for each patients?

Yes (1)

No (2)

63. Do patients receive every dose of drugs under direct observation in intensive phase?

Yes (1)

No (2)

64. Are patients receiving at least one dose a week under direct observation in continuation phase?

Yes (1)

No (2)

65. Are the facilities (Clean water, disposable cups, privacy) for DOTS are available?

Yes (1)

No (2)

66. Do the treatment cards being marked at the time of giving each dose?

Yes (1)

No (2)

67. Do the patients bringing back blister packs when they collect weekly drugs?

Yes (1)

No (2)

68. Do there consistency between no. of doses and treatment card and drug box?

Yes (1)

No (2)

69. What did you do if the patient did not turn up for taking the drug on the day he is advised to come?

70. Did you try to retrieve the patient?

Yes (1)

No (2)

71. If in case the patient still don't turn up for medicine, then what do you do?

72. Whom do you inform?

73. When do you inform?

74. Did you get the feedback from the supervisory staff of RNTCP?

Yes (1)

No (2)

75. Does the treatment observer make home visits to verify the address of patients?

Yes (1)

No (2)

76. Does the treatment observer make prompt home visits to bring irregular patients back on treatment?

Yes (1)

No (2)

77. Does the treatment observer know at what dose in intensive phase he is supposed to give the sputum container for follow up examination?

Yes (1)

No (2)

78. Does the treatment observer know at what dose in continuation phase he is supposed to give the sputum container for follow up examination?

Yes (1)

No (2)

III. Constraints

79. Please list any specific problem you encountered in implementing RNTCP in your DOT centre?

80. Would suggest could you prepare to tackle the problems included above?

81. Is there anything you could like to add regarding performance of RNTCP in your DOT centre?

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

OBSERVATIONAL CHECKLIST – PRIVATE DOT PROVIDER (CONFIDENTIAL)

Name of the Private DOT Provider _____

Under DMC/TU _____, Distt. _____

S. No.	Questions	Yes / No
1	Are patient wise drug boxes being marked and maintained for each patient	
2	Are the facilities (Clean water, disposable cups, privacy) for DOTS are available?	
3	Is there adequate arrangement available for providing Inj. SM (for CAT II patients)	
4	Is there consistency between the no. of doses on treatment card and drug box? (check any two boxes)	
	Box 1 (Name:.....TB No.)	
	Box 2 (Name:.....TB No.)	
5	Are the prompt home visits made to bring irregular pts back on treatment?	
6	Have any of the drugs in the pt wise boxes (PWB) cross the date of expiry?	
	Box 1 (Name:..... Expiry date)	
	Box 2 (Name:..... Expiry date)	
7	Is home address verification done for pts. Before the start of Treatment? (check Treatment.Card)	%

QUESTIONNAIRE – NGO
(CONFIDENTIAL)

We are interested in knowing what is situation of patients of Tuberculosis who have been placed on DOTS in district Solan Himachal Pradesh. I will ask you some questions. Kindly spare five minutes and help us improve the services.

Data collection instrument for Non Governmental Organizations in district Solan Himachal Pradesh.

Please answer all the questions. Do not leave any question unanswered.

I. Identification information of the NGO

1. ID. No.
2. Name of NGO _____
3. Location _____ Name of TU _____
4. No. of years of working _____
5. No. of years associated with RNTCP _____
6. Phone no. _____ (Mobile) _____ (Off. /Resi.)
7. Area
Urban (1)
Sub urban (2)

II. Participation particulars of NGO

1. Are the members of the NGO are trained in RNTCP?
Yes (1)
No (2)
2. What are your activities as an NGO in RNTCP?

3. What activity do you undertake in IEC?

4. How you are collaborating with the district health authorities?

5. What is the no. of patients on treatment under you as DOT provider? _____
6. For how many years you are providing DOT provider facility? _____
7. How many DOT providers are there in your NGO? _____
8. Are they trained in RNTCP?
Yes (1)
No (2)

