

**Guidance document
for
the peoples' movement
against
Tuberculosis in Kerala**

Kerala TB Elimination Mission

**Principles, Strategies and
Activities**

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Contents

Contents.....	2
Acronyms and abbreviations	5
Foreword.....	7
Background:	9
Kerala- Geography and Demographics:	9
Kerala Health System	10
Determinants of TB in Kerala	11
Migration	11
HIV.....	11
Diabetes	12
Smoking.....	12
Alcoholism.....	13
Chronic Respiratory Diseases.....	13
Air Pollution	13
Kerala TB Epidemic: A Situational Analysis	14
Case finding efforts and notification.....	14
Quality of sputum smear microscopy	16
Age wise notification.....	16
TB Notification from Private Sector	19
Drug sales in the private sector	20
Incidence of Drug Resistant Tuberculosis	20
Non-Tuberculous Mycobacterium	21
While Kerala Moving towards elimination.....	22
Q1. Is Kerala prepared to move towards TB elimination?.....	22
Q2. What are the state’s strengths to move towards elimination?	22
Q3. Will it be possible to bring down incidence to Pre-elimination levels in Kerala?	23
Q4.What are the challenges for moving towards elimination?.....	23

Q5. What are the resource implications for moving towards elimination?	24
Idukki district: Preparing ground to move towards elimination.....	26
Principles and strategies for TB elimination in Kerala	30
1. Stop new TB infections	30
2. Prevent active breakdown of disease among the infected	30
3. Diagnose TB early and completely.....	30
4. Treat TB correctly and completely.....	30
5. Prevent emergence of resistance	30
Strategies for TB elimination in Kerala	31
1. Generation of awareness and demand through advocacy, communication and social mobilization	32
2. Airborne infection control (AIC) in health facilities, households and community.....	33
3. Active case finding and treatment of TB disease.....	33
4. Establish robust TB surveillance and surveillance linked to action	35
Surveillance of TB disease:.....	35
Surveillance Data flow, analysis and linked action	36
Mandatory notification of TB by all health care providers.....	36
Step1. Provider mapping.....	37
Step2. Engaging providers through formal linkages	37
Step3. Enacting and Enforcement.....	37
Extra steps to facilitate notification.....	37
Estimating TB burden.....	38
5. Complete treatment of all forms of TB including drug resistant TB	38
Prompt initiation of treatment of TB including DRTB.....	38
b. Patient support through treatment support groups	39
c. Monitoring and promotion of adherence through ICT	39
d. Early detection and management of ADR.....	40
e. Institutional management of seriously ill patients	40

f. Management of comorbidities	40
6. Universal access to drug susceptibility testing and DST guided treatment.....	40
7. Screening and management of comorbidities including HIV.....	41
8. Private Hospital Consortium for TB elimination	43
9. Addressing TB among Tribal population.....	44
10. Addressing TB among migrant workers.....	44
Additional strategy in low burden settings.....	45
<i>Screening for diagnosis and treatment of latent TB infection</i>	46
Generic Activity Plan for TB Elimination	47
Conclusion.....	95
Annexures:	97
Annexure I: Proposed budget for TB elimination activities 2017-18.....	97
Annexure II: Forms for microplanning:	107
Instructions to use the microplanning forms:	113
Annexure III: Activity reporting forms	114
Instructions to use activity reporting forms:	117
Annexure IV.....	119
Annexure V.....	120
Tuberculosis Vulnerability Screening Interview Guide	120

Acronyms and abbreviations

ACF	Active Case Finding
ACSM	Advocacy Communication and Social Mobilisation
ADR	Adverse Drug Reaction
AIC	Airborne Infection Control
ARTI	Annual Risk of Tuberculosis Infection
ASHA	Accredited Social Health Activist
CBNAAT	Cartridge Based Nucleic Acid Amplification Test
CGHS	Central Government Health Services
CHC	Community Health centre
CRD	Chronic Respiratory Disease
CXR	Chest X-ray
DHS	Director of Health Services
DMC	Designated Microscopy Centre
DRTB	Drug Resistant Tuberculosis
DST	Drug Susceptibility Test
EQA	External Quality Assurance
FBO	Faith Based Organization
GoI	Government of India
HI	Health Inspector
HIV	Human Immunodeficiency Virus
HS	Health Supervisor
HSC	Health Sub Centre
IGRA	Interferon Gamma Release Assay
IMA	Indian Medical Association
INH	Isoniazid
Jr.HI	Junior Health Inspector
Jr.PHN	Junior Public Health Nurse
KSACS	Kerala AIDS Control Society
LHI	Lady Health Inspector

LHS	Lady Health Supervisor
LSG	Local Self Government
LTBI	Latent Tuberculosis Infection
MDRTB	Multi drug Resistant Tuberculosis
MO	Medical Officer
MPW	Multipurpose Worker
NGO	Non-Government Organization
NHM	National Health Mission
NSP	New Smear Positive
NTM	Non Tuberculous Mycobacterium
NTP	National Tuberculosis Program
PHC	Primary Health Centre
PHI	Peripheral Health Institution
PIP	Project Implementation Plan
PPD	Purified Protein derivative
PRI	Panchayati Raj Institution
RBRC	Random Blinded Rechecking
Rif	Rifampizine
RNTCP	Revised National Tuberculosis Control Program
SHSRC	State Health System Resource Centre State Tuberculosis Training and Demonstration Centre
STDC	
TB	Tuberculosis
TSG	Treatment Support Group
TST	Tuberculin Skin Test
WHO	World Health Organization

Foreword

India revised the National TB Program in 1992 in response to the global call to control TB. Earlier, in 1990, WHO had declared the disease as a global public health emergency. Kerala, the southern Indian state, started implementing the Revised National Tuberculosis Control Program (RNTCP) in 1997 achieving complete population coverage in 2000. Annual Risk of Tuberculosis Infection (ARTI) by Tuberculin surveys suggested a lower TB transmission in Kerala compared to other parts of the country.

From a phase of voluntary reporting of symptoms of TB, attempts to find more TB cases in the state led to a phase of active case search in health facilities followed by a phase of active case search among the key population by referrals/sputum collection and then to active case search in the community. These activities were not implemented uniformly across the entire population, but were followed according to the attitude, aptitude, motivation and capacity of the district/sub-district program management units. Uniform concerted efforts were there in all districts for engagement of private sector for referral of presumptive TB cases. However, these efforts did not result in detecting more TB cases in spite of a good quality sputum smear microscopy in the background. In fact the TB notification started falling since 2009, with sustained quality of program management. This decrease was noted in all districts at varying magnitude. Idukki (population 1.1 million) and Wayanad (population 0.9 million) report maximum decline. The notification rate of microbiologically confirmed TB cases is as low as 19/100,000 in Idukki and as low as 10/100,000 in three of its sub-district level areas.

The program has also demonstrated strength in case holding. Treatment support and retrieval of interrupting patients are decentralized to PHI level staff. Novel interventions at field level have been encouraged to promote adherence; of which the nutrition support program, the Treatment Support Group (TSG) initiative, and the TB pension schemes have received global acclaim. The impact of case holding efforts are demonstrable as proportion of cases developing resistance and re-registration for treatment is comparatively low. Proportion of Rif Resistant/MDRTB cases among presumptive DRTB is as low as 4%.

These observations have thrown open opportunities to consider accelerating impact of program for TB elimination. Key policy makers of the state are committed to ending TB. Program managers at various levels are oriented to the great task. Efforts to end TB in the tip of the peninsula may pave way for the same in the entire country and may prove causal for ending TB globally. This effort will undoubtedly be supported by all stakeholders.

Kerala TB Elimination Mission is a 4 year long intensive fight against TB from 2017 to 2020. The objective is to bring down TB cases in the state to less than 2020 by the year 2020. It comprises of four annual campaigns, directly combating TB at the community level. After achieving this, a mop up round in the form of a five year campaign will be undertaken to bring TB incidence to elimination levels, ie, less than 1 per million.

This document is brought out with joint efforts of experts from all across the world to find ways to move towards TB elimination starting with the lowest burden settings in Kerala. It will mark a milestone in Global TB Elimination.

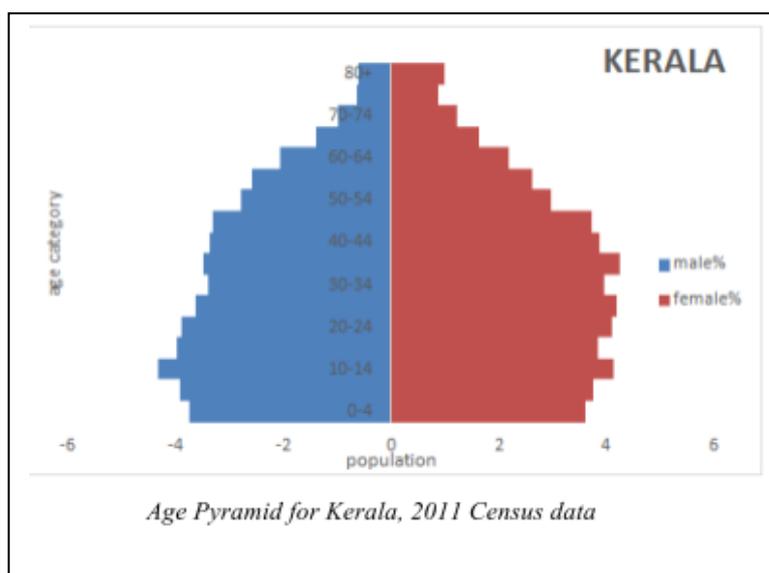
Chapter 1

Background:

Kerala- Geography and Demographics:

Kerala is a small state, tucked away in the south west corner of India. The state of Kerala has an area of 38,863 sq. km. and a population of 33.38 million. It is situated between the Arabian Sea to the west and the Western Ghats to the east. Kerala's coast runs some 580 km in length, while the width varies between 35 and 120 km. The state is divided into three geographical regions- high land, midland and lowland. It is separated from the rest of the peninsula by natural geographic boundaries. There are 14 districts, 152 blocks and 1364 villages. The State has a higher population density compared to the entire country (859 and 312 per square km respectively).

With a good track record of social development indicators, especially in health and education sectors, Kerala is witnessing a demographic transition with a rise in the proportion of aged in the total population along with declining growth rate. The decadal growth rate (4.83%) is much slower than that of the country (17.64%). Pathanamthitta and Idukki districts in Kerala report negative growth rate. Except one district, all districts in Kerala have a declining child population. Scheduled tribe constitutes 1.45% of the population. The Sex Ratio of the State is 1084 (as compared to 940 for the country).



Kerala Health System

Kerala has attracted international attention for its outstanding achievements in population health despite its economic backwardness. This paradox, often referred to as the 'Kerala Model of Development', has become an ideal model of development for many poor income countries in the world. Many of its health indicators surpass those of other Indian states; some are even on par with developed countries. Infant Mortality Rate of Kerala is 12/1000 live births while that of India is 45/1000 live births. Antenatal care is 100% and institutional delivery is universal in the state. The state has the highest overall life expectancy at birth (74.9 years), lowest rates of maternal mortality (66/100,000 live births) and childhood malnutrition (23%). Key contributing factors to these outcomes are often attributed to its effective health care system, which has ensured high accessibility at low cost, and non-health sector contributions addressing social determinants of health such as widespread education, high literacy rate (male 96.11% and female 92.07%), social and land reforms, public distribution of food, development of road and housing conditions.

Primary Health care services have been systematically organised in rural areas of the state. This ample network that extends to the grass root level must have contributed to less urban-rural disparity. There are 230 community health centers and 845 primary health centers (approximately one per 30,000 population) in the State. There are 5500 junior public health nurses and 3500 Junior Health Inspectors; both being multi-purpose health workers (MPW) for a Health Sub-Centre, serving every 5000 population. Ownership of primary and secondary healthcare institutions is decentralized to Local Self Governments (LSG). Substantial budget provision is ensured to equip the LSGs to assume these responsibilities. This democratic decentralisation has led to mass participation in health care activities of the state and increased the public accountability and government stewardship of public health programs.

Curative services are provided by Modern medicine, Ayurveda and Homeopathy. The private sector plays a major role in health care provision providing the majority of facilities. There are more than 300 hospital beds per 100,000 population, which is probably one of the highest ratios in the developing world. Modern Medicine comprises 36.9% of total facilities and 94.2% of total beds; the public sector owns 23.3% of the facilities and 39.5% of the beds. There are 13.5 private health facilities per 100,000 population. There are 811

Ayurveda hospitals/dispensaries and 644 Homeopathy dispensaries/hospitals in Government sector.

Determinants of TB in Kerala

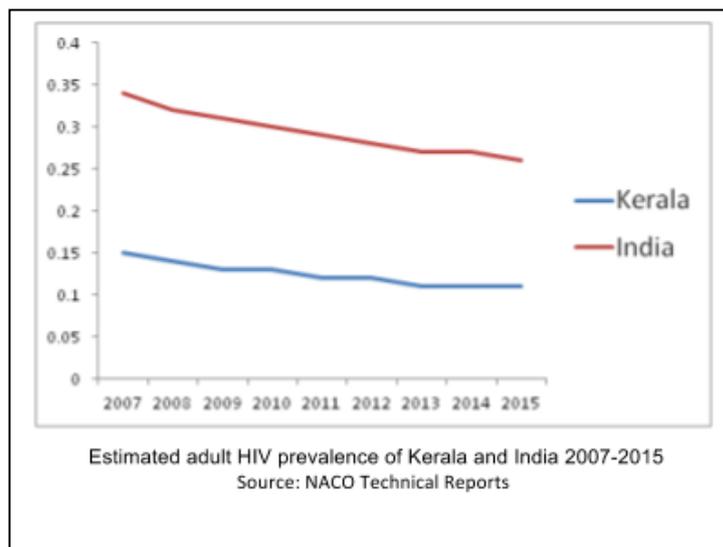
As per the Reserve Bank of India annual reports, Kerala state ranks best, next only to Goa with least number of people below poverty line (7.09%), while national average stands at 21.92%. The percentage of people living below poverty line fell by 12% points within a decade. Kerala with a Human Development Index of 0.71, stands first in HDI among the states in India.

Migration

The number of Kerala emigrants estimated to be living abroad as estimated by a migration survey in 2014 is 2.36 million. Majority of emigration is to Middle East countries. Number of Kerala migrants living in other states in India is less in volume as compared to international migration and is estimated to be 700,342 in 2014. At the same time, there is an inflow of migrants to Kerala especially for manual labour and construction. There is an estimated 4 million migrants from other states working in Kerala at a time and around 75% of them belong to five states- West Bengal, Bihar, Assam, Uttar Pradesh and Odisha.

HIV

Kerala is one among the states with lowest HIV transmission. The state has witnessed a significant 60% decrease in HIV cases reported over the last decade. The statistics show that the total number of HIV cases reported in the state was 2,627, including 1,151 women, in 2005 the figure rose to 3,972 by 2007 but it saw a downward trend since then, touching 1,076 in 2015. Estimated number of new adult HIV cases (>15 years) in the state for 2015 was 581 (324-1051).



Diabetes

Kerala reports the highest community prevalence of diabetes in the country. Prevalence of diabetes in Kerala (20%) is more than double that of the nation (8%). Kutty et al¹ reported 16.3% crude prevalence of diabetes mellitus among 322 adults aged 20 years or above in an urban settlement in Kerala. In another study from southern Kerala, the crude prevalence of diabetes mellitus among urban residents was 12.7%. Amritha Diabetes and Endocrine Population Survey (2005) identified 9% reported- prevalence and 10.5% prevalence of newly detected diabetics among semi-urban and urban adult residents aged 18 years and above in Central Kerala. In a large multi-center study in 2007 involving nearly 20,000 subjects, the prevalence of diabetes in Thiruvananthapuram was 17% compared to 15% in Hyderabad and New Delhi, 4% in Nagpur and 3% in Dibrugarh. A study in 2007 from Central Kerala reported the age adjusted prevalence of DM as 12.5%. Age adjusted prevalence of diabetes mellitus from a statewide survey including 5124 adults in 2011 was 15.23%; 19.14% in urban and 16.23% in rural areas.

Smoking

Current prevalence of smoking among men in Kerala (27.9%) was more or less same as national average (Thankappan et al., 2013). The KSSP study in 1987 reported a smoking prevalence of 43 % among men aged 15 years and above (Kannan et al., 1991). A study conducted by the National Family Health Survey (NFHS round 2) in the year 1998-99 reported a smoking prevalence of 28% and 0.4% among men and women respectively. The

Global Adult Tobacco Survey conducted in the year 2009–2010 reported that 21.4% adults in Kerala use tobacco in one form or the other. Based on the type of current tobacco use among males aged 15 years and above, the GATS reported that 27.9% of Kerala's adult male population was smokers (which include smokers alone and those who used both smoking and smokeless forms). GATS also reported that in 2010, 41.8 % of adults were exposed to secondhand smoke at home and 18.7 % were exposed to secondhand smoke at public places. Kerala became the first state in India to ban smoking in public places in 1999 and has adopted smoke free laws prior to the national law.

Alcoholism

NCD risk factor survey by IDSP in 2007 found that overall, 11% of the respondents with 24% among males, consumed alcohol in past 30 days. Kerala alcohol study reports that 11% of adult males are at risk pattern of drinking and 4% of adult males have an alcohol use disorder. State has adopted a liquor policy in 2014 restricting the sale of alcohol only to five-star hotels and shutting down around 700 bars in the wake of the policy.

Chronic Respiratory Diseases

The prevalence of asthma was 4.45% and that of chronic bronchitis among those with age more than 35 years was 13.5% in Trivandrum as reported by a multi-centric study, which was high as compared to the rest of the cities in other states. Prevalence of self-reported asthma was 2.82% and that of chronic bronchitis was 6.19% in a study which included around 12000 individuals from a rural area of Kollam district.

Air Pollution

The analysis of Air Quality Index values during June 2015 by Central Pollution Control Board as a part of National Ambient Air quality monitoring in 11 cities of Kerala indicates that 71% AQI values are falling in good category, 28% are in satisfactory and 01% in moderate. This indicates that the people in these areas have minimal impact of air pollution.

Chapter 2

Kerala TB Epidemic: A Situational Analysis

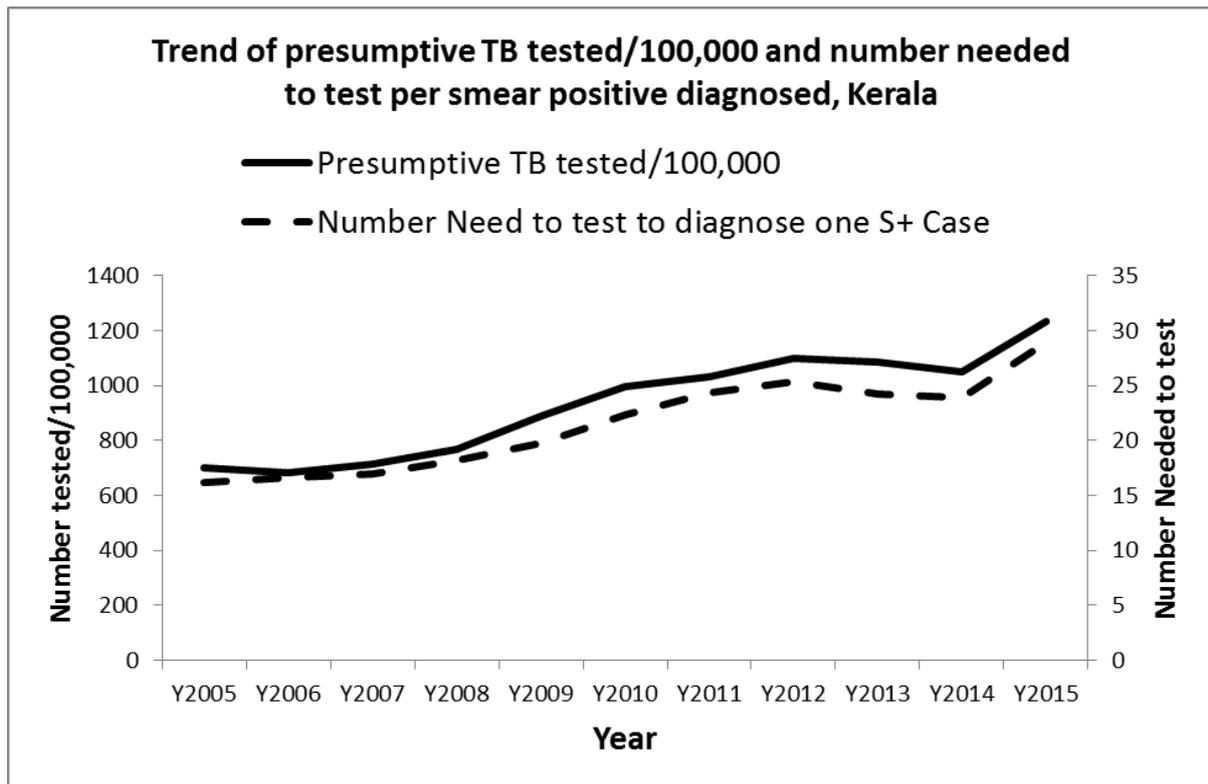
History of TB in Kerala could only be narrated linked to national program, private sector, health seeking behavior and literacy. Kerala was implementing National TB Program (NTP) since 1962. Once NTP was reviewed and revised in 1992, one of the districts in Kerala (Pathanamthitta) piloted the RNTCP with four other districts in the country.

Among many others, suboptimal documentation was a major challenge during the NTP period. All districts had functional district TB centers, x-ray and sputum smear microscopy facilities at sub district levels. However, microscopy was seldom utilized, and diagnosis of TB was mostly based on chest x-ray and clinical examination. Drug supply was often interrupted. However, during scarcities, patients managed to acquire drugs by out of pocket expenditure with some interruptions in treatment. A focused group discussion among senior clinicians who were practicing TB during NTP was suggesting successful treatment completion in the order of 75 to 80%.

After revision of NTP in 1993, Designated Microscopy Centres (DMC) were established for every 100,000 population in accessible areas and for every 50,000 population in difficult terrains and tribal areas. Seventy three sub district level program management units (tuberculosis units) were established for approximately every 0.5 million. RNTCP achieved complete population coverage in the year 2000 and private sector engagement in RNTCP started in 2002.

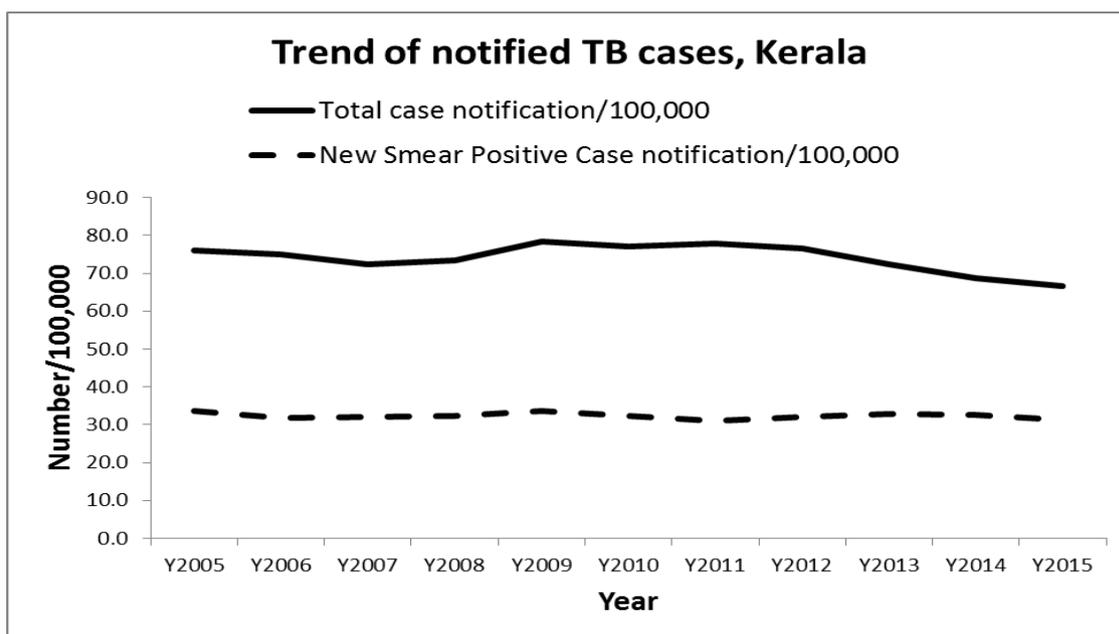
Case finding efforts and notification

Since complete population coverage in 2000, RNTCP has passed through three distinct phases in the state. (1)Phase of passive case detection among patients voluntarily reporting TB symptoms till 2008, (2) phase of active case finding among patients attending health facilities (2009 to 2013), and (3) phase of active case finding from community from 2014.



In the beginning, approximately 14 chest symptomatic patients needed to be tested to detect one smear positive case (NNT). This trend continued till 2009 when district program management units started advocating for active search of symptoms in health facilities. Following this, chest symptomatic patients tested per 100,000 population rose to about 1000. However, the total case notification did not rise proportionately. The number needed to test increased from 14 to 20. Next the district program management units started active case finding from the house hold contacts of TB patients and other vulnerable population in the community. Following this, chest symptomatic tested per 100,000 increased to 1230 by 2015, and the NNT increased to 29 with a drop in total TB notification and smear positive TB notification.

Important observation during this transition is that despite the enhanced effort to detect cases, case detection did not increase, rather it started declining.

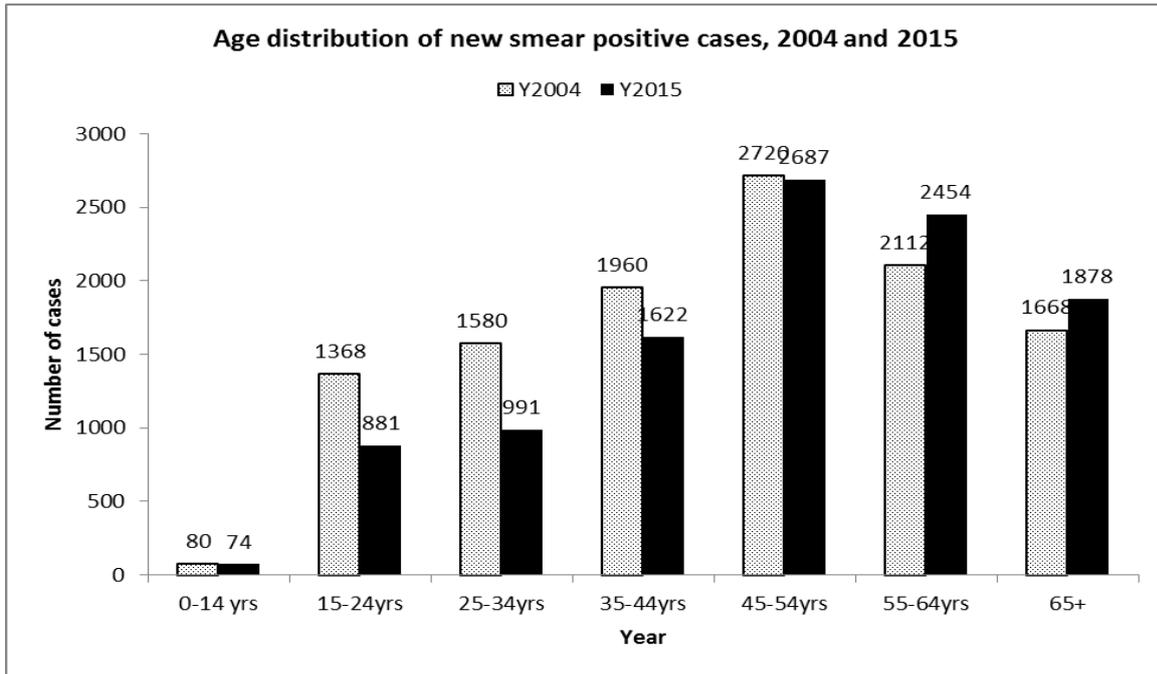


Quality of sputum smear microscopy

Protocol for quality assurance of sputum smear microscopy was available under the program since 2005, and the state was meticulously implementing it. The protocols consisted of supply of freshly prepared Ziehl-Neelsen reagents after assuring quality with positive and negative quality control slides, monthly supervision of TB laboratory technicians by expert and non-blinded rechecking of a sample of the month's work, monthly Random Blinded Rechecking (RBRC) of smears in all Designated Microscopy Centres (DMC) by external experts and periodic maintenance of binocular microscopes. During early years, approximately 15% of the DMCs in the state reported at least one high false positive or high false negative error in a year. It dropped to negligible levels by 2009. Thus the observation of declining TB notification with doubled case finding effort stood highlighted in the backdrop of a quality assured sputum smear microscopy.

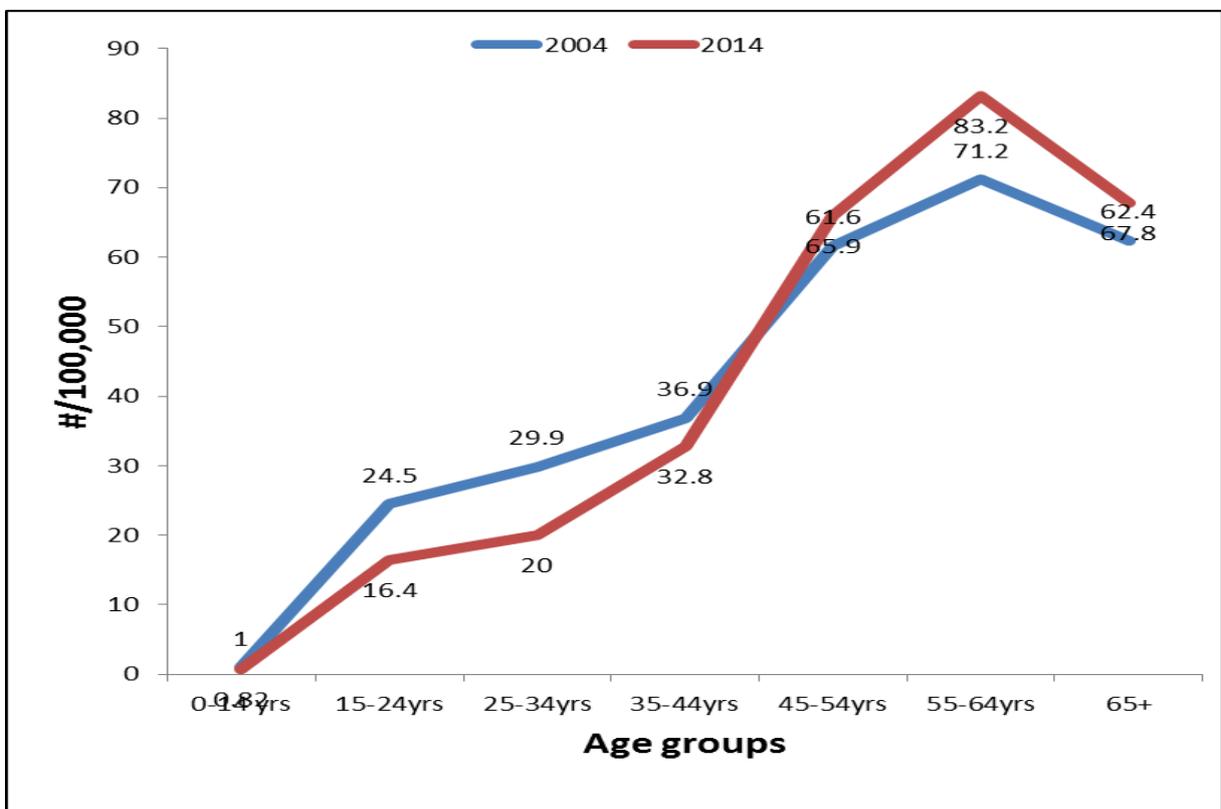
Age wise notification

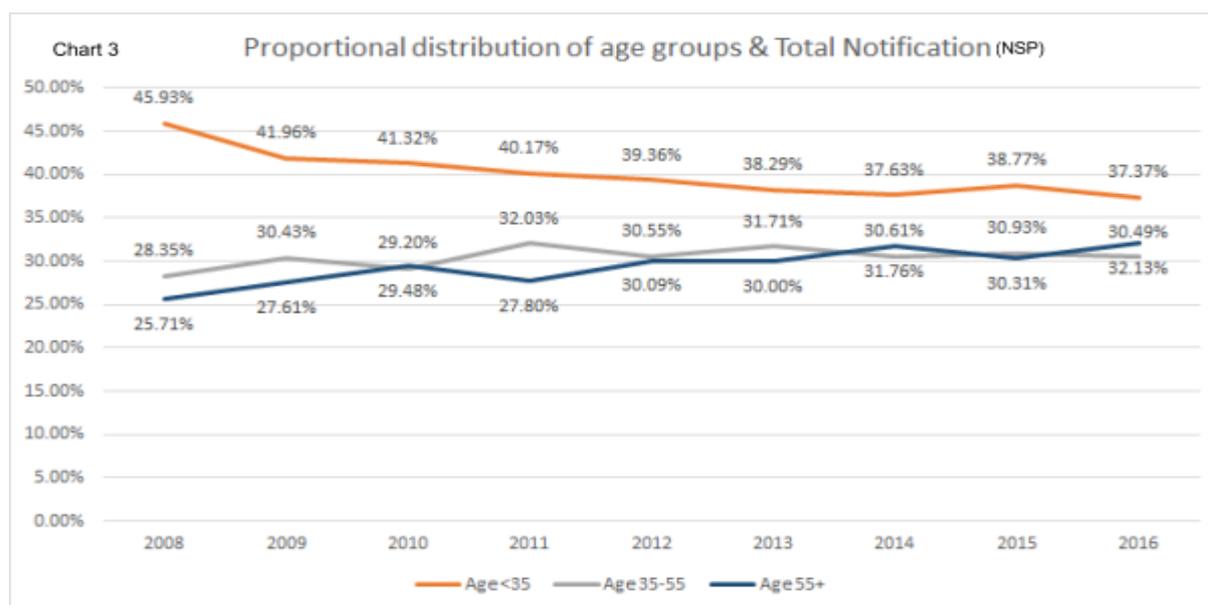
Age data of notification was available only for new smear positive cases in the program in the past. Maximum number of cases was notified in the age group of 45-54 years. Though this trend continues, it seems the median age increased in 2015. This is due to a prominent decrease in notification in the younger age groups and increase in the higher age group.



Age specific notification of new smear positive cases shows the highest notification in the age groups of 55-64 years followed by above 65 years in 2015.

Fig. Comparison of age specific notification of new smear positive TB cases registered under RNTCP in Kerala during 2004 and 2014.



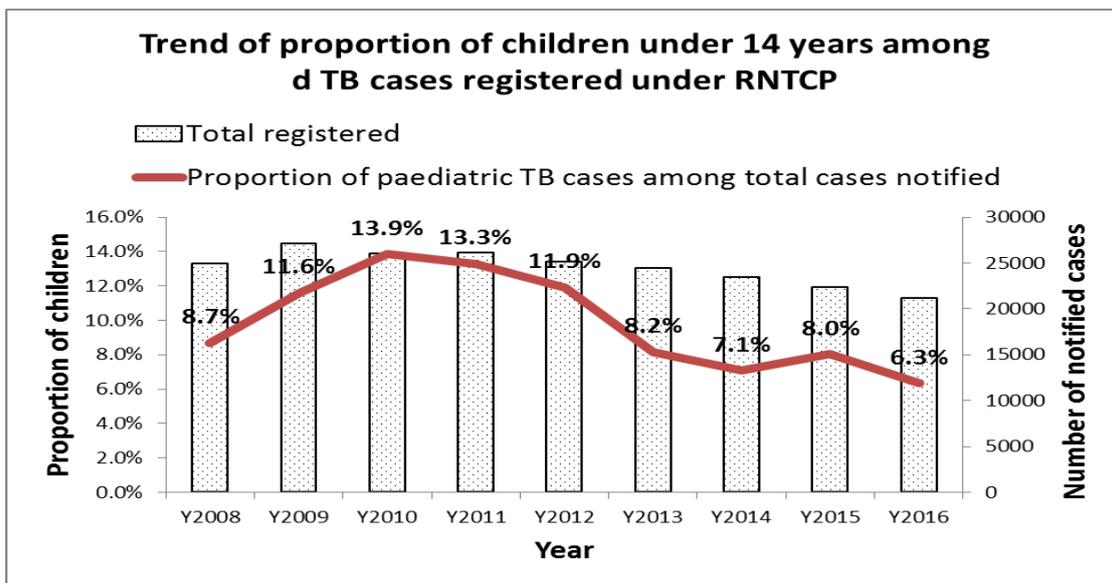


Age group	Age specific notification 2004	Age specific notification 2016	Change	Decadal rate of change
<14	1.0	0.8	-0.2	-20%
15-24	24.5	16.4	-8.1	-33%
25-34	29.9	20	-9.9	-33%
35-44	36.9	32.8	-4.1	-11%
45-54	61.6	65.9	4.3	7%
55-64	71.2	83.2	12.0	17%
65+	62.4	67.8	5.4	8.6%

Notification of new smear positive cases was declining since 2009. By 2016, there was a drop of 11.6%; from 33.6 in 2009 to 29.7/100,000 in 2016. Similarly, total TB notification declined by 20.4% from 78.4 in 2009 to 62.4/100,000 in 2016.

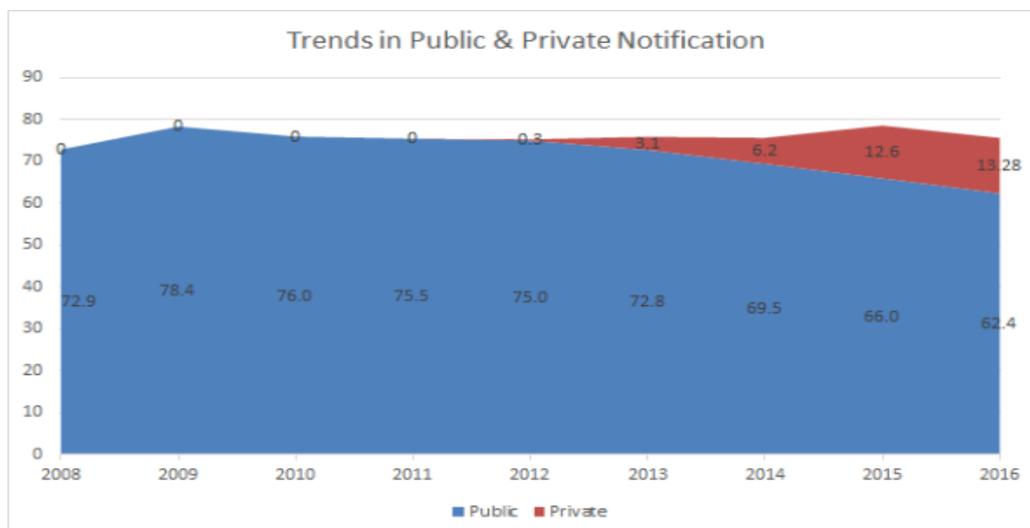
While notification has been coming down, there is a change in the age distribution among the notified cases. With each subsequent year the proportion of new smear positive cases in the lower age group (<35 years) is falling while the reverse is true for higher age groups

(+50). From 2008 to 2016 there has been a dip from about 46% to about 37%. On further disaggregation, age groups 0-14, 15-24, 25-34 and 35 to 44 years had decline of 0.1, 2.3, 1.4 and 1.2% respectively while age groups 45-54, 55 to 64 and above 65 years had an increase of 1.9, 2.2 and 0.8% respectively. Among the total TB cases notified, proportion of patients in age group below 14 years declined by 7.6% between 2009 and 16.