9. If yes, then how many are trained in RNTCP? _____
10. In which area these facilities are being provided.
- | | | |
|-----------|-----|--------------------------|
| Urban | (1) | <input type="checkbox"/> |
| Sub urban | (2) | |
| Rural | (3) | |
| Difficult | (4) | |
11. Do you have any hospital run by your NGO?
- | | | |
|-----|-----|--------------------------|
| Yes | (1) | <input type="checkbox"/> |
| No | (2) | |
12. Do you have any laboratory support?
- | | | |
|-----|-----|--------------------------|
| Yes | (1) | <input type="checkbox"/> |
| No | (2) | |
13. If yes, in which area.
- | | | |
|-----------|-----|--------------------------|
| Urban | (1) | <input type="checkbox"/> |
| Sub urban | (2) | |
| Rural | (3) | |
| Difficult | (4) | |
14. For how long you are providing the above facility? _____
15. How many LTs are there in your NGO? _____
16. Are they trained in RNTCP?
- | | | |
|-----|-----|--------------------------|
| Yes | (1) | <input type="checkbox"/> |
| No | (2) | |
17. If yes, then how many are trained in RNTCP? _____
18. How many cases of sputum tested positive by your laboratory? _____
19. Do the DTO, MOTC or any RNTCP supervisory staff visit your health facility in the last one year?
- | | | |
|-----|-----|--------------------------|
| Yes | (1) | <input type="checkbox"/> |
| No | (2) | |
20. Do you have any suggestion for improvement in RNTCP in your district? _____
-

“Thank you very much for your precious time and valuable contribution in the interest of Patients and public”

ANNEXURE-VI

Table 2. Characteristics/variables found significant in univariate analysis for NSP patients in Solan and Bilaspur Himachal Pradesh India 2008

Characteristic/Variable		Solan district (n=86)		Bilaspur district (n=86)		χ^2 - test / T-statistic*	df	p-value*
		No.	%	No.	%			
Area	Urban	57	46.6%	9	10.5%	41.53	1	< 0.00
	Rural	46	53.4%	77	89.5%			
Type of family	Nuclear	62	72.1%	75	87.2%	6.06	1	0.01
	Joint	24	27.9%	11	12.8%			
Qualification	Illiterate	19	22.1%	43	50.0%	23.52	5	< 0.00
	Primary	15	17.4%	12	14.0%			
	Middle	21	24.4%	21	24.4%			
	High	21	24.4%	10	11.6%			
	Graduate	8	9.3%	0	0%			
	Professional	2	02.3%	0	0%			
Occupation	Unemployed	18	20.9%	35	40.7%	7.88	1	0.004
	Employed	68	79.1%	51	59.3%			
Preference to Health Facility	Indifferent to ailments	1	1.2%	8	0.3%	19.67	6	0.003
	Self medication	2	2.3%	3	3.5%			
	Pharmacy	1	1.2%	3	32.6%			
	Native medicine	0	0%	1	1.2%			
	Specialist care	4	4.7%	1	1.2%			
	Govt. health facility	76	88.4%	39	45.3%			
	Others	2	2.3%	6	7.0%			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

Contd.....Table....2

Characteristic/Variable		Solan district (n=86)		Bilaspur district (n=86)		χ^2 - test / T-statistic*	df	p-value
		No.	%	No.	%			
Level of GHF 1 st Contacted	State/District	29	33.7%	48	55.8%	72.92	6	<0.001
	Sub district	2	2.3%	22	25.6%			
	Community Health Centre	25	29.1%	0	0.0%			
	PHC	15	17.4%	3	3.5%			
	CD	2	2.30%	11	12.8%			
	HSC	1	1.20%	2	2.3%			
	None	12	14.0%	0	0.0%			
Level of PHF contacted	Chest specialist	4	4.7%	0	0.0%	29.47	5	< 0.001
	Physician	2	2.3%	3	3.5%			
	MBBS	2	2.3%	8	9.3%			
	BAMS	0	0.0%	6	7.0%			
	Others	4	4.7%	16	18.6%			
	None	74	%	53	61.6%			
Dist. b/n Resi. & MC centre	0-1 km	42	48.8%	12	13.9%	52.52	4	< 0.001
	2-5 km	31	36.1%	15	17.5%			
	6-9 km	7	8.2%	21	24.4%			
	10 km	4	4.6%	24	27.9%			
	>10 km	2	2.3%	14	16.3%			
Adm. Level of DOTS provider	State/District level	24	27.9%	7	8.1%	39.55	7	< 0.001
	Sub district level	0	0.0%	5	5.8%			
	CHC level	25	29.1%	8	9.3%			
	PHC level	21	24.4%	23	26.7%			
	CD level	1	1.2%	3	3.5%			
	HSC level	11	12.8%	22	25.6%			
	Below HSC level	1	1.2%	0	0.0%			
	Others	3	3.5%	18	20.9%			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