There were significant efforts by the program to identify the profile of pediatric TB cases notified to the program. Observations from interview of a sample of children notified with TB, their parents, and the clinicians by clinical and public health experts revealed that even among the notified cases, approximately 50% were treated empirically.

TB Notification from Private Sector



A significant proportion of TB cases access care from private sector. The state has pioneered private- public partnership in TB control during the early days of RNTCP. With support from Indian Medical Association, the state program was able to sensitize and train private practitioners and establish more than 100 designated microscopy centres in the private sector by 2008, which accounts for 20% of all the DMCs in the state. Later, 20% of the smear positive cases diagnosed and treated under the program was being constantly contributed by the private sector. Approximately 25% of the smear negative and extra-pulmonary cases are also being contributed by private sector.

After TB was made notifiable by the executive order of Government of India in May 2012, there were concerted efforts to sensitize practitioners. This led to increased notification from the private sector. In 2016, notification rate from private sector excluding cases put on RNTCP treatment was 13/100,000. However, there were a number of challenges to achieve 100% notification from the private sector.

Drug sales in the private sector

While number of patients registered under RNTCP declines on one side, private drug sales also declines. A published study in Lancet shows in 2014, there was decline of approximately 20% in drug sales compared to 2013.

Incidence of Drug Resistant Tuberculosis

RNTCP has been building its capacity to diagnose and manage drug resistant tuberculosis since 2007. Kerala started DRTB service delivery in the entire population at one go in 2008. It established a Culture & DST laboratory at the Intermediate Reference Laboratory at Thiruvananthapuram. To begin with the program tested only treatment failures for drug resistance. Towards late 2012, all patients who remain smear positive at two months of first line treatment were also being tested along with failures. Among these patients with high risk of developing resistance, less than 4% of the patients were diagnosed with Rifampicin resistance. Recently the program has begun testing of Key population for diagnosis of TB on rapid molecular tests where Rif Resistance is available as a byproduct. Among the tested new patients, proportion patients diagnosed with Rifampicin resistance is less than 0.5%.

Non-Tuberculous Mycobacterium

As the incidence of Tuberculosis is falling, and with advanced testing and diagnostic facilities, the program has been able to detect cases of Tuberculosis that are not caused by Mycobacterium Tuberculosis. However, it happens during processing of presumptive DRTB samples, there are no programmatic interventions to diagnose and treat NTM.

Chapter 3

While Kerala Moving towards elimination...

This section deals with a set of important questions that deal with the understanding about the need, rationale, implications, opportunities and challenges for a state specific End TB Strategy for moving towards TB elimination.

Q1. Is Kerala prepared to move towards TB elimination?

A1. The World Health Organization defines TB elimination as <1 case of TB disease per million population annually and defines a low incidence region as <100 cases per million. Currently Kerala notifies approximately 900 cases per million. Notification of incident TB (new and recurrent) is 350 per million. In a few districts this is as low as 500 and 230 respectively. Annual risk of tuberculosis infection (ARTI) in Kerala has been estimated to be at low levels. Childhood TB notification also is very low, of which the confirmed segment is negligible. Age specific notification is markedly skewed to the right. All these could be early epidemiological indicators of a declining TB transmission.

However, term TB elimination cannot be loosely applied. 'Moving towards elimination' is accelerating impact with appropriate interventions in appropriate settings. Thus a few settings in Kerala may be identified to accelerate impact.

Q2. What are the state's strengths to move towards elimination?

A2. The state government is highly committed towards ending TB to achieve sustainable development. The health system is robust and TB control is fully integrated with it. The private health sector maintains reasonable quality of care and is in synchrony with the government initiatives. Social support networks are efficient, social welfare and social justice are government's prime agendas. Access to diagnostic and treatment services suits to the good health seeking behaviour of the public. The decentralised planning empowering local governments ensure government stewardship and gives room for grass root level intervention towards elimination. Of late, E-health is implemented providing conducive environment for an ICT supported surveillance system.

Q3. Will it be possible to bring down incidence to Pre-elimination levels in Kerala?

A3. An unpublished data on risk factors for TB in Kerala shows that 20% of TB cases reported staying with a TB case in the household during their childhood. Majority of those who developed TB now, had their childhood in an era where chemoprophylaxis for household childhood contacts of TB did not exist. Another 20% of cases had clear contact of TB within the household within past five years. TB is now seen among people with comorbidities- approximately 44% of TB patients in Kerala are diabetic, 45% were chronic smokers, a quarter was habitual alcoholics and one tenth had history of a chronic respiratory illness. As per RNTCP guidelines, Kerala is providing chemoprophylaxis to the childhood household contacts of pulmonary TB for last two decades. TB in Kerala is now a disease of middle aged people and elderly, particularly exposed to TB during their childhood. It is expected that TB in Kerala may see a dramatic drop in coming years as the current younger cohort with low prevalence of LTBI gets older. The decline could be accelerated by diagnosing all cases earlier by household contact tracing and active case finding and screening for and treating LTBI in appropriate settings.

However, current attempt is to bring TB incidence to less than 2020 by the year 2020. It means, the incidence needs to be drastically reduced to 6/100,000. After achieving this, further intensive action will follow for complete elimination.

Q4.What are the challenges for moving towards elimination?

A4.The following challenges may be expected.

1. Migration: Massive on the job migration is an important challenge to achieving TB elimination in Kerala. It is estimated that at a time, there will be 40, 00,000 migrants in the state; majority of which are labourers. Migrants often would have acquired TB infection, due to higher infection rates in their state of origin. They have an increased risk of developing active TB disease, depending on factors such as conditions of their migration, occupation involved in, and due to socioeconomic vulnerability augmented by stressful migration conditions. Migrant workers also have a higher risk for not completing treatment once started.
2. Vulnerable groups: TB has been concentrated in certain vulnerable groups, such as the poor, the homeless, migrants, people with harmful alcohol and other marginalized

groups like tribal. The factors that make these groups vulnerable operate through two principal pathways: increased risks for exposure and infection and an increased risk for progression from infection to active disease

3. Diabetes Epidemic: Kerala is witnessing an ever increasing and alarming trend of diabetes prevalence. Diabetes plays an important role in the development of TB disease.
4. Absence of state specific data on TB burden.

Q5. What are the resource implications for moving towards elimination?

A5. TB control in Kerala is mostly supported by the national program for the recurring activities. State provides a part of TB human resources and deploys the general health system HR for TB control activities. Social support is being provided in the form of a TB pension of 1000 rupees per month for the duration of treatment to the TB patients with annual family income less than 100,000 rupees by a revenue department initiative. Nutritional support to the TB and MDRTB patients below poverty line is being provided by a LSG department initiative. Infrastructure development of the two Culture & DST laboratories is a state initiative.

However, efforts to achieve SDG and End TB targets and elimination goal are resource intensive. Focus areas are,

- a. Estimation of TB burden in the state
- b. Establishing a TB surveillance system and link it to e-health where hardware and software ICT support and networking will be required
- c. X-ray units at the block levels with support HR and CBNAAT machines active case finding.
- d. Diagnosis and treatment of Latent TB infection in low burden subpopulations where IGRA and INH/Rifapentine combinations may be needed
- e. ICT support for treatment adherence
- f. Management of co-morbidities like diabetes and COPD to prevent death of patients, where scale up of PAL and NPCDCS is required

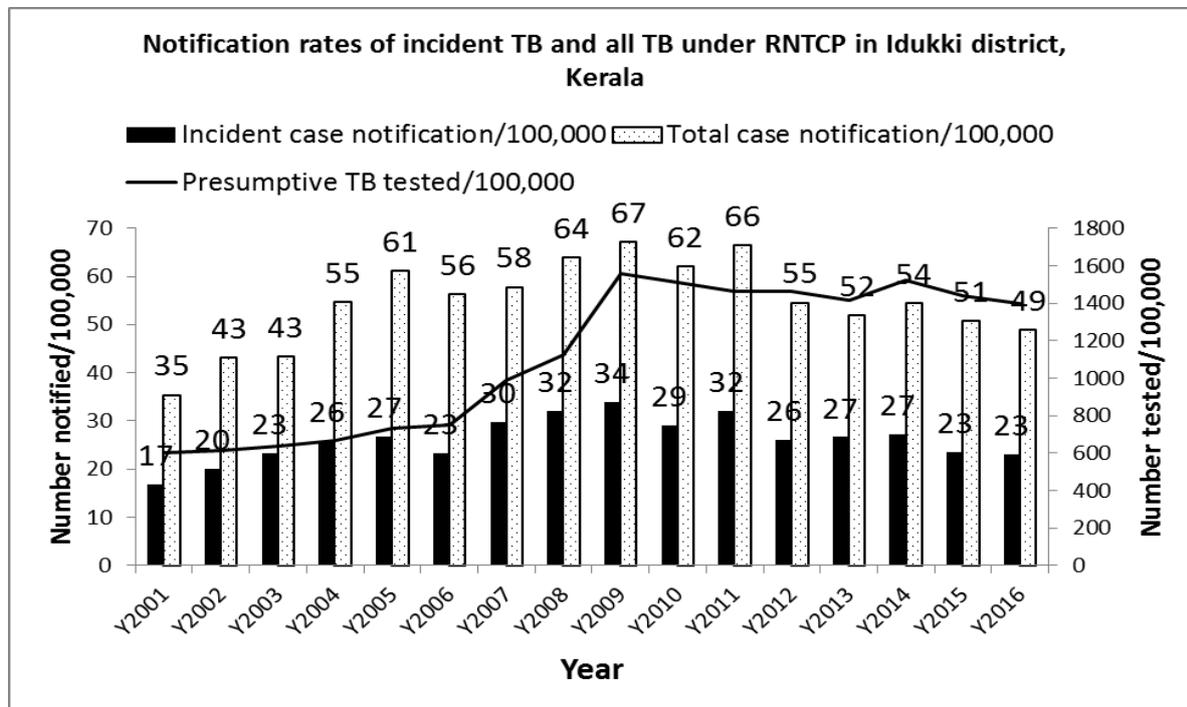
- g. Bring catastrophic expenditure to zero, where all TB related services are to be provided free of cost to the patient

Chapter 4

Idukki district: Preparing ground to move towards elimination

Idukki district of Kerala, with 1.1million population inhabiting its mostly hilly terrain, is implementing RNTCP since 2000. During early years of implementation, the district was testing 500 presumptive TB cases and notifying 17 incident smear positive cases (new smear positives + recurrent TB) per 100,000 population annually. With enhanced efforts for case finding and assurance of quality of sputum smear microscopy; these figures have gone up to 1500 and 34 respectively in 2009. Since then, the incident TB case notification was declining steadily to reach 23/100,000 in 2016 while test rate has stayed at 1400/100,000. Similar decline has been observed in total TB notification. While 24 presumptive cases needed to be tested to confirm a TB case during the early years, the figure has gone up to 84 in 2016. Trends of case finding efforts and TB case notification in Idukki district are depicted in fig 1.

Fig.1. Case finding efforts and TB notification trends, Idukki district, Kerala, India



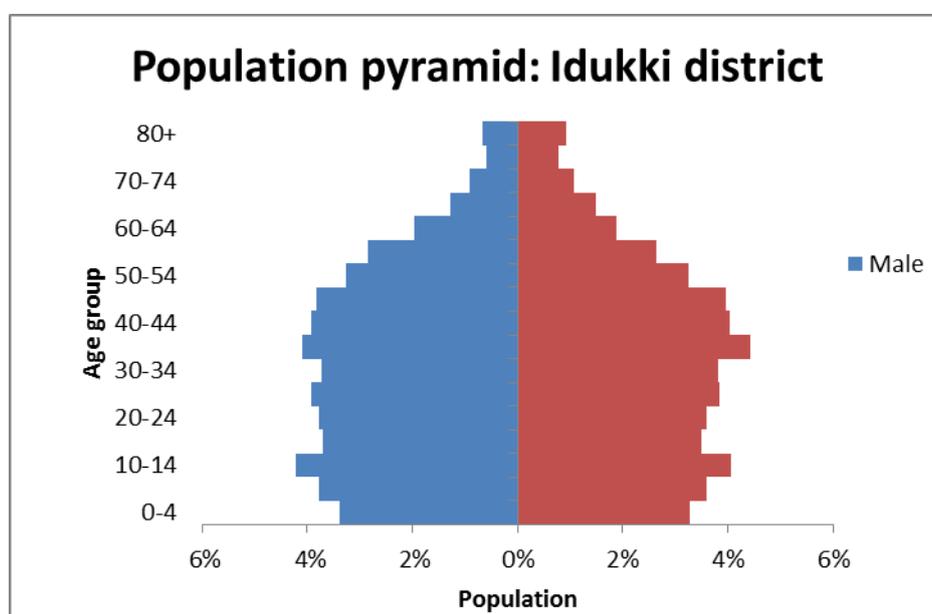
While the case finding efforts are on the rise and the notification rates on the decline, all the subdistrict level reporting units (Tuberculosis Units -TU) were not exhibiting these trends uniformly. During 2016, the low flat terrain TU Thodupuzha with denser population had an

incident case notification 44/100,000 while the high hilly terrain TUs with less population density had incident case notification less than 20/100,000. In all the four TUs, smear examination was close to the district average, i.e, 1400/100,000.

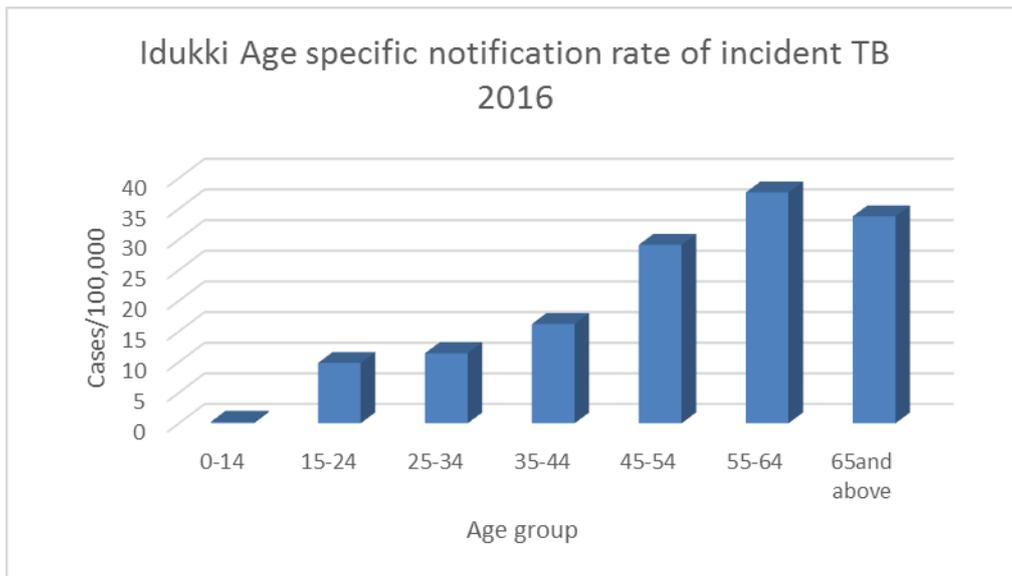
TB Case notification by subdistrict reporting units, Idukki, 2016

Reporting Unit	Population	Presumptive TB tested/100,000	Incident cases/100,000	Total cases/100,000
Painavu	214465	1373	18	38
Adimaly	257716	1389	16	42
Vandanmedu	376038	1418	19	41
Thodupuzha	267000	1406	44	85

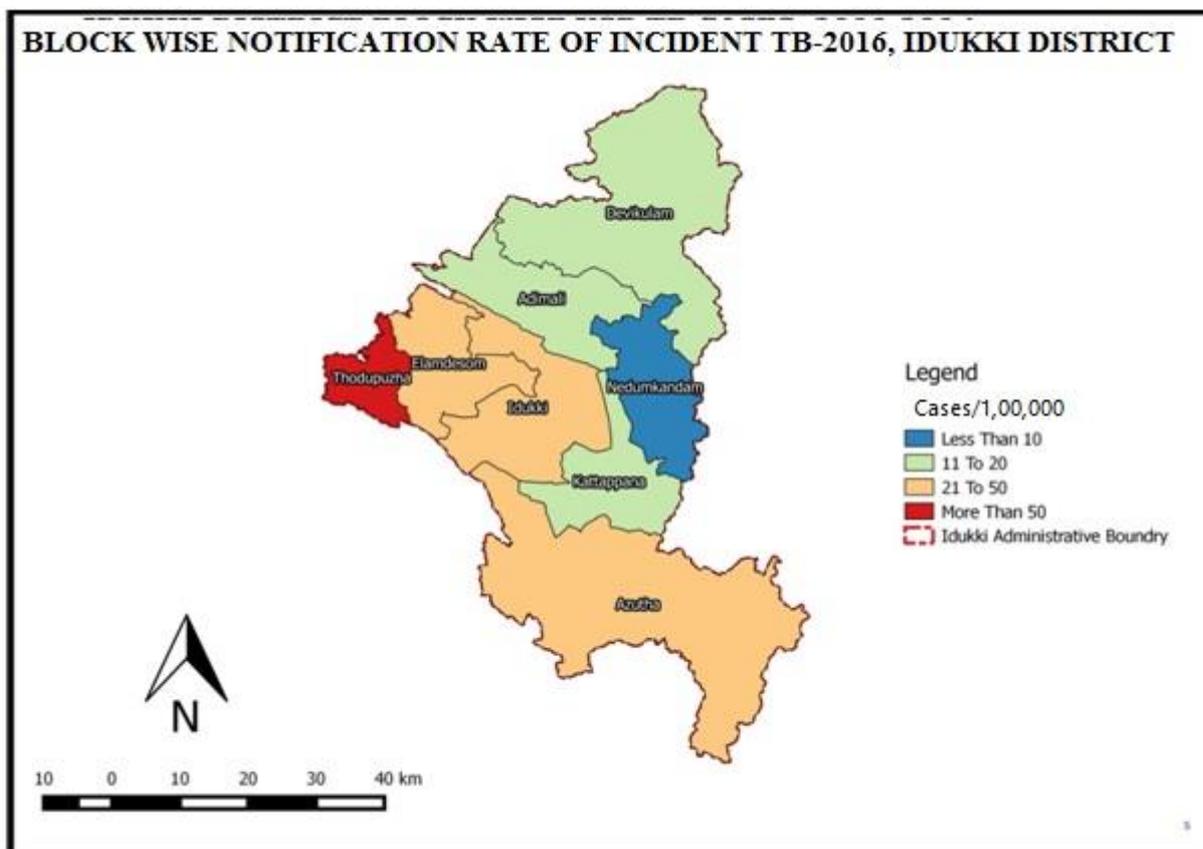
Idukki district has the lowest population density in the state (254/sq.km). The population pyramid very much resembles that of developed countries. It is declining with a negative annual growth by 0.18%.



Age specific notification rate of new smear positive TB in Idukki is similar to that of the state with the highest notification in 55 to 64 years followed by age group above 65 years.



There are 8 development blocks with a population of approximately 100,000 per block. Population density of the blocks ranges from 123/sq km in Azhutha to 1469 in Thodupuzha municipality. There are blocks reporting less than 10 incident TB cases per 100,000 population.



District specific information on the prevalence of diabetes, smoking, chronic respiratory diseases and HIV are not available. Approximately 35 to 40% of the newly diagnosed TB cases is diabetic and 50% report a history of household contact with TB.

Private sector in Idukki is collaborating with the public sector for TB control. There are 34 private hospitals, of which 7 are RNTCP microscopy centres and others are referring cases to RNTCP. The district has a well set health system infrastructure with nearly complete trained HR, functional DMCs and efficient district program management unit with excellent political and administrative back up.

TB control efforts in the district gained momentum in 2006. Till then, the district was affected with poor HR and infrastructure for TB control. Designated microscopy centres were increased by 25%, trained laboratory HR was ensured in all DMCs, trained medical officers and MPWs were ensured in all primary health centres (PHCs) and supervision was strengthened in 2006. Active case search began during that year. Presumptive TB cases from the vulnerable population were referred from the field for testing; positive case yield from these referrals was low.

There is a stewardship of local self-governments for TB elimination in the district. Panchayat wise mapping of presumptive TB cases and diagnosed TB had been done for political advocacy and resource pooling. End TB task forces are established in all the 55 panchayats under the leadership of LSG heads. General health system is working in tandem with the LSG vision to End TB.

Chapter 5

Principles and strategies for TB elimination in Kerala

There are five core principles of TB elimination. These principles lay foundation to the strategies for TB elimination in Kerala. Each foundational principle is further divided into subprinciples

1. Stop new TB infections

- 1.1. Airborne Infection Control in health facilities, households and community
- 1.2. Find and treat cases as soon as they occur

2. Prevent active breakdown of disease among the infected

- 2.1. Detect and Manage Comorbidities
- 2.2. Manage risk factors including smoking and substance abuse
- 2.3. Prevent and manage malnutrition
- 2.4. Detect and treat Latent TB Infection

3. Diagnose TB early and completely

- 3.1. Identify TB vulnerable individuals in the community
- 3.2. Actively search for TB among vulnerable
- 3.3. Provide Drug Susceptibility Test for all

4. Treat TB correctly and completely

- 4.1. DST guided regimen for treatment
- 4.2. ICT based adherence support for all
- 4.3. Treatment support groups for social support during treatment

5. Prevent emergence of resistance

- 5.1. Ensure judicious use of anti-TB drugs by peer/social audit
- 5.2. Indoor management of resistant cases till first negative smear report

Strategies for TB elimination in Kerala

TB Elimination Strategies built on Sustainable Development Goal [SDG] target 3.3 sets its global targets for 2035. These are reduction of TB deaths by 90%, reduction of incidence by 90% and ending catastrophic expenditure due to TB.

The state has taken bold initiatives to attain SDGs. A clear SDG plan is drafted for the state for TB considering the End TB targets too. With new light on the TB horizon with rapid and more sensitive diagnostic technologies, drugs and more importantly, with assured government stewardship, the global hope to end TB is more brightened. It is implied that for the world to achieve the SDG targets, the low burden areas should shorten their time span and move towards elimination while the high burden areas should accelerate impact. Each country, province and sub-provincial regions should adopt End TB Strategy to suit their epidemiology for customized versions instead of trying to fit the global size. Kerala being a 'relatively low burden' setting in a high burden country should first accelerate impact for SDGs, become the flagbearer for India to end TB and then move towards elimination to join the TB elimination group.

Within the state, there are comparatively still lower burden settings that may provide opportunity to move towards elimination. Kerala's End TB Strategy is built on Kerala TB SDGs and is a regional adaptation of Global End TB Strategy and the TB elimination strategy. It discusses ways to accelerate impact to End TB and move forward to elimination.

The strategy has ten components.

1. Generation of awareness and demand through Advocacy, Communication, and Social Mobilization.
2. Airborne infection control in health facilities, households and community
3. Active case finding and treatment of TB disease
4. Establish robust TB surveillance and link surveillance to action
5. Complete treatment of all forms of TB including drug resistant TB
6. Universal access to drug susceptibility testing and DST guided treatment
7. Screening for comorbidities including HIV and their management
8. Private Hospital Consortium for TB in elimination

9. Addressing TB and other health issues among migrant workers
10. Addressing TB and other health issues among Tribal population

While most of these are suitable for pan state, a few need to be applied to selected settings. In addition to the 10 components, LTBI detection and treatment may be considered in Idukki district to gather experience and move forward.

1. Generation of awareness and demand through advocacy, communication and social mobilization

ADVOCACY FOR GOVERNMENT STEWARDSHIP AND ACCOUNTABILITY: Government stewardship is the most important resource for TB elimination. The governance is well decentralized through the three tier Panchayati raj system wherein Gram panchayat (village level), block panchayat (sub-district level) and Zilla Panchayat (district level) have elected local self-governments in rural areas and corporations and municipalities in urban areas. This system has a distinct role to play in TB elimination through decentralized planning and efficient utilization of resources.

Each gram panchayat needs to be sensitized on the need, locally appropriate methodology and outcomes of TB elimination with the help of a line list and preconceived tool. This is (1) to pool resources by LSGs beyond the provisions by TB program for locally appropriate additional interventions (2) to piggyback TB elimination with other development initiatives in the jurisdiction for value addition (3) to ensure popularity and acceptance for the interventions (4) to ensure civic compliance to the intervention (5) to strengthen active surveillance and notification and (6) to provide social support to diagnosed TB patients when needed, to complete treatment successfully.

Sensitization is done by the public health team in the local Primary Health Centre. Outcome of this sensitization is a local TB Elimination Task Force and a local plan.

COMMUNICATION: Sustained, repeated, simple messages on TB must be given to all citizens at their residences. Engage communication squads for pre-fixed house groups, such as community volunteers, students etc, with preconceived tool in local language. However,

after a round or two, this method could be target oriented by peripheral health workers and Accredited Social Health Activists (ASHA).

The target oriented communication could then be linked with active case search among key population and then to the continuous surveillance discussed elsewhere.

SOCIAL MOBILIZATION: While political leadership steers the intervention, civic movements in each village is coordinated by the people's' representative to the Local Self Government. Social mobilisation increases demand for TB elimination.

2. Airborne infection control (AIC) in health facilities, households and community

HEALTH FACILITIES: Establish/revamp hospital infection control committee. Assess and certify all health facilities for AIC compliance. Training on National AIC Guidelines must be imparted to all health staff and health facility administrators. Sensitization messages and masks/hand kerchiefs/tissue for patients' use to be ensured in institutions.

HOUSEHOLDS: Approximately a quarter of the recently notified TB cases in the state self-report history of contact with TB at residential indoors (houses/old-age or mental health care centres/shelters), on their interview during internal evaluation by the national program.

Designated peripheral health worker and ASHA responsible for home based public health support should observe, document, modify and reinforce patients' compliance with AIC and ensure provisions to cover cough and disinfect sputum. (Eg. Supplying masks/hand kerchiefs and disinfectant solution for a month)

COMMUNITY: Messages on cough etiquettes as a component of communication strategy to all citizens in the district followed by promotion and enforcement by LSGs.

3. Active case finding and treatment of TB disease

Current national policy on diagnosis of TB disease has moved up from passive diagnosis in self-reporting TB symptomatic cases to active case finding in health facilities and intensified case finding in high risk institutional settings and finally to active case finding in high risk community settings with priority diagnostic care to clinically and socially vulnerable individuals.

A vulnerable group is any group of people in which the prevalence or incidence of TB is significantly higher than in the general population. The recommended vulnerable groups to be considered for intensified case finding may be classified as follows:

Clinical	Social	Geographical
Clients attending HIV Care Settings	Prisoners	Urban Slums
Substance abuse including smokers	Occupations with risk of developing TB	Hard to reach areas
Co-morbidities like Diabetes Mellitus, Malignancies, patients on dialysis and on long-term immunosuppressant therapy	People in Congregated settings – night shelters, De-addiction centres, Old age homes	Indigenous and tribal populations
Health Care Workers within the state and working outside the state	Migrant laborers	
Household & Workplace Contacts		
Patients with Past History of TB		
Malnourished		
Antenatal mothers attending antenatal clinics/MCH clinics		

In the state specific context, coastal population may be included in the geographically vulnerable group since the notification specific to the coastal area is higher in the state compared to in-land and hilly areas.

TOOLS FOR ACTIVE CASES SEARCH: A sensitive tool for screening symptoms in the form of a questionnaire embedded in the computer/mobile application should be deployed by the health workers/ASHA responsible for the periodic screening. Cartridge Based Nucleic Acid

Amplification Test (CBNAAT) may be used to test the presumptive pulmonary TB cases identified by active case search from the vulnerable population till more sensitive and field deployable tools are available. Optimal access to CBNAAT should be ensured by logical deployment of machines for geographic and population coverage. Mapping of vulnerable population would enable in logical deployment of CBNAAT. To balance the use of CBNAAT in view of cost-benefit indicators, complex logistics in terms of specimen transportation, workload of laboratory human resource, chest radiography should be deployed generously and judiciously. X-ray facility should be made available at least for every 100,000 population, in close proximity to the designated microscopy centres either by procurement of new machines or outsourcing to private sector.

4. Establish robust TB surveillance and surveillance linked to action

Surveillance is one of the fundamental public health activities necessary for the control and elimination of TB. A robust surveillance system should be able to identify individuals with risk to develop TB and monitor them lifelong for developing TB disease. Notifying a confirmed patient is the easiest step in surveillance, however, that too is complex due to a number of influencing factors. A complete surveillance system should be able to capture all TB cases and actively look for symptoms to trigger diagnosis.

Surveillance of TB disease:

This includes identification individuals belonging of key populations (clinically, socially and geographically vulnerable). Risk factors, social determinants and co-morbidity of TB cases will be incorporated. A case based surveillance with an electronic data flow will be initiated in districts reporting lesser number of cases.

Active Case Finding includes symptomatic screening of individuals mapped by health system. A database of vulnerable individuals by name and unique identification details is to be maintained for this purpose at health centre/ sub centre level. Further details of including ICT supported active case finding is discussed under the specific section below.

Surveillance Linked action at this level would include linking up and facilitating confirmatory tests for diagnosis and appropriate Drug Susceptibility Testing in diagnosed cases.

Surveillance Data flow, analysis and linked action

The data transmission in the envisioned surveillance system has two principal directions in data flow. Upward flow is case based information from the field to a central data repository. Downward flow is as action prompts for screening, testing or any additional intervention. Such actions trigger active case finding.

The information collected will be centralized around the concept of following up a high risk individual through phases of infection, disease, treatment and long term follow up. These phases can be further subdivided based on various factors such as the type of risk, drug resistance, type of diagnostic confirmation, site of disease, adherence pattern, source of treatment etc.

A surveillance unit will be a Health Sub Centre (HSC), for every 5000 population where a Multi Purpose Health Worker (MPHW) will be the nodal personnel for surveillance. Each MPHW will be provided with a handheld device installed with the surveillance application. During the initial survey, which is a one-time activity to be completed with the help of ASHA, the MPHW identifies the vulnerable individuals in the jurisdiction of the HSC and feeds into the application with Aadhaar number and landmarks.

It is important to see that the individuals so identified are not stigmatised.

The application should have a checklist to be filled by the health worker or the individual at a fixed interval, say, of three months. The checklist contains symptoms of TB disease. Ideally the health worker should visit the individual every three months and conduct interviews with the help of the checklist.

Alternatively, the individual can apply the checklist himself and look for the presence of symptom. If a set of symptoms are present, the application should prompt the individual to undergo a diagnostic test for TB. If the checklist is not applied over a period of more than 3 months, the application should prompt action. The system could be used for monitoring of these events and extend of achievement at various levels.

Mandatory notification of TB by all health care providers

All Health care providers (formal or informal) must notify TB. The strategy to ensure 100% notification has three specific steps.

Step1. Provider mapping

Mapping of all health care providers irrespective of their system of medicine, including unqualified providers should be done. This is to ensure that all care points that a patient is likely to access services from are included. 'TB care provider' is a subset of this universe that gets registered in the program MIS. Others provide an opportunity for active case finding.

Definition of provider should not be limited to clinical practitioners, but should cover clinical and pathological laboratories and chemists shops.

Step2. Engaging providers through formal linkages

- a. Assigning a nodal person for notification in each provider setting linked to the personnel responsible for surveillance at the PHC/HSC
- b. Channelizing all program services to the patients through the private provider. An 'after sale care model' may be tried instead of program directly providing those services.

Lack of formal linkages should not undermine the statutory responsibility if any, to notify TB.

Step3. Enacting and Enforcement

ENACTING: Enacting notification at state level

ENFORCEMENT: Validate laboratory and drug sale data in schedule H1 register with Nikshay notification data. TB program authorities need to verify H1 registers and compare TB drug sale data with notification data from the prescriber. Compliance should be acknowledged with certification/recognition. Non-compliance should attract penal action.

Extra steps to facilitate notification

An extra step may further promote notification that requires wider discussion and action; hence not elaborated here. This step is ensuring availability of anti-TB drugs in open market only through a notification triggered outlet.

While active surveillance among vulnerable population leads to active case finding and notification of TB cases, complete notification by private sector will take care of the spill-overs and complete the surveillance circle.

Estimating TB burden

Will it be a good idea to have a state specific disease burden estimate with a simple methodology which would in turn help to assess the efficiency of the surveillance system?

5. Complete treatment of all forms of TB including drug resistant TB

Principle of complete treatment is not completing treatment anyway. It is prompt initiation of treatment with the right regime, regular intake of all doses, prevent or manage factors adversely affecting a good treatment outcome like adverse reactions to drugs (ADR), comorbidities, social inclusion issues, substance abuse, smoking and unfavorable occupations so that the patient becomes healthy by all means. It is important in preventing long term morbidity due to TB sequelae. It is also important in achieving a goal of zero TB death.

Strategy for complete treatment includes,

- a. Prompt initiation of treatment of TB including drug resistant TB
- b. Patient support through treatment support groups
- c. Monitoring and promotion of adherence through ICT
- d. Early detection and management of ADR
- e. Institutional management of seriously ill patients
- f. Management of comorbidities

Prompt initiation of treatment of TB including DRTB

All TB patient including DRTB patients should be initiated on a first-line regime within seven days of diagnosis. While initiation of patient in Kerala on a first-line regime is well within a week, initiation of MDRTB patients on a second-line regime is mostly after a week. Once DST guided treatment and universal DST are implemented, more patients with resistance to one more drugs may be diagnosed, with implications on promptness of initiation of treatment. Hence, all districts should have at least one DRTB centre with a panel of specialists trained in management of drug resistant TB. The DRTB centre should have an indoor facility to admit 4 to 5 patients at a time. Similarly, seriously ill drug sensitive patients also may need hospitalization. All medical colleges and district/general hospitals should have TB/DRTB wards and a trained panel of specialists.

b. Patient support through treatment support groups

A treatment support group [TSG] is a non-statutory body of socially responsible citizens and volunteers to provide social support to each needy TB patient safeguarding his dignity and confidentiality by ensuring access to information, free and quality services and social welfare programs, empowering the patient for making decision to complete the treatment successfully. The group is usually chaired by the president of Gram Panchayat or a local opinion leader. Members of the group are the Medical Officer [MO], MPHW, community DOT provider, experienced informal counsellors, community based or faith based organization [FBO]members, Janamythri police (citizen-friendly police), local philanthropists and other community volunteers. TSG links the patient to social welfare schemes, District Panchayat's nutritional support project, Alcohol de-addiction or local benevolence. For example, a patient needs transportation support to go to DOT centre, a community volunteer or taxi driver may pick and drop him free of cost, or a local philanthropist may pay for the service. A patient tends to interrupt treatment would be counselled by the counsellor member. Emotional and spiritual support would be provided by the FBO member. This intervention has minimized loss to follow up in Pathanamthitta district, which piloted the strategy.

c. Monitoring and promotion of adherence through ICT

While supervised treatment is an important intervention to ensure intake of every dose of anti TB medications, the daily transactions occur only between the patient and DOT provider in which the health system does not take part. Even the DOT provider may fail to understand the factors adversely affecting adherence and report them to the health system when they are noticed. Real time information about administration of each dose is important to health system to promote adherence for a relapse free cure. ICT can play a big role in ensuring adherence to treatment by bidirectional flow of information controlled by a call centre. One such initiative is 99 DOTS where each patient is registered in the web system of 99 DOTS, doses taken by the patient is documented through a call by the patient to the random toll free number in the blister pack of each dose, the call is acknowledged, the absence of call is treated as dose not taken and the health system is alerted for retrieval. It is successfully implemented to support PLHIV with TB. It can make a positive impact on the treatment adherence of patient and responsiveness of health system.

d. Early detection and management of ADR

Adverse reactions to drugs play major role in interruptions in treatment, increase in morbidity and catastrophic expenditure. To prevent, detect and manage ADRs, especially in the context of daily regime, the following may be considered.

1. Treatment initiation by a medical officer after interrogating thoroughly for conditions that may predispose to or complicate ADRs. In situations where such conditions exist, laboratory investigations need to be done to guide treatment.
2. Monthly clinical review by Medical Officers of the PHI or the treating clinician. In presence of a predisposing condition, this monitoring should be at least once in two weeks.
3. Basic tests to rule out impaired liver and renal function should be done at two monthly intervals.
4. All ADRs should be reported through Vigiflow, the WHO web system for pharmacovigilance. Medical Officers should be sensitised on Vigiflow.

e. Institutional management of seriously ill patients

It is important to manage seriously ill TB and DRTB patients in tertiary care institutions where there are facilities for such management. All medical college hospitals and district/general hospitals should have TB/DRTB wards. In addition, all subdistrict level hospitals should have at least 3-4 beds to manage seriously ill TB patients.

f. Management of comorbidities

Management of comorbidities is discussed with more relevance elsewhere. Noncommunicable diseases like diabetes, chronic respiratory diseases, cardiovascular diseases, and cancers do significantly lower the favorable outcomes of TB treatment. With prompt linkages among respective disease control programs, patients could be ensured of cure and better quality of life.

6. Universal access to drug susceptibility testing and DST guided treatment

Current policy of RNTCP is to offer DST to the TB patients with high risk for developing drug resistance, especially Rifampicin resistance. These include TB patients who do not respond to first line treatment by giving a positive AFB test on follow up sputum smear microscopy,

previously treated, HIV infected and the contacts of MDRTB patients. However, curtailing primary transmission of drug resistance by early detection should be a key component of the strategy along with management of cases with appropriate regimes that prevent emergence of further forms of resistance and ensure high treatment success. These could be achieved by,

UNIVERSAL ACCESS TO DST: All diagnosed TB cases should undergo DST to all FLDs and SLDs (extended DST) before initiation of treatment. A sample of appropriate specimen should be sent to the Reference laboratory that can provide DST to all relevant anti TB drugs, the results of which will determine the course of treatment. Thus INH, Rifampicin, Quinolones and Second Line Injectable drugs may be tested for resistance. Till IRL Kerala is certified for these drugs, National Reference Laboratories may be requested to provide this service. Approximately 12500 microbiologically confirmed cases are currently diagnosed in the state annually. This could go up to 20000 if cases from other sectors are notified completely. All these cases should be offered extended DST. However, Initiation of treatment cannot be delayed till the extended DST results become available. Hence, all these cases should have been tested at least for resistance to Rifampicin and INH with LPA before initiation of treatment. One LPA laboratory is functional in IRL Thiruvananthapuram. The second LPA laboratory in Government Medical College, Kozhikode should also be made functional to ensure the workload is optimized and results are available within a week.

DST GUIDED TREATMENT: Standard first line regimen should be started for all cases that are not found to be Rifampicin resistant at the time of diagnosis. Standard FL regime should be modified according to extended DST report. Standard second line regimen should be started for all Rifampicin resistant cases, to be modified according to extended DST report.

7. Screening and management of comorbidities including HIV

Diabetes Mellitus is highly prevalent in the community. It is highly prevalent among TB patients in Kerala. Diabetes may increase the risk for TB infection, active TB disease, unfavourable outcomes including relapse. Chronic respiratory diseases (CRDs) may increase the risk and pose threat to effective TB treatment. Alcohol consumption rampant in Kerala is to be titled as a comorbidity that leads to system dysfunction. Smoking needs to be addressed as a part of primary prevention of lung morbidities. Other lifestyle diseases like

cardiovascular diseases, renal diseases etc. that could adversely affect TB treatment outcomes also need to be managed. Kerala reports very low prevalence of HIV. However, Infection control, intensified case finding and INH prophylaxis are to be implemented stringently.