Contd.....Table....2

Characteristic/Variable		Solan district (n=86)		Bilaspur district (n=86)		$\chi^2 - test /$ <i>T-statistic*</i>	df	p-value
		No.	%	No.	%			
Perceived causes of delay in diagnosis and treatment initiation	No specific cause	31	36.0%	15	17.4%	41.15	8	< 0.00
	Poor knowledge of disease	8	9.3%	18	20.9%			
	Denial & concealment	10	11.6%	13	15.1%			
	Fear of social isolation	0	0.0%	1	1.2%			
	Economic restraints	4	4.7%	0	0.0%			
	Symptoms were mild	19	22.0%	2	2.3%			
	Distance of HF not convenient	1	1.2%	2	2.3%			
	Poor quality of health service	1	1.2%	0	0.0%			
	Others	12	14.0%	35	40.7%			
Confidence of getting cured in choosing 1 st health facility	Yes	40	46.5%	22	25.6%	8.17	1	0.004
	No	46	53.5%	64	74.4%			
Poor knowledge of disease	Yes	8	9.3%	18	20.9%	4.53	1	0.03
	No	78	90.7%	68	79.1%			
Reason choosing 1 st HF	Easy accessibility	21	24.4%	54	62.8%	40.08	6	< 0.00
	Confidence of getting cured	40	46.5%	22	25.6%			
	Service anytime	5	5.8%	7	8.1%			
	Free service	8	9.3%	0	0.0%			
	Advised by somebody	2	2.3%	0	0.0%			
	Others	1	1.2%	3	3.5%			
	None	9	10.5%	0	0.0%			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

Contd.....Table....2

Characteristic/Variable		Solun district (n=86)		Bilaspur district (n=86)		$\chi^2 - test /$ <i>T-statistic*</i>	df	p-value
		No.	%	No.	%			
Exact cause of TB	TB germs	32	37.2%	14	16.3%	25.44	8	0.001
	Lack of proper food	1	1.2%	4	4.7%			
	Addiction to smoking	18	20.9%	13	15.1%			
	Overwork	0	0.0%	2	2.3%			
	Worries	0	0.0%	7	8.1%			
	Gods curse	0	0.0%	2	2.3%			
	Fate	1	1.2%	5	5.8%			
	Poor hygiene	0	0.0%	2	2.3%			
	Don't know	34	39.5%	37	43.0%			
TB affects work performance	No / disagree	55	64.0%	31	36.0%	53.77	2	< 0.00
	Can't say	14	16.3%	1	1.2%			
	Yes / agree	7	19.8%	54	62.8%			
Dist. b/n Resi. & DOTS centre	0-1 km	52	60.4%	33	38.4%	9.38	3	0.02
	2-5 km	27	31.3%	42	48.8%			
	6-9 km	6	7.1%	7	8.2%			
	>10 km	1	1.2%	4	4.6%			
No. consultations before diagnosis of TB	None	6	7.0%	0	0.0%	64.50	5	< 0.00
	One	22	25.5%	18	20.9%			
	Two	55	64.0%	20	23.3%			
	Three	3	3.5%	10	11.6%			
	Four	0	0.0%	11	12.8%			
	More than four	0	0.0%	27	31.4%			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

ANNEXURE-VII

Table 3. Mean patient intervals univariate analysis for NSP case patients in Solan and Bilaspur districts, Himachal Pradesh India

Characteristic/Variable		Solan district Patient interval						Bilaspur district Patient interval						χ^2	df	p-value
		N	%	Mean	Median	SD	Range	N	%	Mean	Median	SD	Range			
Age	15-29	83	96.5%	11	15	12.6	0-45	50	58.1%	45	23	62.1	1-244	116.2	3	< 0.0
	30-44	2	2.3%	15	15	13.4	0-30	15	17.4%	41	14	59.2	1-244			
	45-59	0	0.0%	31	15	79.5	0-365	8	9.3%	57	31	66.1	2-190			
	≥60	1	1.2%	16	15	13.9	0-30	13	15.1%	55	28	76.0	3-218			
Sex	Male	25	29.1%	30	15	70.8	0-365	25	29.1%	43	22	59.0	1-244	7.09	1	0.00
	Female	61	70.9%	12	15	12.8	0-45	61	70.9%	49	23	63.7	1-244			
Area	Urban	41	47.7%	13	15	13.0	0-45	9	10.5%	51	14	56.3	13-168	2.45	1	0.1
	Rural	45	52.3%	22	15	53.9	0-365	77	98.5%	46	22	63.1	1-244			
Occupation	Unemployed	19	22.1%	16	15	14.9	0-45	35	40.7%	40	18	59.4	1-244	65.44	5	< 0.0
	Unskilled	26	30.2%	13	15	12.2	0-30	0	0.0%	0	0	0	0			
	Semi skilled	22	25.6%	12	15	12.5	0-30	20	23.3%	66	27	76.8	1-244			
	Skilled	12	14.0%	10	0	13.3	0-22	11	12.8%	26	11	33.9	2-115			
	Managerial	2	2.3%	30	30	0.0	0-30	11	12.8%	46	38	30.9	2-108			
	Professionals	5	5.8%	82	15	158.6	0-30	9	10.5%	56	11	87.0	3-233			
Education	Illiterate	19	22.1%	18	15	12.8	0-45	42	50.0%	42	14	59.6	2-218	23.52	5	< 0.0
	Primary	15	17.4%	10	0	12.2	0-30	12	14.0%	42	22	59.1	1-244			
	Middle	21	24.4%	29	15	77.9	0-365	21	24.4%	70	49	68.0	13-212			
	High school	21	24.4%	14	15	12.9	0-30	10	10.0%	36	27	44.3	2-188			
	Graduate	8	9.3%	15	15	16.0	0-45	0	0.0%	72	25	103.4	2-244			
	Professional	2	2.3%	0	0	0	0	0	0.0%	4	3	0.7	3-4			
Health Facility	Indifferent	3	3.5%	0	0	0	0	8	9.3%	41	31	32.3	5-102	59.26	6	< 0.0
	Self medication	4	1.2%	0	0	0	0	3	3.5%	21	17	9.2	15-32			
	Pharmacy	4	0.0%	8	8	8.6	0-15	28	32.6%	47	19	61.2	5-218			
	Native medicine	0	4.7%	0	0	0	0	1	1.2%	16	16	0	16-16			
	Specialist care	2	2.3%	8	8	10.6	0-15	1	1.2%	4	4	0	4-4			
	GHF	76	88.4%	19	15	42.3	0-365	6	7.0%	58	45	58.1	2-168			
	Others	0	0.0%	0	0	0	0	39	45.3%	49	22	71.9	1-244			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

Contd.....Table.....3

Characteristic/Variable	Solon district Patient interval							Bilaspur district Patient interval							χ^2	df	p-value
	N	%	Mean	Median	SD	Range	N	%	Mean	Median	SD	Range					
	86						86										
Distance from residence to MC	0-10	80	93.0%	17	15	41.4	0-365	52	60.5%	39	17	53.1	1-244	25.98	3	< 0.0	
	11-20	4	4.7%	30	30	0	30-30	20	23.3%	57	34	70.7	2-233				
	21-30	2	2.3%	15	15	0	15-15	9	10.5%	63	22	77.5	2-244				
	>30	0	0.0%	0	0	0	0	5	5.8%	56	22	90.5	10-218				

Table 4. Patient interval found to be significant in univariate analysis for NSP case patients in Solon and Bilaspur Himachal Pradesh India 2008.

Characteristic/Variable	Solon district (n=86)		Bilaspur district (n=86)		$\chi^2 - test / T-statistic*$	df	p-value	
	No.	%	No.	%				
Frequency of patient interval	0-30 days	83	96.5%	50	58.1%	36.41	3	<0.00
	31-60 days	2	2.3%	15	17.4%			
	61-90 days	0	0.0%	8	9.3%			
	>90 days	1	1.2%	13	15.1%			

Table 5. Mean patient delays found to be significant in univariate analysis for NSP case patients in Solon and Bilaspur Himachal Pradesh India

Characteristic/Variable	Solon district (n=86)		Bilaspur district (n=86)		$\chi^2 - test / T-statistic*$	df	p-value	
	No.	%	No.	%				
Mean of patient interval	From onset of symptoms to any HF 1 st contacted (days)	18	100%	47	100%	6.3336	< 0.00	
Median of patient delay	Patient delay	15		22				
Means patient interval stratified by sex	Female	31		71		6.74	1	0.009
	Male	13		13				
Means patient interval	In assessing Govt. health facility	18		47				
Means of patient interval (Excess delay)	In private health facility	5		15				

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

ANNEXURE-VIII

Table 6. Characteristics/variables in univariate analysis for PHI Doctors in Solan and Bilaspur districts Himachal Pradesh India 2008