SCREENING FOR DIABETES: Screening for TB among diabetics is discussed elsewhere. Screening for diabetes among TB patients is established as a routine practice in the district. Approximately 90% of all TB cases are being screened. However, the screening is based on a low sensitivity tool, i.e., estimation of plasma glucose levels that would not predict or indicate control of blood sugar. This may be replaced by estimation of glycated haemoglobin (HbA1c) levels. Subsidised/reimbursed outsourcing or establishing test facilities owned by government health system are two methods to achieve this.

MANAGEMENT OF DIABETES: This is to be discussed in two contexts. (1) Management of Diabetics with TB and (2) management of diabetics without TB. Though management principles are the same, diabetic TB patients may have to be additionally screened for drug interactions, adverse reactions to drugs etc. and diabetics without TB may have to be screened for TB periodically. A strong NCD control program is the prerequisite of this intervention.

SCREENING AND MANAGEMENT OF CRDs: Prevalence of CRDS is high in the state. Chronic respiratory diseases are to be managed with a patient centered approach in the primary care setting. The state program for prevention and control for COPD is intended for this. All diagnosed TB patients would be linked to the program for diagnosis and management of CRDs.

INTENSIFIED TB and HIV CASE FINDING: It relates to bidirectional screening among TB cases for HIV and TB among PLHIV. National guidelines are already been established. However, in line with active TB case finding from the community, active HIV case finding from the community needs to be established through appropriate interventions by National AIDS Control Program. In the sociocultural context of the state, active campaign followed by voluntary counselling and testing may have more acceptance than active testing. District HIV TB coordination committee is to be strengthened in a task oriented way.

8. Private Hospital Consortium for TB elimination

Conventionally, public health programs elaborate on private sector engagement and public-private partnerships. Models thus developed were mostly incentive based engagement or business purchase models. Private-private partnerships also were demonstrated where one private partner acts as an interface with governments. Wise investments in these models have resulted in various degrees of success with wide range of cost-benefits.

TB management in the private sector of Kerala seems to follow reasonable standards of care. A published study reports that in two major cities of Kerala, 94% of the 124 participated TB practitioners prescribed a complete four drug regime (HREZ) for a minimum of 6 months to treat drug sensitive TB. Only 2.4% added a second line (Quinolone) to the regime. Private sector keeps flexible timings and fosters customer loyalty. However, provider initiated follow up is in its rudimentary stage; though 83% participated in the study believed that more than 80% of their clients adheres to treatment for the entire course.

Private sector is not resistant to partner with RNTCP. More than 100 DMCs (20% of the entire lot) were established in private hospitals. A significant proportion of private practitioners refer their TB cases to the program. Practitioners of Ayurveda and Homoeopathy too were referring their presumptive TB cases to the program and facilitate DOTS. A few district TB program management units have established such successful referral linkages.

Some of the major private sector institutions have established wards for management of drug resistant TB and were often providing free of cost services to DRTB patients from low socioeconomic settings.

Issues with notification of TB cases by the private practitioners have been elaborated elsewhere. However, private sector engagement should address issues beyond notification, early diagnosis and free of cost TB services. It should also address confidentiality, treatment adherence, disease surveillance, LTBI detection and management and long term follow up. Concept of an End TB Consortium in private sector is discussed here.

End TB consortium bases upon the social responsibility of private sector in Ending TB blended well with profitable customer care services. All the mapped private TB providers including hospitals are the members of the consortium. All the members will be provided

free access to quality assured TB diagnostics including drug susceptibility testing under RNTCP, daily fixed dose ATT and second-line ATT, and ICT support for treatment adherence. In turn the members follow an 'after sale care model' where every TB case diagnosed will be notified, followed up regularly at periodic intervals and retrieved with or without the support of public sector if treatment is interrupted. The value addition of this consortium would be to establish network for follow up of patient anywhere in Kerala.

9. Addressing TB among Tribal population

TB among tribal require special attention. In Wayand district, approximately 60% of the notified cases are among tribal population that constitutes 17% of the district population. Disaggregated data was not routinely collected in other districts in the past. Revised recording and reporting system in the program provide opportunity to access disaggregated data on tribal.

TB among tribal may be managed as a special project. An ethnicity sensitive intervention is required for ending TB in tribal population. It is characterized by

- a. Limiting travel to access care
- b. Providing enablers to travel when necessary
- c. Mechanisms for sputum collection and transportation
- d. Administration of drugs at home
- e. Early identification of malnutrition and preventive and therapeutic nutrition
- f. Support for airborne infection control in households
- g. Early detection and management of comorbidities
- h. Social support systems provided through the focal points in the community

10. Addressing TB among migrant workers

There are two types of migrant workers in Kerala. (1) Traditional tea plantation workers hailing from border districts of Tamil Nadu, establishing themselves as permanent inhabitants of the state. (2) Recent migrant laborers from other states who keep on

changing their locations very frequently. Approximate number of such migrants is about 20,00,000. Being past residents or natives of high TB burden pockets of India, they may possess the risk of high prevalence of infection and disease. However, in Kerala, their access to health services may be limited because of their tight work schedule and time, language and cultural barriers. Though TB among these two groups may be referred as 'imported cases' for surveillance purpose; interventions are of high priority, firstly to ensure equitable delivery of TB care services to all Indian citizens and secondly to break the chain of transmission. However, it is important to understand that a comprehensive health care is the most important ensuring their social inclusion.

MIGRANT SCREENING: A migrant screening cell needs to be established at district level with task groups at gram panchayat level. Each migrant should be provided with health card and periodically screened by the task group for symptoms and referred for diagnosis in case of detection of symptoms. Migrants may be given high priority for testing for Rifampicin resistance with CBNAAT at baseline.

Additional strategy in low burden settings

Diagnosis and treatment of latent TB infection may help to reduce the reservoir of infection that eventually may drastically reduce incidence of TB disease. Is screening of "entire population" needed or feasible? Will treating LTBI provide long term protection against further infection afterwards? Answer to both, based on current knowledge is no.

However, will testing be feasible in settings that report very low case levels? Will treating LTBI in these settings provide opportunity to accelerate impact? LTBI detection and treatment in these settings may worth an attempt.

Accelerating impact for elimination needs to carry this intervention at the community level. Running a community based screening program requires set criteria for probability. Thus, all the vulnerable individuals in the low case settings, who are mapped and targeted for active surveillance may be tested for LTBI.

Screening for diagnosis and treatment of latent TB infection

Strategy of community based screening for diagnosis and treating LTBI would be the most resource intensive. Additionally, it throws queries of acceptance, civic rights, compliance and methodology.

DIAGNOSIS OF LTBI: It requires administration of an invasive test (Tuberculin Skin Test or Interferon Gamma Release Assay) for complete population. TST is cheaper, but less accurate. IGRA is very costly, though accurate. In a resource limited setting, expenditure should be justified with expected yield and decision to treat. Diagnosing LTBI, if not complemented with decision to treat, results in fear of ill health. Hence what would be recommended is testing close contacts. Screening general population may be considered at a later stage after marked reduction in incidence rates.

TREATMENT OF LTBI: All LTBI may not progress to active TB. Life time risk to develop active disease among HIV positive individuals is 60-80%. It justifies treatment of LTBI among them, which policy has been incorporated into RNTCP, as prophylactic isoniazid therapy for all HIV positive individuals irrespective of LTBI test positivity. Hence LTBI testing would not be recommended for HIV positives, as it does not influence decision to treat. However, similar risk is not accurately estimated among the infected that have diabetes, renal disease, malnourished etc. Since the objective is to prevent active breakdown and onward transmission, treating LTBI may be considered among these populations. Treatment will be 'offered' to these individuals they will be encouraged to opt for treatment and monitored for adherence and completion of a course of treatment. However, people who do not opt for treatment may be closely followed up for symptoms of active tuberculosis, at the onset of which a CBNAAT must be done on the appropriate sample and if found positive, or clinically diagnosed having active TB, must be treated with full course of anti TB treatment.

Treatment options recommended by WHO for LTBI include:

1. 6-month isoniazid or
2. 9-month isoniazid, or
3. 3-month regimen of weekly rifapentine plus isoniazid
4. 3–4 months isoniazid plus rifampicin
5. 3–4 months rifampicin alone

Among these options, 3-month regimen of weekly rifapentine plus isoniazid is operationally feasible in view of ease of administration, and monitoring for adherence.

Chapter 6

Generic Activity Plan for TB Elimination

Kerala TB Elimination Mission is a 4 year long intensive fight against TB. It comprises of four annual campaigns, directly combating TB at the community level. Based on the principles and strategies, taking into consideration the strengths of the state's Panchayati raj system, stewardship of the state and Local Self Governments to the Goal of TB Elimination and the strengths of state's health system, activities for implementation in the field are planned. TB Elimination in Kerala is envisaged as a mass movement against tuberculosis.

The most important preparatory steps include formation of TB elimination boards at state and district level for policies and TB elimination task forces at state, district, TB Unit, and local self-government levels.

Once the task forces are equipped by advocacy and trainings, field level activities may start.

1. Formation of State TB Elimination Board

1.1. Concept:

1.1.1. State TB Elimination Board is the apex body to take policy decisions on strategy, operations, resources and timelines for TB Elimination. It is the direct demonstration of state government's stewardship for TB elimination. It monitors implementation of TB elimination strategy at all levels and adopts appropriate corrective measures on recognition of shortfalls or gaps.

1.2. Constitution:

1.2.1. Chief Patron – Hon'ble Chief Minister

1.2.2. Patrons-

1.2.2.1. Hon'ble minister for Health and Social Welfare

1.2.2.2. Hon'ble Minister for Local Self Governments

1.2.2.3. Hon'ble Minister for Tribal Welfare

- 1.2.2.4. Hon'ble Minister for Education
- 1.2.2.5. Chief Secretary, Government of Kerala
- 1.2.3. Chairperson: Additional Chief Secretary/ Principal Secretary [H&FW]
- 1.2.4. Vice Chairpersons-
 - 1.2.4.1. Secretary [LSGD]
 - 1.2.4.2. State Mission Director [Arogyakeralam]
- 1.2.5. Member Secretary- Director, Health Services
- 1.2.6. Convener- State TB Officer
- 1.2.7. Members-
 - 1.2.7.1. Director, Public Instruction
 - 1.2.7.2. Regional Director CGHS
 - 1.2.7.3. Director of Medical Education
 - 1.2.7.4. Director, Indian Systems of Medicines
 - 1.2.7.5. Director, ESI
 - 1.2.7.6. Director, Railway Health Services
 - 1.2.7.7. State Official, Pollution Control
 - 1.2.7.8. State Official, Kerala TB Association
 - 1.2.7.9. Director, Homeopathy
 - 1.2.7.10. Additional DHS (TB)
 - 1.2.7.11. Additional DHS (PH)
 - 1.2.7.12. IMA RNTCP State Coordinator
 - 1.2.7.13. TB Specialist
 - 1.2.7.14. Public Health Expert
 - 1.2.7.15. Project Director, KSACS
 - 1.2.7.16. State Official, TB Association
 - 1.2.7.17. State Program Officer (Arogyakeralam)
 - 1.2.7.18. STDC Director
 - 1.2.7.19. Medical College STF Chair
 - 1.2.7.20. WHO Consultant [RNTCP]
 - 1.2.7.21. Chairperson (Nodal DRTB Centre Committee)
- 1.3. Terms of Reference:

1.3.1. The Board meets once in three months. It takes policy decisions on strategy, operations, resources, and timelines TB elimination. It takes decisions on appropriate local adaptation of national guidelines for Revised National Tuberculosis Control Program [RNTCP], and seeks resources beyond the budgeted resources in RNTCP PIP. The board also takes final decisions on procurement of goods and contractual services for TB elimination. It guides the government on recruitment of regular staff to the key positions of TB control and elimination.

1.4. Time-line

1.4.1. Formation of State TB Elimination Board is to be completed before 20th August 2017. Meeting should be conducted once in every 3 months. Notice for the meeting and agenda should be served one week before the meeting by the convener with approval of Chairperson.

1.5. Monitoring Indicator

Hon'ble Chief Minister and Chief Secretary to the government monitor proceedings of the board.

Indicators:

1.5.1. Is the meeting of the board conducted during current quarter year?

1.5.2. Were actions taken on all decisions of previous meetings?

2. Formation of State TB Elimination Task Force

2.1. Concept:

2.1.1. The state TB Elimination Task Force plays the lead role in executing various activities for TB Elimination. It plans, executes, supervises, monitors, reviews activities and reports to State TB Elimination Board

2.2. Constitution

2.2.1. Chief Executive: State TB Officer

2.2.2. Executive Members:

2.2.2.1. STDC Director

- 2.2.2.2. WHO Consultant, RNTCP
- 2.2.2.3. Consultant, STDC
- 2.2.2.4. Junior Consultant, STDC
- 2.2.2.5. IRL Microbiologist
- 2.2.2.6. EQA Microbiologist
- 2.2.2.7. MO State TB Cell
- 2.2.2.8. State Epidemiologist/APO
- 2.2.2.9. State program officer (NCD)
- 2.2.2.10. State Program Officer (School Health)
- 2.2.2.11. State HIV TB Coordinator
- 2.2.2.12. State DRTB Coordinator
- 2.2.2.13. State Accountant, RNTCP
- 2.2.2.14. State Mass Education Media Officer
- 2.2.2.15. State IEC Officer
- 2.2.2.16. State PPM Coordinator
- 2.2.2.17. JD (Basic Services), KSACS
- 2.2.2.18. JD (ART), KSACS
- 2.2.2.19. Deputy DHS (Mental Health)
- 2.2.2.20. District TB Officer, Thiruvananthapuram
- 2.2.2.21. Medical College STF State Official
- 2.2.2.22. IMA State Official

2.3. Terms of Reference

2.3.1. The TB Elimination Task Force plans, executes, supervises, monitors, reviews activities and reports to State TB Elimination Board. It prepares RNTCP state PIP and TB elimination activity plan every year. Each district is assigned to a subgroup of executive members for supervision and monitoring. The subgroup visits the assigned district every month and reports to the Task Force at the end of the month. The Chief Executive compiles these reports and submits to the State TB Elimination Board along with the report on state level activities.

2.4. Time-line

2.4.1. The Task Force is to be formed latest by 20th August 2017. Meeting should be conducted during second half of 1st month of every quarter. The executive

subgroup should submit supervisory report on or before 1st of every subsequent month. The Chief Executive Officer should submit a report to state TB Elimination Board on or before 10th of every month.

2.5. Monitoring Indicator

Hon'ble Minister for H&SW and Additional Chief Secretary monitor activities of state TB Elimination Task Force.

- 2.5.1. Is the meeting of the Task force conducted during current quarter year?
- 2.5.2. Are all districts visited by executive members during the previous month?
- 2.5.3. Were actions taken by all districts on recommendations of previous visits?

3. Sensitization of State Program Officers of Health Services

3.1. Concept

- 3.1.1. TB elimination demands close integration of most of the national programs. On one hand the integration enhances efficacy of activities and on the other, it optimises resources by pooling and piggybacking. All state program officers are to be sensitized on principles, strategies and activity plan.

3.2. Target audience

- 3.2.1. Regional Director [CGHS], State program officers of Directorate of Health Services, SPM and program managers [Arogyakeralam], E-health officials, KSACS officials, Mental Health Officer, Director Public Health Laboratory, SHSRC

3.3. Process

- 3.3.1. Half a day sensitization in Directorate of Health Services using power point presentations on TB epidemiology in the state, RNTCP updates, elimination strategy and activity plan and monitoring checklists.

3.4. Expected outcome

- 3.4.1. State Program Officers will review TB elimination activities in districts assigned to them.

3.5. Time line

- 3.5.1. Sensitization to be completed before 31st August 2017

3.6. Monitoring Indicator

3.6.1. Number of officers sensitized out of line listed total number of state program officers

4. Sensitization of District Medical Officers [Health] and District Program Managers (Arogyakeralam)

4.1. Concept

4.1.1. TB elimination demands strong leadership at the district level and close integration of various national programs at district level and Arogyakeralam. It promotes enhancing priority of TB elimination activities and fast tracking of financial support.

4.2. Target audience

4.2.1. All District Medical Officers [Health] and District Program Officers (Arogyakeralam)

4.3. Process

4.3.1. One day sensitization in Directorate of Health Services using power point presentations on TB epidemiology in the state, RNTCP updates elimination strategy and activity plan and monitoring checklists.

4.4. Expected outcome

4.4.1. Close review of TB elimination activities at district level. Complete integration of all national programs at district level.

4.5. Time line

4.5.1. Sensitization to be completed before 31st August 2017

4.6. Monitoring Indicator

4.6.1. Number of officers sensitized out of all DMO[H] and DPM.

5. Sensitization of District level key policy makers and administrators

5.1. Concept

5.1.1. Presidents of local self-governments are to be sensitized on TB elimination and empowered to lead the battle against TB in their respective jurisdiction. The theme of "My TB free panchayat/ Municipality/ Corporation" is to be disseminated effectively to promote ownership by the LSG heads. The District

Collectors are to be sensitized on the principles, strategies, activity plans and resources to provide required administrative approvals for appropriate interventions.

5.2. Target audience

- 5.2.1. Heads of LSGs, District Collectors, Principals of Medical Colleges, District Medical Officers [Health], District Program Officers [Arogyakeralam]

5.3. Process

- 5.3.1. Joint call for action by Hon'ble Ministers for Health & Family Welfare and Local Self Governments to the Presidents of District Panchayats, Block Panchayats and Gram Panchayats, Corporations Mayors and Municipal Chairpersons
- 5.3.2. DO letter to District Collectors from Additional Chief Secretary H&FW
- 5.3.3. DO letter to Director of Medical Education and Principals of Medical Colleges from Additional Chief Secretary H&FW
- 5.3.4. DO letter from Director of Health Services to District Medical Officers [Health]
- 5.3.5. DO letter from Mission Director Arogyakeralam to District Program Managers

5.4. Expected outcomes

- 5.4.1. Key policy makers and administrators at all levels are aware about the principles, strategies and activities for TB elimination mission.

5.5. Time line

- 5.5.1. Sensitizations should be complete before 20th August 2017

5.6. Monitoring Indicator

- 5.6.1. Are the listed activities complete according to schedule?

6. Media Advocacy at state level

6.1. Concept

- 6.1.1. Media advocacy is important for disseminating the objectives, interventions and activity schedule.

6.2. Process

- 6.2.1. Media Workshop on TB elimination campaign
- 6.2.2. Feature articles in frontline media.

6.3. Timeline

6.3.1. Media workshop should be conducted before 25th September 2017

7. Formation of District TB Elimination Board

7.1. Concept:

7.1.1. District TB Elimination Board is the district level apex body to take policy decisions on adaptation of TB elimination strategy, operations, resources and timelines. Since TB epidemiology, population characteristics and access to health care vary across districts, the district TB elimination board will need to customise state's strategies to suite local situations. The board also monitors implementation of TB elimination strategy at sub district levels and adopts appropriate corrective measures on recognition of shortfalls or gaps.