Characteristic/Variable		Solan district (n=47)		Bilaspur district (n=32)		χ^2 - test / T-statistic*	df	p-value
		No.	%	No.	%			
Training in RNTCP	Yes	44	100%	23	71.8%	5.53	1	0.01
	No	4	0.0%	9	28.2%			
Supervisory visits by RNTCP official in 1q08	Yes	41	87.2%	19	59.4%	12.74	1	< 0.00
	No	3	12.8%	13	40.6%			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

ANNEXURE-IX

Table 7. Characteristics/variables in univariate analysis for DOTS providers in Solan and Bilaspur districts Himachal Pradesh India 2008

Characteristic/Variable		Solan district (n=175)		Bilaspur district (n=107)		χ^2 - test / T-statistic*	df	p-value
		No.	%	No.	%			
Training in RNTCP	Yes	175	100%	104	97.0%	4.96	1	0.02
	No	0	0.0%	3	3.0%			
Area	Urban	12	6.9%	6	6.6%	0.17	1	0.67
	Rural	163	93.1%	101	94.4%			
Trained in TB case finding and treatment	Yes	170	97.1%	100	94.3%	1.39	1	0.24
	No	5	2.9%	7	5.7%			
Supervisory visits by RNTCP official in last 3-6 moth	Yes	132	75.4%	60	56.1%	11.45	1	< 0.00
	No	43	24.6%	47	43.9%			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

ANNEXURE-X

Table 8. Characteristics/variables in bivariate analysis for LTs of DMCs in Solan and Bilaspur districts Himachal India 2008

Characteristic/Variable	Solan district (n=15)		Bilaspur district (n=11)		$\chi^2 - test /$ <i>T-statistic*</i>	df	p-value	
	No.	%	No.	%				
Training in RNTCP	Yes	13	86.7%	9	81.8	0.11	1	0.73
	No	2	13.3%	2	11.2%			
Unmanned health institutions	Yes	2	13.4%	2	18.2%	0.11	1	0.73
	No	13	86.6%	9	81.8%			
Supervisory visits by RNTCP official in last 3-6 month	Yes	15	100%	9	81.8%	2.95	1	0.08
	No	0	0.0%	2	18.2%			

ANNEXURE-XI

Table 9. Mean total provider delays found to be significant in univariate analysis for NSP case patients in Solan and Bilaspur Himachal India

Characteristic/Variable	Solan district (n=86)		Bilaspur district (n=86)		$\chi^2 - test /$ <i>T-statistic*</i>	df	p-value	
	No.	%	No.	%				
Frequency of total system interval	0-7 days (No delay)	69	80.2%	29	33.7%	52.83	3	< 0.001
	8-15 days	12	14.0%	12	14.0%			
	16- 23days	4	4.7%	6	7.0%			
	>24 days	1	1.2%	39	45.3%			
Mean total system interval Stratified by age	15-29	5 days		20 days		1.27	3	0.7
	30-44	6 days		18 days				
	45-59	5 days		24 days				
	≥ 60	4 days		26 days				
Mean patient excess delay	In contacting GHF due to other HF 1 st to diagnosis (days)	4	100%	15	100%	2.5475	1	0.01
Mean system delay	From any HF 1 st contacted to diagnosis (days)	3	100%	17	100%	7.7049	1	< 0.001
Mean system delay	from diagnosis to initiation of treatment	2	100%	3	100%	2.3705	1	0.01

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

ANNEXURE-XII

Table 10. Characteristics/variables in multivariate unconditional logistic regression analysis for NSP case patients in Solan and Bilaspur HP

Characteristic/Variable		Univariate p-value*	Multivariate adjusted p-value#
Area	1 Urbanization	< 0.001	< 0.001
Employment	2 Salaried employment	< 0.001	0.0164
Health seeking	3 Diagnosis of patients in less than 5 days of contacting GHF	< 0.001	< 0.001
	4 Mean patient delay from onset of symptoms to any HF 1 st contacted	0.003	0.007
	5 Confidence of cure in choosing 1 st health facility	0.004	0.01
Knowledge	6 Patients knowing exact cause of TB	0.001	0.01
Health facility access awareness	7 Distance of MC centre from patient residence ≤ 10 kms	< 0.001	0.007

*p-value calculated by chi-square test/Fisher's exact test or T-static as applicable. #p-value calculated by unconditional logistic regression.