7.2. Constitution:

7.2.1. A District TB elimination Board is to be formed with the District panchayat President, Member of Parliament, members of Legislative Assembly and Mayor as the patrons

7.2.2. Chairperson: District Collector

7.2.3. Vice Chairpersons:

7.2.3.1. DMO [H]

7.2.3.2. DPM, Arogyakeralam

7.2.4. Convener: District TB Officer

7.2.5. Members:

7.2.5.1. Deputy Director, Panchayat

7.2.5.2. Deputy Director, Public Instruction

7.2.5.3. District Labour Officer

7.2.5.4. Principal, Medical College [all medical colleges in the district]

7.2.5.5. Secretary, District Panchayat

7.2.5.6. Secretary [Corporation]

7.2.5.7. DMO, Indian Systems of Medicines

7.2.5.8. DMO, Homeopathy

7.2.5.9. District Surveillance Officer

- 7.2.5.10. District Nodal Officer [HIV]
- 7.2.5.11. DTF Chairman, IMA
- 7.2.5.12. TB Specialist
- 7.2.5.13. Public health expert
- 7.2.5.14. WHO Consultant [RNTCP]

7.3. Terms of Reference:

- 7.3.1. The Board meets once in three months.
- 7.3.2. It takes decisions on appropriate local adaptation of national guidelines for Revised National Tuberculosis Control Program [RNTCP], and state TB elimination strategies and seeks resources beyond the budgeted resources in RNTCP PIP.
- 7.3.3. The board also takes final decisions on procurement of goods and contractual services for TB elimination. It guides the district administration and Arogyakeralam on recruitment of regular staff to the key positions of TB control and elimination.

7.4. Time-line:

- 7.4.1. Formation of District TB Elimination Board is to be completed before 31st August 2017. Meeting should be conducted once in every 3 months. Notice for the meeting and agenda should be served one week before the meeting by the convener with approval of Chairperson.

7.5. Monitoring Indicators:

- 7.5.1. District TB elimination board submits quarterly reports to State TB elimination board. Convener prepares the reports on actions taken on the minutes of previous meeting and submits to state with approval of the Chairperson. Indicators are, 1. is the meeting of the board conducted during current quarter year? 2. Were actions taken on all decisions of previous meetings?

8. Formation of District TB Elimination Task Force

8.1. Concept:

8.1.1. The district TB Elimination Task Force plans, executes, supervises, monitors, reviews activities and reports to State TB Elimination Task Force. It prepares RNTCP district PIP and TB elimination activity plan every year.

8.1.2. Constitution:

8.1.3. Chief Executive : District TB Officer

8.1.4. Executive Members:

- 8.1.4.1. District Program Officer [NCD]
- 8.1.4.2. TB Specialist of District TB Centre
- 8.1.4.3. Technical Assistant, DMO
- 8.1.4.4. DPHN
- 8.1.4.5. District Lab Technician
- 8.1.4.6. District Mass Education Media Officer
- 8.1.4.7. District Nodal Officer [TB], IMA
- 8.1.4.8. One member each from all Medical College Core Committees
- 8.1.4.9. Representatives from Indian Systems of Medicine
- 8.1.4.10. Representative from Homeopathy
- 8.1.4.11. District Coordinator, Project Axshya
- 8.1.4.12. All staff of District TB Centre
- 8.1.4.13. MOTCs of all TB Units
- 8.1.4.14. STSs and STLs of all TB Units

8.2. Terms of Reference:

8.2.1. The TB Elimination Task Force plans, executes, supervises, monitors, reviews activities and reports to District TB Elimination Board and State TB Elimination Task Force.

8.2.2. It prepares RNTCP district PIP and TB elimination district activity plan every year. Each health block is assigned to a subgroup of executive members for supervision and monitoring.

8.2.3. The subgroup visits the assigned health block including the peripheral health institutions, microscopy centres, target population, patient houses and LSG TB elimination task force officials every month and reports to the District Task Force at the end of the month.

9.3. Terms of reference

- 9.3.1. The TU TB elimination task force provides support for PRI level and ward/division level task forces for planning, executing, monitoring and reviewing their TB elimination activities.
- 9.3.2. It provides logistics support to the PRI level and ward/division level task forces including brochures, referral slips, questionnaires, data sheets, microplanning formats and sputum containers
- 9.3.3. The TU task force reviews the microplans of PRI task forces and suggest optimal linkages with DMCs, x-ray facilities and CBNAAT sites
- 9.3.4. The TU task force helps DTO in health system strengthening by identifying potential DMCs, private x-ray units and specimen transportation agencies
- 9.3.5. With the Block medical Officers and Health supervisors, MOTC, STS and STLS are facilitators for PHI level training and campaign volunteer training
- 9.3.6. The TU task force also compiles e-copies of vulnerability data from all panchayats in the TU
- 9.3.7. The TU task force coordinates with the external supervision team formed by STO for weekly external supervision.

9.4. Time line

- 9.4.1. 31st August 2017

9.5. Expected outcome

- 9.5.1. All PRI level task forces are adequately guided for TB elimination activities

9.6. Monitoring indicators

- 9.6.1. Number (%) of TB Units formed task forces

10. Formation of Block level TB elimination Task Force

10.1. Concept:

- 10.1.1. The Block TB Elimination Task Force plans, executes, supervises, monitors, reviews activities and reports to District TB Elimination Task Force. It prepares TB elimination activity plan for the block in consultation with the gram panchayat TB elimination task forces.

10.1.2. Constitution:

- 10.1.2.1. Patrons: president and Members of Block Panchayat

10.1.2.2. Chief Executive : Block PHC Medical Officer

10.1.2.3. Secretary: Health Supervisor of the Block PHC/CHC

10.1.3. Executive Members:

10.1.3.1. All medical Officers of the Block PHC

10.1.3.2. Lady Health Supervisor

10.1.3.3. Health Inspector of block PHC

10.1.3.4. Lady Health Inspector of Block PHC

10.1.3.5. STS of corresponding TB unit

10.1.3.6. NGO members

10.1.3.7. Members from community

10.2. Terms of Reference:

10.2.1. The TB Elimination Task Force plans, executes, monitors, reviews activities and reports to District TB Elimination Task Force.

10.2.2. It prepares block TB elimination activity plan every year. Each gram panchayat is assigned to a subgroup of executive members for supervision and monitoring.

10.2.3. The subgroup visits the assigned panchayat including the peripheral health institutions, microscopy centres, target population, patient houses and gram panchayat TB elimination task force officials every month and reports to the District Task Force at the end of the month.

10.2.4. The Chief Executive compiles these reports and submits to the district TB Elimination Task Force along with the report on block level activities.

10.3. Time-line:

10.3.1. Formation of block TB elimination task force is to be completed before 20th September 2017. Meeting should be conducted once in every 3 months. Notice for the meeting and agenda should be served one week before the meeting by the convener with approval of Chairperson.

10.4. Monitoring Indicators:

10.4.1. Is the meeting of the task force conducted during current quarter year?

10.4.2. Were actions taken on all decisions of previous meetings?

11. Formation of Private Hospitals Consortium for TB elimination

11.1. Concept:

11.1.1. Private Hospitals Consortium bases upon the social responsibility of private sector in Eliminating TB blended well with profitable customer care services.

11.2. Constitution:

11.2.1. The consortium may be formed at the city level. All private hospitals are the members of the consortium. Each institution is represented by the administrator/ senior member of administration. Chairperson, Vice Chairperson, Secretary and Joint Secretary are nominated from the members. Senior leader of city branch IMA may be the coordinator. Member of faculty of Community Medicine Department of local Medical College may serve as the academic and public health coordinator. District TB Officer/MOTC is the Government Representative to the consortium.

11.3. Terms of Reference:

11.3.1. All member hospitals will ensure that doctors dealing with TB in their premises will undergo training in Standards of TB Care in India

11.3.2. All member hospitals will use free access to quality assured TB diagnostics including drug susceptibility testing under RNTCP, daily fixed dose ATT and second-line ATT, and ICT support for treatment adherence.

11.3.3. All member hospitals will notify all cases of TB diagnosed at the institution through NIKSHAY web portal.

11.3.4. For patients put on private anti TB regimen, member hospitals will follow an 'after sale care model' where every TB case diagnosed will be followed up regularly at periodic intervals, and retrieved back to the hospital with or without the support of public sector if treatment is interrupted.

11.4. Time-line: Consortiums are to be formed before 30th September 2017.

Meetings are conducted in the premises of a member institution by rotation every quarter year.

11.5. Monitoring Indicators:

11.5.1. Are all city consortiums formed as planned?

11.5.2. Were the quarterly meetings of all city consortiums conducted in the previous quarter?

- 11.5.3. Are all TB practitioners trained on Standards for TB Care in India in all member institutions within 6 months of the formation of the consortium?
- 11.5.4. Is TB notification number available for all TB patients diagnosed/ treated in the member institutions?
- 11.5.5. Are all TB cases on treatment actively followed up in after sale care model?

12. Training of RNTCP Key staff

- 12.1. Concept:
- 12.1.1. District TB Centre staff, MOTCs, Treatment Organizers, STSs, STLSs, TBHVs, and Laboratory Technicians are to be trained on the principles, strategies and activity plan for TB elimination.
- 12.2. Process:
- 12.2.1. One day training session with TB elimination strategy document and activity plan.
- 12.3. Expected outcome
- 12.3.1. At the end of the session, the key staff should be able to provide technical and management leadership for TB elimination in their respective areas.
- 12.4. Time line:
- 12.4.1. All key staff must be trained before 30th August 2017
- 12.5. Monitoring Indicator:
- 12.5.1. Are all key staff trained in principles, strategies and activity plan for TB elimination?

13. Sensitization of Major PRI Heads

- 13.1. Concept:
- 13.1.1. Local self-governments are empowered for decentralized planning. They are to be further sensitized to take decisions for locally appropriate interventions for TB elimination and own the responsibility for TB elimination in their respective jurisdictions.
- 13.2. Target audience:

13.2.1. District Panchayat President, Mayor of Corporation, Chairpersons of Municipalities.

13.3. Process:

13.3.1. One-to-one sensitization. District Panchayat President and Mayor are to be sensitized by DTO and Municipal Chairpersons are to be sensitized by MOTC. Call for action by Hon'ble Ministers of H&SW and LSG must reach the PRI Officials before sensitization. Population based analysis of TB data of their jurisdiction showing case finding effort and case notification are to be used as the tool to generate felt need. They should be briefed on locally appropriate/customized TB elimination activity plan.

13.4. Expected outcome:

13.4.1. Call for formation of TB elimination task force of their respective jurisdictions.

13.5. Time line:

13.5.1. Sensitization of major PRI officials to be complete by 30th August 2017

13.6. Monitoring Indicator:

13.6.1. Are all major PRI heads in the district sensitized on TB elimination?

13.6.2. Are TB elimination Task Forces formed in all major PRIs of the district?

14. Sensitization of District Program Officers [Health]

14.1. Concept:

14.1.1. All public health programs have cross cutting areas in principles, strategies and operations. Each program will benefit by sharing of expertise, resources and supervision and monitoring. All district program officers are to be sensitized on principles, strategies and activities of TB elimination.

14.2. Target audience:

14.2.1. All district program officers in District Medical Office.

14.3. Process:

14.3.1. Half-a-day sensitization session using presentations and interaction on TB elimination.

14.4. Expected outcome:

14.4.1. At the end of the session, district program officers should be able to supervise and monitor TB elimination activities in their assigned population.

14.5. Time line:

14.5.1. All district program officers are to be sensitized before 31st August 2017

14.6. Monitoring Indicator:

14.6.1. Are all district program officers sensitized?

15. Sensitization of District Officers, Other systems of Medicines

15.1. Concept:

15.1.1. District Officers of other systems of medicine (AYUSH) are to be sensitised on principles, strategies and activities for TB elimination. This will help in disseminating the information to the medical officers and staff of the respective systems.

15.2. Target audience:

15.2.1. District officers of other systems of medicine

15.3. Process:

15.3.1. District TB officer visits the district officers of other systems of medicines and sensitize them on-to-one

15.4. Expected outcome:

15.4.1. All district officers are to be sensitized on TB elimination

15.5. Time line:

15.5.1. One-to-one sensitization of to be completed by 31st December 2017

15.6. Monitoring Indicator

15.6.1. Number of districts that have completed sensitization of all district officers of other systems of medicine

16. Sensitization of PHI medical Officers

16.1. Concept:

16.1.1. TB elimination activities are decentralized to population units. Gram Panchayats are the most peripheral population units empowered to take

decisions. Medical Officer of Peripheral Health Institution (PHC/CHC) lead the public-health executive and are responsible for implementation of public health programs in the panchayat. All medical officers, especially those who hold charge of the institutions must be trained on the principles, strategies and activities of TB elimination.

16.2. Target audience:

16.2.1. All the medical officers of peripheral health institutions including specialists of secondary/tertiary care institutions and emergency/casualty service medical officers.

16.3. Process:

16.3.1. Half-a-day sensitization session in batches of 50 using presentations and interaction on TB elimination. Medical Officers of the PHC/CHC are to be sensitized at district level. Doctors of Tertiary/secondary institutions including medical colleges are to be sensitized at the institution level. Medical Officers of the DMCs should be additionally sensitized on screening and approval of presumptive TB cases referred by the field campaign team.

16.4. Expected outcome:

16.4.1. At the end of the session all medical officers of PHIs should be able to advocate with respective PRI officials to generate felt need for TB elimination in the respective panchayats. Specialists should be able to conduct active case detection in hospital settings, and manage TB with co-morbidities.

16.5. Time line:

16.5.1. Medical Officers are to be sensitized before 20th of September 2017

16.6. Monitoring Indicator:

16.6.1. Proportion of medical officers sensitized on TB elimination. Expected to achieve 100% by September 2017.

17. Sensitization of Medical Officers, Other systems of Medicine

17.1. Concept

- 17.1.1. Medical Officers in public and private sectors of other systems of medicines have to play a vital role in early diagnosis, support for treatment adherence and prevention of airborne infection.
- 17.2. Target audience
 - 17.2.1. All medical officers and practitioners in other systems of medicine
- 17.3. Process
 - 17.3.1. Activity may be conducted through Project Axshya
 - 17.3.2. In district review meetings of other systems of medicines, medical officers may be sensitized in a one hour session
 - 17.3.3. In meetings of professional associations of practitioners in others systems of medicine, members may be sensitized in a one hour session
- 17.4. Expected outcome
 - 17.4.1. Medical officers are capable for early referral of presumptive TB cases for microbiological confirmation
 - 17.4.2. Practitioners' premises to act as treatment support centres on a case to case basis
- 17.5. Time line
 - 17.5.1. Sensitization to be completed before 31st December 2017
- 17.6. Monitoring Indicator
 - 17.6.1. Proportion of other system medical officers sensitized in the district

18. Facility Airborne Risk Assessment and compliance of Hospitals under Health Services

- 18.1. Concept:
 - 18.1.1. Hospitals are potential sources of cross infection. All hospitals under health services are to be assessed for compliance with airborne infection control guidelines with a checklist.
- 18.2. Process:
 - 18.2.1. Ensure functional hospital infection control committees in all hospitals.
 - 18.2.2. A team of experts with at least two members constituted by DMO[H] to visit each institution with the AIC checklist and assess risk of infection in the most vulnerable areas [ICU/CCU/Laboratory/IP wards/ OPD] and submit

recommendations to hospital management [Superintendent/HMC/LSG/State government]

18.3. Expected outcome:

18.3.1. Administrative / Environmental corrective measures in all institutions and provisions for personal protection in high risk settings [Eg. ICU/CCU/MDRTB Ward]

18.4. Time line:

18.4.1. Assessment activities to be completed in all districts by 31st December 2017

18.4.2. Corrective measures to be taken by 24th March 2018

18.5. Monitoring Indicator

18.5.1. Proportion of institutions undergone assessment

18.5.2. Proportion of institutions compliant with AIC guidelines

18.5.3. Proportion of non-compliant institutions made compliant

19. Facility Airborne Risk Assessment and compliance of Medical College Hospitals

19.1. Concept:

19.1.1. Medical College hospitals are expected to set standards for AIC compliance. All medical college hospitals are to be assessed for compliance with airborne infection control guidelines with a checklist.

19.2. Process:

19.2.1. Sensitisation of members of hospital infection control committee by RNTCP core committee. A team of experts with at least two members constituted by STF Chairperson to visit each institution including private medical colleges with the AIC checklist and assess risk of infection in the most vulnerable areas [ICU/CCU/Laboratory/IP wards/ OPD] and submit recommendations to hospital management

19.3. Expected outcome:

19.3.1. Administrative / Environmental corrective measures in all institutions and provisions for personal protection in high risk settings [Eg. ICU/CCU/MDRTB Ward]

19.4. Time line:

19.4.1. Assessment activities to be completed in all medical colleges by 31st October 2017

19.4.2. Corrective measures to be taken by 31st December 2017

19.5. Monitoring Indicator

19.5.1. Proportion of institutions undergone assessment

19.5.2. Proportion of institutions compliant with AIC guidelines

19.5.3. Proportion of non-compliant institutions made compliant

20. Sensitization of supervisory health staff

20.1. Concept:

20.1.1. Supervisory health staffs play an important role in planning, training, monitoring and supervision of TB elimination activities and linkages with local self- governments. Their sensitization is crucial in successful implementation of TB elimination activities.

20.2. Target audience:

20.2.1. Health Supervisors and Lady Health Supervisors

20.3. Process

20.3.1. One day sensitization at district level on principles, strategy, activities and indicators of TB elimination, conducted by DTO

20.4. Expected outcome

20.4.1. All supervisory staff to understand their role as leaders and trainers in TB elimination

20.5. Time line

20.5.1. All districts to complete sensitization before 31st August 2017

20.6. Monitoring Indicator

20.6.1. Proportion of supervisory staff sensitized on TB elimination

21. Sensitization of PHI staff

21.1. Concept:

- 21.1.1. Staffs of Peripheral health institutions play the key role in implementation of all TB elimination activities in their respective panchayats under the leadership of the PRI Officials, Medical Officers and Health Inspectors/Lady Health Inspectors. Their sensitization is crucial in successful implementation of TB elimination activities.
- 21.2. Target audience:
- 21.2.1. Health Inspectors, Lady Health Inspectors, Jr. Health Inspectors, Jr. PHNs, Laboratory technicians, Pharmacists, Staff Nurses
- 21.3. Process:
- 21.3.1. Block Medical Officers to conduct a half-day sensitization with the help of MOTC, STS, STLS and Health/Lady Health Supervisors for the staff, to adopt the TB Elimination strategy to the local setting. In the Major hospitals, Superintendent of the institutions conducts the sensitization with the help of MOTC/STS/STLS
- 21.4. Expected outcome
- 21.4.1. Medical Officers, Health Inspectors and Lady Health Inspectors become capable to advocate with PRI officials on TB elimination with the help of prepared thematic maps and spot map and customize the interventions suitable to the local settings.
- 21.4.2. All other PHI staffs become capable to lead the vulnerability survey, TB symptom surveillance, active case finding, TB notification, treatment support group strategy including travel, nutrition, counselling, deaddiction, and retrieval of interrupters; detection and management of comorbidities, detection and management of adverse drug reactions, airborne infection control, special group intervention strategies, diagnosis and management of latent TB infection in their respective jurisdictions. Additionally, staff of DMCs should be capable of fast tracking presumptive TB cases referred by the campaign team in the field.
- 21.5. Time line
- 21.5.1. All districts to complete sensitization before 20th September 2017
- 21.6. Monitoring Indicator
- 21.6.1. Proportion of Block PHIs completed sensitization of all staff.

22. Formation of LSG (Gram Panchayat/ Municipality / Corporation) level TB Elimination

Task Force

22.1. Concept

22.1.1. This is the most important activity in TB elimination. Theme of TB elimination is “My TB free panchayat/municipality/corporation [name]”. Each LSG should be able to apply the principles, strategies and interventions of TB elimination appropriately adapted to the local setting. The TB elimination task force is a group of responsible citizens and public servants organized under the leadership of the LSG specifically to achieve the goal of TB elimination in the population stewarded by that LSG.