ANNEXURE-XIII

Table 11. Characteristics / variables **not** found to be significant in univariate analysis for NSP case patients in Solan and Bilaspur Himachal Pradesh India 2008.

Characteristic/Variable	Solan district (n=86)		Bilaspur district (n=86)		$\chi^2 - test /$ <i>T-statistic*</i>	df	p-value	
	No.	%	No.	%				
Age group	0 – 14 Years	2	2.3%	0	0.0%	3.19	4	0.52
	15 - 29	29	33.7%	32	37.2%			
	30 - 44	26	30.2%	31	36.0%			
	45 - 59	20	23.3%	16	18.6%			
	> 60	9	10.5%	7	8.1%			
Gender	Male	54	62.7%	61	70.9%	1.29	1	0.25
	Female	32	37.3%	25	29.1%			
Religion	Hindu	84	97.7%	84	97.7%	1.33	2	0.51
	Muslim	1	1.2%	0	0%			
	Sikh	1	1.2%	2	2.3%			
Denial & concealment	Yes	10	11.6%	13	15.1%	0.45	1	0.5
	No	76	88.4%	73	84.9%			
Perception about HF	Hospitable	75	87.2%	72	83.7%	6.39	4	0.17
	Long waiting hours	7	8.1%	14	16.3%			
	Inconvenient working hours	2	2.3%	0	0.0%			
	Too costly/bribe	1	1.2%	0	0.0%			
	Non availability	1	1.2%	0	0.0%			
Ashamed of having TB	No / disagree	69	80.2%	63	73.3%	4.39	2	0.11
	Can't say	4	4.7%	1	1.2%			
	Yes / agree	13	15.1%	22	25.6%			
Heard of TB	Yes	84	97.7%	85	98.8%	0.34	1	0.56
	No	2	2.3%	1	1.2%			

*p-value calculated by chi-square test/Fisher's exact test or T-statistic as applicable.

3.1.1.1 Age

Patients visiting these health care facilities in Solan have a mean age of 37 years, while in Bilaspur it was also 37 having a T Statistic = 0.1295, P-value = 0.8970 which is not significant. Most of them were from the age group of 15 to 44 (63.9% & 73%) for Solan and Bilaspur respectively.

3.1.1.2 Denial and concealment

Eleven percent patients cited denial and concealment as the reason to choose the first health facility for treatment in Solan as compared to Bilaspur (15%) was not statistically significant ($\chi^2 = 0.45$, df^1 and $p\text{-value} = 0.5$).

3.1.1.3 Distance of HF not convenient

One percent patients cited denial and concealment as the reason cited to choose the first health facility for treatment in Solan as compared to Bilaspur (2%) was not found statistically significant ($\chi^2 = 0.34$, df^1 and $p\text{-value} = 0.5$).

3.1.1.5 Ashamed of TB

Only 15% of the patients agree that they ashamed of having TB as compared to 26% in Bilaspur. This was not statistically significant ($\chi^2 = 4.39$, df^2 and $p\text{-value} = 0.11$).

ANNEXURE-XIV

Table 12. Abstraction form

Purpose could be for the need for obtaining data in RNTCP Solan

Name of document /publication /article:

Full reference of document reviewed:

Sr. No.	Description contents	Details obtained	Remarks
1	Introduction :	1	Not available
a.	Relevance of RNTCP	2	
b	Rationale	3	
2	Goals of RNTCP	1 2	
3	Specific objectives of TB under RNTCP selected for description and assessment		
4	Diseases of public health priority kept under surveillance for Integrated Disease Surveillance Project National State		
5	Health infrastructure of RNTCP - For HP - For your district	Organogram of 1. health infrastructure 2. manpower responsible at different levels of RNTCP	
6*	Case definitions (Write the suspected , Probable and confirmatory case definition as per document review for RNTCP)	Compare case definitions of RNTCP with those of NTCP	
7*	Population kept under RNTCP Total		

Contd.....Table 12

8*	Reporting mode Passive Active		
9*	Data structure Individual data Aggregated data		
10*	Types of reporting units Public Rural Urban Medical colleges Laboratories Private Individual practitioners Nursing homes Hospitals Medical colleges Laboratories		
11*	Data flow and frequency from various reporting units Flow chart for data from Periphery Intermediate level Secondary Tertiary		
12*	Data analysis Include frequency and indicators for analysis for disease selected		
13*	Feedback Include flow chart to show frequency and flow of feedback for RNTCP		
14*	Others (Specify)		