22.2. Constitution of LSG TB elimination task force:

22.2.1. Chairperson: Head of LSG

22.2.2. Vice Chair: Health standing committee Chairperson

22.2.3. Chief Executive Officer: DTO in Corporations, MOTC in Municipalities, MO PHI in Gram panchayat

22.2.4. Secretary: Health Supervisor/ Inspector

22.2.5. Members:

22.2.5.1. All members of LSG

22.2.5.2. Secretary of the LSG

22.2.5.3. Corporation Health Officer

22.2.5.4. ADS/CDS Chair

22.2.5.5. CDPO

22.2.5.6. NHM PRO

22.2.5.7. Lady Health Supervisor/Inspector

22.2.5.8. Jr. His/ Jr.PHNs

22.2.5.9. Janamythri police

22.2.5.10. Civil society representatives

22.2.5.11. STS and STLS corporations and municipalites.

22.2.5.12. Other appropriate members nominated by head of LSG

22.3. Terms of Reference:

22.3.1. The LSG TB Elimination Task Force plans local activities, implements, mobilizes resources, monitor self, adopts mid-course correction and reports to the district TB elimination task force.

22.3.2. Each ward/ division is assigned to a subgroup of members for supervision and monitoring.

22.3.3. If the PRI Task force decides, a ward/division level task force also can be formed under the leadership of the ward member/ division councillor, which will be responsible to undertake the activity planned in the PRI task force.

22.3.4. The Secretary keeps documents of all activities from the formation of the task force, followed by minutes of each meeting, plan of activities, mapping, surveys, active case findings, treatment support group activities, interventions for special groups, supervisory visits, in chronological order.

22.4. Expected outcome

22.4.1. TB elimination task forces are formed in all LSGs

22.5. Time line:

22.5.1. TB elimination task forces are to be formed by all LSGs by 20th September 2017

22.6. Monitoring Indicator:

22.6.1. Have all LSGs in the district formed task forces?

23. Sensitization of Medical College State Task Force Members

23.1. Concept:

23.1.1. Medical colleges play important role in TB elimination. They educate medical students and post graduates on TB elimination. They conduct research for evidences to support policy on TB elimination. Their clinical departments serve as centres for diagnosis and management of TB as well as centres for referral of cases require expert opinion and management. They can support advocacy and field activities for TB elimination.

23.2. Target audience:

23.2.1. Members of State Task Force

23.3. Process:

23.3.1. During State Task Force meeting, members have to be sensitized on principles, strategies and activities for TB elimination.

23.4. Expected outcome:

23.4.1. Sensitized faculty representatives, cascade the process in medical college core committees.

23.5. Time line:

23.5.1. Sensitization to be done 31st August 2017

23.6. Monitoring Indicator:

23.6.1. Was the sensitization conducted?

24. Sensitization of Medical College Core Committee Members and faculty

24.1. Concept:

24.1.1. Sensitized STF members and DTO conduct sensitization of members of medical college core committee members and other members of faculty. The activity may be combined with sensitization on Technical and Operational Guidelines for RNTCP.

24.2. Target audience:

24.2.1. All faculty members in the medical college

24.3. Process:

24.3.1. During the core committee meetings a sensitization session is conducted by the STF member and DTO

24.4. Expected outcome:

24.4.1. All members are aware about principles, strategies and activities for TB elimination.

24.4.2. Each medical college adopts a sub-district population for TB elimination interventions.

24.5. Time line:

24.5.1. All medical colleges to conduct sensitization sessions before 15th October 2017

24.6. Monitoring Indicator:

24.6.1. Proportion of medical colleges conducted sensitization

24.6.2. Proportion of medical colleges adopted a sub population

25. Sensitization of IMA State Officials and DTF Chairpersons

25.1. Concept:

25.1.1. Indian Medical Association is a very active stakeholder in TB elimination and an active partner of RNTCP. IMA stewards TB elimination by advocating with governments, private health sector and civil society and interfacing between government and private practitioners. Sensitization leads to enhanced visible and direct involvement of IMA in TB elimination. Eg. IMA RNTCP projects for providing laboratory technicians to CBNAAT sites, sputum collection and transportation from private hospitals for CBNAAT, project for 100% notification.

25.2. Target audience:

25.2.1. State office bearers, state working committee members and district task force chairpersons.

25.3. Process:

25.3.1. In IMA state working committee meeting, a sensitization session is to be conducted on TB elimination

25.4. Expected outcome:

25.4.1. All state office bearers of IMA are sensitized

25.4.2. Cascading of sensitization to branch levels.

25.5. Time line:

25.5.1. State level sensitization before 31st October 2017

25.6. Monitoring Indicator:

25.6.1. Proportion of IMA state officials and DTF chairpersons sensitized on TB elimination

26. Sensitization of IMA Branch Officials

26.1. Concept:

26.1.1. Sensitization at state level is to be cascaded to district and branch levels. In each district, a sensitization session is to be conducted for the district task force

members. DTO, DTF Chairperson and IMA – RNTCP district coordinators are the facilitators for the sessions.

26.2. Target audience:

26.2.1. IMA branch office bearers

26.3. Process:

26.3.1. Sensitization session for half a day may be conducted as an exclusive session or along with IMA DTF business meeting, as decided by the DTF.

26.4. Expected outcome:

26.4.1. All members of DTF are sensitized on TB elimination

26.5. Time line:

26.5.1. All districts to complete sensitization before 15th November 2017

26.6. Monitoring Indicator:

26.6.1. Proportion of IMA branch officials (President, Secretary, and Treasurer) sensitized on TB elimination

27. Sensitization of IMA members

27.1. Concept:

27.1.1. Sensitizations are to be cascaded to the most peripheral levels to make all members aware about their role in TB elimination.

27.2. Target audience:

27.2.1. All members of IMA

27.3. Process:

27.3.1. Sensitization session for half a day may be conducted as an exclusive session or along with IMA branch business meeting, as decided by the branch. MOTC and district IMA-RNTCP coordinator to facilitate sensitization

27.4. Expected outcome:

27.4.1. All branch members are sensitized on their role in elimination

27.4.2. Notification of all TB cases started on non-RNTCP regimen

27.4.3. Steady increase in use of daily FDC in private sector

27.4.4. After –sale- care model for all TB patients started on treatment by private TB practitioners.

27.5. Time line:

27.5.1. Sensitization in all branches to be completed by 31st December 2017

27.6. Monitoring Indicator

27.6.1. Proportion of branch members sensitized

28. Mapping of Panchayat wise TB Cases for past year

28.1. Concept:

28.2. Activities for TB eliminations are to be planned, implemented, supervised and monitored at the most peripheral panchayati raj institution level. To prioritize TB elimination activities, it is important to have panchayat/municipality/corporation-wise mapping of TB cases. This map is thematic, where cases notified/1000 population gives a comparison at district/state level.

28.3. Process:

28.4. From the TB registers/Nikshay, each case registered/ notified is assigned to the respective panchayat according to the residential address. Ideally, non-RNTCP TB cases notified from private sector are also to be mapped. Finally, TB notification of each panchayat/municipality/corporation per 1000 population is calculated.

28.5. Expected outcome:

28.6. Preparation of a colour coded thematic map (Chloropleth) where panchayats/municipalities/corporations with cases >2/1000 are coloured dark red, 1.5 to 1.9 are coloured light red, 1-1.4 are coloured yellow , 0.5 to 0.9 are coloured green and <0.5 are coloured light blue. This map is to be used as a tool for sensitization of LSG leaders.

28.7. Time line:

28.8. Mapping to be completed before 20th August 2017 in All districts

28.9. Monitoring Indicator

28.9.1. Has all districts completed PHI wise case mapping?

29. Mapping of panchayat wise presumptive TB cases for past year

29.1. Concept

- 29.2. To prioritize TB elimination activities, it is important to have panchayat/municipality/corporation-wise mapping of presumptive TB cases. It may give an indirect understanding on the efforts for TB detection in each LSG population. This map is thematic, where presumptive TB cases tested/1000 population gives a comparison at district/state level.
- 29.3. Process:
- 29.4. From RNTCP laboratory registers, each presumptive TB case tested is assigned to the respective panchayat according to the residential address. For this, a worksheet will be distributed to the districts in which each case from the lab register can be entered with additional information on the panchayat (LSG) of residence. Finally, TB notification of each panchayat/municipality/corporation per 1000 population is calculated.
- 29.5. Expected outcome
- 29.6. Preparation of a colour coded thematic map (Chloropleth) where panchayats/municipalities/corporations tested presumptive TB cases >20/1000 are coloured dark red, 15 to 19 are coloured light red, 10-14 are coloured yellow, 5 to 9 are coloured green and <5 are coloured light blue. This map is to be used as a tool for sensitization of LSG leaders.
- 29.7. Time line:
- 29.8. Mapping to be completed before 25th August 2017 in All districts
- 29.9. Monitoring Indicator
- 29.9.1. Has all districts completed PHI wise case mapping?

30. Spot mapping of TB cases in the panchayat area for past 5 years

- 30.1. Concept:
- 30.1.1. This is to understand the distribution of TB cases within the panchayat population. Unlike the two previous maps which are choropleths, this is a spot map, where each TB case registered/notified in the past five years are represented by a spot on the map of the LSG area. This will help to understand if there is a clustering of cases.
- 30.2. Process:

30.2.1. Treatment cards of cases reported in the PHC and Nikshay notification of TB cases on private notification are used as the source data. Health Inspector with the help of Jr.Health Inspectors and Jr.PHNs identifies the area of residence and spots the case. In urban areas where Jr.Health Inspectors and Jr.PHNs are available, the activity is to be carried out by STS and TB Health Visitors.

30.3. Expected outcome:

30.3.1. A spot map with all cases in the LSG area for past 5 years. The map is to be used for advocacy with LSG leaders at the time of formation of LSG level TB elimination task force.

30.4. Time line:

30.4.1. Spot maps are to be prepared in all PHIs before 15th September 2017.

30.5. Monitoring Indicator:

30.5.1. Proportion of LSGs that have completed spot mapping. Expected 100% by 15th August.

31. Health System Strengthening

31.1. Concept:

31.1.1. Before the active case search and case holding starts, the health system need to be fully prepared to handle the additional responsibilities and workload. Most importantly, designated microscopy centres, sputum collection and transportation systems, x-ray facilities, CBNAAT machines, treatment support groups, social and nutritional support systems, facilities for detection and management of comorbidities, universal DST and in-patient facilities for seriously ill drug sensitive and drug resistant TB patients have to be ensured in the districts.

31.2. Process:

31.2.1. Check for adequacy of DMCs. It is estimated that approximately 800,000 (8 lakh) presumptive TB cases will have to undergo sputum smear microscopy during the campaign in the entire state. It means 16,00,000 microscopy tests. If each DMC tests 20 diagnostic smears (10 patients) per day, 530 to 540 DMCs are required. Currently 500 DMCs including private are functional. 30-40

additional DMCs are to be developed. If there are health facilities in the public sector with laboratory facilities (Eg. Urban Primary Health Centres), they may be designated as microscopy centres. Consideration will be to improve access in place and time for presumptive TB cases and optimise workload of all DMCs when active referral by survey teams start.

- 31.2.2. When micro plan for campaign is prepared, each field unit (a campaign block with 200 households as explained later) is to be linked with a DMC based on patient access.
- 31.2.3. Start sputum collection and transportation facilities as per RNTCP guidelines in difficult to access areas.
- 31.2.4. Ensure availability of at least one trained medical officer and lab technician in all DMCs. All medical officers in the DMCs have to be well prepared to screen the presumptive TB cases referred by the field survey team and assess the need for test. DMC staff should be sensitized to fast track the patients to prevent possible airborne infection and complete the diagnostic process on the same day.
- 31.2.5. It is estimated that 7,84,000 patients have to undergo chest Xray during the campaign. If 10 x-rays are taken per day per machine, approximately 160 machines are required. If x-ray units are not available in public sector, the task needs to be outsourced to private x-ray centres. Each survey unit is to be linked to an x-ray machine. Approximately 40% of the total requirement (3,39,000) may have to be outsourced to private. This outsourcing may be done with state initiated flexi fund other than RNTCP budget. MoU may be entered with appropriate private x-ray units.
- 31.2.6. Additional Lab technicians in all CBNAAT site. These technicians may be placed through RNTCP partnership guidelines
- 31.2.7. Approximately 82000 CBNAAT tests have to be performed during the campaign. A machine should run for at least 5 cycles per day. Apart from RNTCP CBNAATS, private sites have to be used. Approximately 25% (20,000) tests may have to be outsourced. For private outsourcing, MoU may be entered with the sites. Cartridges may be supplied by program and service charge of Rs. 100 may be given per test.

31.2.8. All LED FM microscopes are to be made functional and lab consumables including alcohol may be ensured.

31.2.9. A box file has to be placed for each PRI TB elimination task force in the corresponding PHI. Starting with the minutes of formation meeting, documents all activities including trainings, filled survey sheets, treatment support group etc. have to be chronologically filed by the Health Inspector of the PHI.

31.3. Timeline

31.3.1. Additional DMCs, MoUs for X-ray outsourcing, CBNAAT Lab technicians by IMA LT Scheme, Box files for LSG TB elimination task force are to be in place before 30th September 2017.

32. Microplanning for TB elimination campaign

32.1. Concept:

32.1.1.1. Microplanning determines the success of the campaign. Objective is to personally meet 3,40,00,000 individuals in 78,00,000 households in the state covering small campaign units on Sundays over a period of 6 months, to (1) generate TB awareness in every member, (2) to assess the TB vulnerability of every member and to generate a vulnerability data base for TB surveillance and (3) to actively search for TB cases .

32.2. Process:

32.2.1. Assign an alphanumeric to each PRI in the district. Eg.Edavanakad Panchayat in Ernakulam district may be given number as KEENKP03 where KE stands for Kerala, ENK for Ernakulam, P for gram panchayat, 03 for Edavanakad. Similarly, Irinjalakuda Municipality may have KETHRM01 where KE is for Kerala, THR is for Thrissur, M for Municipality and 01 for Irinjalakuda. KEKLMC01 is for Kollam Corporation where C stands for corporation.

32.2.2. Serially number panchayat ward/ corporation division add W and two digits to denote the ward

32.2.3. Divide the population of the PRI into campaign units of 200 households.

Serially number each campaign unit. For this U and two digits may be added to

the PRI identification alphanumerical. Eg.KEENKP03W08U01 is for the first campaign unit of ward 8 of Edavanakad panchayat.

- 32.2.4. Serially number the households in the ward from 1 to 200. Add H and three digits to denote the house. Eg.KETHRM01W12U04H098 is the alphanumerical for 98th house of 4th campaign unit of 12th ward of Irinjalakuda Municipality in Thrissur district. If there are less than 150 houses remaining after assigning 200household units, they may be equally divided among the other units
- 32.2.5. Assign campaign team to each campaign unit. Two volunteers are assigned to each unit. Along with the unit's alphanumerical, V1 denotes the first volunteer and V2 denotes the second volunteer.
- 32.2.6. Each campaign unit is to be linked to a DMC (This is the most difficult process). For this, during the planning process in the PHI, three DMCs are to be selected in the order of ease of access. Once the distribution is complete, the STLSs of the district have to verify entire plan and suggest final linkage taking into account the expected workload of each DMC during the campaign.
- 32.2.7. Each survey team is to be linked to a Jr.HI and Jr.PHN. for support and supervision. Half of the teams will be supported by a Jr.HI and the other half by a Jr.PHN. Thus, in a subcentre area with 5000 population in 1000 households, five teams will be under the support of a supervisor.
- 32.2.8. Each team is to be given 210 TB pamphlets, 210 survey-formats (one per household and 5% extra), 30 referral slips, 4 sputum containers (replenished) and 4 copies of survey questionnaire.
- 32.2.9. Households 01 to 10 may be visited on the first Sunday and households 191 to 200 on 20th Sunday.
- 32.2.10. Volunteers may introduce themselves and brief about the visit. A pamphlet containing basic information about TB, its spread, prevention, symptoms, tests and treatment is to be given to the family and slightly briefed too. The survey format may be filled using one row for each member. Questions may be serially asked referring a questionnaire.
- 32.2.11. As far as possible, information are to be directly collected from each member except children.

- 32.2.12. Any member found to have symptom suggestive of TB (quality of training to team members is important here) is referred to the linked DMC to reach before 9.00am. Members of the first two houses (of 10 houses) should be given appointment on Monday and the last two households on Friday.
- 32.2.13. In the DMC, they are expected to be screened by a medical officer of the DMC to assess the need for sputum smear microscopy. They should be fast tracked to ensure prevention of airborne infection and completion of diagnosis on the same day.
- 32.2.14. A proportion of presumptive TB cases (bed ridden, physically challenged..) may not be able to travel to DMCs. Other members of the family or a community volunteer should be encouraged to transport sputum samples to the DMC. These samples can be directly subjected for microscopy.
- 32.2.15. On an average, 10 houses can be covered in 2 Hrs.
- 32.2.16. On Monday, the teams have to hand over the filled survey sheets to the team supervisor (Jr.HI/Jr.PHN)
- 32.2.17. Jr.HI/Jr.PHN has to verify formats for completion and clarify queries. All collected formats have to be handed over to the HI/LHI of the PHI for verification and entry into xls sheets.
- 32.2.18. A month's compiled data may be mailed to DTO with copy to MOTC after verification and approval by the MO of the PHI.
- 32.2.19. STS and STLS have to compile the data pertaining to their Tus.
- 32.3. Expected outcomes:
- 32.3.1. Not less than 18% of the households are covered per month.
- 32.4. Timeline
- 32.4.1. Microplanning to be completed by 25th September 2017
- Note:** Alphaneumerical coding is a method of identification of each unit and volunteer. However, the PRI TB elimination task force have freedom to adopt locally appropriate and convenient identification methods and intimate that to the district task force.*

33. Training of teams for generation of community awareness, vulnerability survey & active case finding

33.1. Concept:

33.1.1. All members in the teams that conduct activities in the campaign unit of 200 households are to be trained. Trainings should address basic information on TB, processes of survey, description of survey tools and communication skills.

33.2. Process:

33.2.1. Training duration is 3 hours

33.2.2. One batch contains 100 volunteers

33.2.3. Jr.HI/Jr.PHN facilitate training

33.3. Timeline:

33.3.1. Trainings of teams to be completed before 25th September 2017

33.4. Expected outcomes

33.4.1. Campaign team members are capable of communicating with the target family members, error free collection of information on vulnerability and referral of presumptive TB cases.

33.5. Monitoring indicators:

33.5.1. Proportion of team members trained out of estimated numbers as per population norms

34. House to house campaign for awareness generation, assessing vulnerability and active case finding

34.1. Concept:

34.1.1. All households in the state have to be visited by a group of specially trained volunteers nominated by the TB elimination task force of the PRI. The team will communicate to each member of the household to generate awareness about TB, collect information on TB vulnerability of every member of the household using a questionnaire and conduct the first episode of active case search among the vulnerable individuals. The database of vulnerable individuals will serve as the target population for subsequent TB surveillance.

34.2. Process:

34.2.1. The entire households in the panchayat/ municipality / corporation, including social care institutions are to be divided into blocks consisting of 200 houses.

Each campaign block will be linked to a DMC for subsequent referral of chest symptomatic members.

34.2.2. Each campaign block will be assigned to a survey team consisting of two pre-trained members. The campaign teams will be provided with an awareness tool with which the members of the house will be sensitized (a copy of the awareness material will be given to the house) and a questionnaire with which the information on vulnerability of each individual member of the house will be collected (one copy per house).

34.2.3. The campaign will be conducted preferably on a Sunday to ensure meeting with working members of the house. To facilitate this, the members of the campaign team may be selected from the same locality. Eg. ASHA, Kudumbasree health volunteer, MSS volunteer etc.

34.2.4. Not more than 10 houses are covered on a single day. Reason for this is explained under the next activity.

34.2.5. Vulnerability factors (with their weighted scores in brackets) are: Household Contact (5), immunosuppressive therapy (4), malnutrition (4), Health Care Worker (3), Diabetes (3), Organ dysfunction (3), tribal (3), worked/lived in high burden cities (3), street dweller (3), Coastal (2), Chronic Lung disease(2), Smoking (2), alcoholism (2), Migrant (2), Prison inmate (2) Age above 60 (1), slum dweller (1). If the total score is 5 or above, the person is classified as highly vulnerable and requires symptom screening in every 3 months. If the total score is 1 to 5, the person is moderately vulnerable and to be screened for symptoms once every year

34.3. Time line:

34.3.1. The campaign starts on 2nd October 2017 and completes on 24th March 2018.

Note: PLHIV has a score of 5. However, for obvious confidentiality issues, the information should not be sought. PLHIV on Pre-ART and ART should be directly screened for symptoms by ARTI/ICTC staff.

35. Vulnerability data compilation

35.1.1. The questionnaires may be handed over to the supervisors of the campaign team i.e, Jr.HI and Jr.PHN, They will get these filled questionnaires to the HI of

the PHC who will make arrangements for entry of the data into a given xls format in the computer.

35.1.2. Service of a data entry operator may be hired for the purpose as per norms given in the budget planning section. At the end of each month, the compiled xls sheet will be mailed to District TB Officer.

35.1.3. District Statistical Assistant will compile and analyse the data every month.

35.1.4. The compiled sheets for the district is to be mailed to STO, STDC and WHO Consultants every month

35.2. Expected outcome:

35.2.1. Households under the task force are covered according to schedule.

35.3. Time line:

35.3.1. Campaign starts by 2nd October 2017 and ends by 24th March 2018.

35.4. Monitoring indicators:

35.4.1. Proportion of households covered per month. Approximately 20% households of the panchayat/ district/ state are to be covered every month.

35.4.2. Proportion of PRIs progressing on activity as per schedule. For example, number of panchayats that have covered 40% population at the end of second month out of the total number of panchayats in the district.

36. Active case finding

36.1. Concept:

36.1.1. Case finding effort in RNTCP was mostly centred in health facilities, subject to voluntary reporting of symptoms or provider initiated screening for symptoms. Though system initiated case search in community based on clinical/ social / geographic vulnerability is accepted by policy, its implementation is uneven and confined to contact tracing. With a vision for TB free Kerala, all vulnerable individuals listed through the campaign have to be periodically screened for TB symptoms according to the weighted score of vulnerability.

36.2. Process:

36.2.1. First episode of active case finding is conducted along with the vulnerability survey. On interview during campaign, if a member is found to have symptoms

suggestive of TB, s/he will be referred to the Medical Officer of the assigned DMC using a referral slip. This information will be noted in the remark column of the data format, against the name of the individual.

36.2.2. Not more than 10 houses to be covered on a single day. Each referred individual should be given appointment in the DMC with an advice to report before 9.00am. Members of the first two household of the day will be advised to visit DMC on Monday, the next two on Tuesday, so that 10 households will be given appointments over 5 week days. (This is to ensure that the DMCs are not overburdened with presumptive TB referral. If laboratory is not open on the day of patient's visit, arrangements to receive the specimen should be made). All 200 households are to be covered in 20 weeks.

36.2.3. In the OPD of DMC, patients should be fast tracked (to facilitate airborne infection control) and examined by the MO. Once the Medical Officer approves the presumptive TB status of patient, two supervised spot samples are to be collected from the patient at one hour apart. Results are expected to be ready before 12.00 noon.

36.2.4. Patients found to be smear negative on both samples are to be reassessed by the MO to advise CXR. In DMCs where CXR is readily available, x-ray may be taken on the same day. In DMCs that are linked to a CXR unit outside, patients may be carefully assessed for referral.

36.2.5. All patients found to have any abnormality on CXR, is to be advised CBNAAT. Patients may be referred by MO to the linked CBNAAT site with a filled request for examination of biological specimen.

36.2.6. Patients found to be negative for MTBC, may be clinically assessed further.

36.2.7. Further episodes of active case finding may not be in a campaign mode. Each vulnerable individual in the households under the health sub centres are to be screened for symptoms periodically according to the vulnerability score. If any member is found to have symptoms, s/he should be referred to the MO of DMC for further evaluation.

36.3. Expected outcomes:

36.3.1. All presumptive cases among the vulnerable (or otherwise) are referred to Medical Officer of DMC. Presumptive TB examination rate and TB case

detection rate increase. It is expected that there may be an increase of 40-50% in presumptive TB tested and 20-25% in TB cases detected.

36.4. Timeline: Same as that of campaign

36.5. Monitoring indicators for first episode:

36.5.1. Proportionate increase in examination of presumptive TB cases in the DMC/ TU/ District/ state at the end of the month compared to the levels of 2016.

36.5.2. Proportionate increase in detection of TB cases in the TU/ District/ state at the end of the month compared to the levels of 2016.

36.6. Periodic monitoring indicators:

36.6.1. Proportion of vulnerable individuals in the line-list of the respective task force that was screened as per the vulnerability score.

37. External supervision of the campaign by Medical College faculty team

37.1. Concept

37.1.1. It is expected that the TB elimination task forces at various levels will have a supervisory plan for supporting, guiding and correcting the campaign teams and the task forces downstream. The health supervisors, health inspectors and MPWs will coordinate with other TB elimination task force members to provide field supervision. However, to assess quality of campaign and provide necessary technical support, a team of external experts will be formed at state level.

37.2. Process

37.2.1. Each district will be assigned to a team of Medical college faculty and post graduates. Each team will contain a faculty/PG and an intern. Each team will be provided with a hired vehicle to travel across the district to visit randomly selected houses preferably on the campaign dates (20 Sundays). The vehicles have to be hired by the DTO. Two members of the team will be provided allowances for food and refreshments during field travel as per the budget plan.

37.2.2. The DTO will share the micro plan with assigned the medical college team. MOTC and STS will join the medical college team for field visit. Since the activity is on Sundays, they will be eligible for compensated holiday during the next week. They will claim their TA/DA as per norms from RNTCP S&M head.

37.2.3. The team will visit at least 10 houses on every visit. Not more than one house will be visited in the same ward and not more than 3 houses will be visited in the same panchayat. For Municipalities and corporations locally appropriate selections must be made.

37.2.4. At the end of the month the team will submit field visit report to the State TB elimination task force with a copy to the District TB elimination task force in the prescribed format.

37.3. Expected outcome

37.3.1. The team will cumulatively visit at least 2800 houses in the state. Each monthly report will be analysed by the state and district task forces and corrective actions are taken to ensure quality of campaign.

37.4. Time line

37.4.1. Corresponds to the campaign period.

38. Universal DST

38.1. Concept:

38.1.1. All TB patients diagnosed with smear microscopy (and those who are diagnosed clinically but appropriate specimen is available) to undergo drug susceptibility testing with CBNAAT to detect resistance to Rifampicin if any. This activity can be done in CBNAAT sites in districts.

38.1.2. All TB patients diagnosed as Rifampicin sensitive to undergo Line probe assay to detect resistance to INH. Since this activity can be done only in IRL, only Idukki and Wayanad districts will start the activity.

38.2. Process:

38.2.1. Once a TB patient is diagnosed, an appropriate specimen is to be collected and sent for CBNAAT on the same day.

38.2.2. If the patient is resistant to Rifampicin, another sample is to be collected and sent for confirmation and second-line DST to IRL.

38.2.3. Till the final results are available, patients can be put on first line anti-TB treatment according to the previous history.

38.2.4. If CBNAAT shows MTBC not detected, treating clinician may take a second opinion of other clinical experts (Eg. Faculty of Medical College/ Chest specialist of District TB Centre etc.) before starting treatment.

38.3. Expected outcome:

38.3.1. Idukki and Wayanad to do universal DST with CBNAAT and LPA in IRL and start/ modify regime according to INH susceptibility.

38.4. Timeline:

38.4.1. Idukki and Wayanad districts to start Universal DST with CBNAAT and LPA on 15th August 2017.

38.4.2. Expansion to other districts will be based on the initial outcomes of this pilot

38.5. Monitoring indicators:

38.5.1. Proportion of patients underwent universal DST.

39. Comorbidity screening of all TB patients

39.1. Concept:

39.1.1. Analysis of causes of death of TB patients in the state points to causes other than TB in approximately 60% of cases. These are, complications of diabetes, cardiovascular diseases, malignancies, liver and kidney failures, COPD, immune suppression etc. Presently, screening for HIV and diabetes is a part of TB management policy in the state. However, screening for other co-morbidities are yet to start. All diagnosed TB patients are to be clinically screened for COPD, kidney and liver diseases, and other comorbidities. Once diagnosed, COPD patients have to be linked with SHWAS, appropriate management is to be ensured for others.

39.2. Process:

39.2.1. All TB patients to be provided with a clinical information booklet, in which a few pages are printed with TB information pertaining to treatment, adherence, airborne infection control etc. The subsequent pages are for the treating medical officers to not clinical observations during baseline screening and periodic reviews.

39.2.2. Patients with history/symptoms of co morbidities have to be investigated.

One LFT has been made free of cost by Kerala government order. (ref) If additional / repeat investigations are needed, support for the same can be sought with through the treatment support group mechanism that is a part of the TB elimination task force.

39.2.3. For patients detected to have diabetes,

39.3. Expected outcomes:

39.3.1. All patients to undergo co-morbidity screening

39.4. Timeline:

39.4.1. Systematic screening for all co-morbidities to start from 15th August 2017

39.5. Monitoring Indicators:

39.5.1. Proportion of patients underwent screening for co-morbidities.

40. Fortnightly clinical review of all TB patients

40.1. Concept:

40.1.1. All TB patients (drug sensitive and drug resistant) on treatment should be clinically reviewed by the medical officer of the PHI at least once in two weeks to assess progress, detect adverse reactions to drugs, ensure adherence to treatment, manage substance abuse if any, ensure timely follow up investigations and to ensure treatment support.

40.2. Process:

40.2.1. At the time of initiation of treatment/ first contact with PHI, appointments for clinical reviews to be scheduled.

40.2.2. If patient is unable to travel, medical officer should visit him at home.

40.2.3. Clinical observations are to be noted in the clinical information booklet and managed appropriately.

40.3. Expected Outcomes:

40.3.1. All patients are reviewed fortnightly.

40.4. Timeline:

40.4.1. This is an ongoing process. However, clinical information booklets are to be supplied to PHIs before 15th August.

40.5. Monitoring Indicators:

40.5.1. Proportion of patients underwent clinical review twice in the month.

41. Treatment adherence support to all TB patients (in need)

41.1. Concept:

41.1.1. A treatment support group [TSG] is a non-statutory body of socially responsible citizens and volunteers to provide social support to each needy TB patient safeguarding his dignity and confidentiality by ensuring access to information, free and quality services and social welfare programs, empowering the patient for making decision to complete the treatment successfully. All TB patients in the PRI area are eligible for treatment support. However, needy patients are to be linked to the TSG by MO PHI or concerned staff of PHI after assessing the need.

41.2. Process:

41.2.1. Treatment support groups are to be formed as a sub group of PRI level TB elimination task force.

41.2.2.

41.3. Expected Outcomes:

41.3.1. Zero loss to follow up among patients except for migration abroad.

41.4. Timeline:

41.4.1. All PRIs to form Treatment Support Groups as a sub group of PRI TB elimination task force and start patient support before 31st August 2017.

41.5. Monitoring Indicators:

41.5.1. Proportion of PRIs formed TB treatment support groups

41.5.2. Proportion of PRIs with zero loss to follow up during the month.

42. Airborne infection control kit for all pulmonary TB patients

42.1. Concept:

42.1.1. Prevention of airborne infection to the members of the patients' house needs specific interventions. These are education, assistance for improved ventilation and support for cough etiquette and safe disposal of sputum.

42.2. Process:

42.2.1. Every diagnosed TB patient is provided with a kit containing a disposable spittoon, one litre of disinfectant solution to use diluted in the spittoon, and 5 washable cotton face masks for reuse during the initial home visit by health worker.

42.2.2. Health worker educates the patient on infection control processes.

42.2.3. During every house visit, the health worker ensures that the patient uses the materials and observes cough etiquette.

42.3. Expected Outcomes:

42.3.1. All TB patients receive infection control kit and observe cough etiquette

42.4. Timeline:

42.4.1. Process to start from 1st September 2017

42.5. Monitoring Indicators:

42.5.1. Proportion of patients received AIC kit

42.5.2. Proportion of patients observed to be AIC compliant during supervisors' visit

43. Nutritional support for eligible TB patients

43.1. Concept:

43.1.1. Nutritional support is a high impact intervention to improve outcomes of treatment and to promote adherence. Kerala has successfully piloted nutritional support by LSG department through district panchayats. All patients with family income below Rs.1,00,000/- are eligible for nutritional support.

43.2. Process:

43.2.1. District TB Elimination Task Force to submit proposal to District Panchayat based on estimated number of eligible patients.

43.2.2. Once approved, procurement may be entrusted with appropriate agency approved by the district panchayat. Eg. SUPPLYCO.

43.2.3. The nutritional kit for each patient may contain 25 Kg. of rice, 5 Kg of green gram and 2 litres of Oil.

43.2.4. Once supplied to the district panchayat office, volunteers of TB elimination task force may be entrusted to deliver the kits to the houses of patients.

43.3. Expected Outcomes:

43.3.1. All eligible TB patients to receive nutritional support kit every month.

43.4. Timeline:

43.4.1. All districts task forces to submit proposals by 31st August

43.4.2. All districts to start delivery of kits to patients before 31st October

43.5. Monitoring Indicators:

43.5.1. Proportion of patients with family income below Rs.100,000 pa receiving nutritional kits during the month.

44. Monthly TB pension for eligible patients

44.1. Concept:

44.1.1. Revenue department of Kerala has made provision for a monthly pension of Rs.1000/- to all TB patients with annual family income below Rs. 100,000/- for the duration of treatment. PRI TB elimination task force has to ensure that each eligible TB patient receives the pension within not less than 15 days after diagnosis.

44.2. Process:

44.2.1. Fast tracking for TB pension. At the time of initiation of treatment medical officer of the PHI certifies the patient's disease status and estimated duration of treatment. Jr. HI of the PHI (TBHV/STS in other areas) helps to fill application for pension and submit to village office. Village officer certifies income of the patient and forwards the application to Taluk Office for approval. Patient is intimated from Taluk office when pension is ready and transfers the amount to patient's account.

44.2.2. Prior to the process, it is to be ensured that patients have a Jan-dhan account. This is important for future transfer of patient benefits from program.

44.2.3. Another preparatory activity is to ensure that a prior communication on the subject from the District Collector reaches the Tahsildars and Village Officers.

44.3. Expected Outcomes:

44.3.1.1. All eligible TB patients receive TB monthly pension for the entire duration of treatment starting within 15 days of initiation of treatment

44.4. Timeline:

44.4.1.1. Preparatory activities to be completed in the district by 30th September 2017 and fast-tracking starts from 1st October 2017

44.5. Monitoring Indicators:

44.5.1. Proportion of districts completed preparatory activities for TB pension

44.5.2. Proportion of eligible TB patients receiving TB pension every month

45. Formation of consortium of other systems of medicine

45.1. Concept:

45.1.1. Consortium of other systems of medicine bases upon the social responsibility of non-allopathic systems in eliminating TB. Ayurveda and Homeopathy practitioners had been sensitized by the program and Project Axshya in the past. Their sensitization has resulted in significant referral of TB symptomatic patients and provision for observation of treatment in their premises. The model may be further formalized in the form of consortium for TB elimination at district level. Project Axshya may continue lead role in the process.

45.2. Process

45.2.1. District level consortiums may be formed similar to the private hospital consortiums.

45.3. Expected Outcomes:

45.3.1. At least one consortium is formed in every district

45.4. Timeline:

45.4.1. December 31st 2017

45.5. Monitoring Indicators:

45.5.1. Number of districts that have formed consortiums

46. Special initiative for migrant support

46.1. Concept:

46.1.1. It is estimated that approximately 25,00,000 residents of other state have migrated to Kerala on job. Most of them are engaged in jobs in construction, hotels and restaurants, shops and malls etc. They contribute immensely to the

human resources of the state. Their health care is perceived as the responsibility of the state. Working in extreme conditions and living in crowded, often unhealthy surroundings, they are vulnerable for TB infection and active disease. Since a good proportion of them are residents of high TB burden settings, chances of having active TB and spreading of the disease among colleagues are considerable. A comprehensive health care package is to be provided to the migrants that includes screening for communicable and non-communicable diseases, advocacy with employers for better living conditions, linkages for cost-free health care in public sector and low cost health care in private sector. For example, a migrant worker presenting with symptoms of TB to a private hospital may be provided access to CBNAAT in RNTCP CBNAAT site.

46.2. Process:

46.2.1. To prevent loss of wages, health camps may be conducted with support of the builders and restaurant owners, close to their premises where doctors and supportive staff go to them and provide health care. Alternatively, health camps may be conducted on Sundays close to the places where large number of migrants are settled. This is a specific activity where Medical Colleges will be able to contribute significantly.

46.3. Expected Outcomes:

46.3.1. Significant number of migrant workers are screened for communicable and non-communicable diseases and provided with linkages for their management. Corporations are expected to conduct at least 20 camps, Municipalities at least 10 camps and panchayats at least one camp.

46.4. Timeline:

46.4.1. All PRIs have to start migrant health camps before 31st August 2017 and continue the process and complete the expected number by 31st December.

46.5. Monitoring Indicators:

46.5.1. Proportion of PRIs that have completed the expected number of camps.

47. TB Notification from private sector

47.1. Concept

47.1.1. Information on all TB cases from the private sector are to be actively collected from the drug sale data from chemists' shops and notified through Nikshay

47.2. Process:

47.2.1. Virtual Health Facility IDs to be created in Nikshay for Pharmacists Associations at subdistrict (tuberculosis Unit) level

47.2.2. Monthly collection of notification details from Schedule H1 registers of chemists' shop and notification in Nikshay

47.3. Expected outcome

47.3.1. 100% patients put on private drug regimen are notified in Nikshay

47.4. Monitoring indicators:

47.4.1. Number of districts that have created sub district level virtual HF id for pharmacists association

47.4.2. Proportion of the estimated private TB cases notified in Nikshay during the month.

Note: Notification through virtual Health Facility ID of pharmacists' association should eventually give way to direct notification by the diagnosing health facility/practitioner.

48. Diagnosis and management of Latent TB Infection

48.1. Concept:

48.1.1. To drastically reduce the pool of infection, all the vulnerable individuals in the low case settings, who are mapped and targeted for active surveillance, may be tested for LTBI.

48.2. Process:

48.2.1. Every vulnerable individual in the vulnerability data base may be offered LTBI screening. Those who are found infected, may be offered treatment for LTBI.

48.3. Expected Outcomes:

48.3.1. Drastic reduction in incidence of TB disease.

48.4. Timeline:

48.4.1. The activity need to be further discussed for policy decisions

Conclusion

The generic activities described above are in guidance to the TB elimination campaign at large. These are not the complete package. These activities are to be intelligently adapted to the local setting by respective TB elimination task forces.

The activity plan for TB elimination campaign is prepared with a very tight budget that is appropriate for low income settings. Good microplanning and close supervision will improve the efficiency of the campaign.

Annexures:

Annexure I: Proposed budget for TB elimination activities 2017-18

Activities and estimated budget for TB elimination							
Sl. No	Activity	Time line	Responsible	Budgetary provisions	Estimated additional budget for entire state	Total additional budget for activity	Head of expenditure
1	Formation of state level TB Elimination Board	20th August 2017	STO	Expenditure for formation meeting and quarterly meetings from RNTCP ACSM head	Rs. 3000 for meeting x 2 = Rs.6000/-	6,000	ACSM
2	Formation of State TB Elimination Task Force	20th August 2017	STO	Expenditure for formation meeting and quarterly meetings from RNTCP ACSM head	Rs. 3000 per meeting x 2 = Rs. 6000/-	6,000	ACSM
3	Sensitization of State Program Officers	31st August 2017	DHS and STO	One time expenditure from RNTCP training head	Rs. 3000	3,000	Training
4	Sensitization of District Medical Officers [Health] and District Program Managers (Arogyakeralam]	31st August 2017	DHS and STO	One time expenditure from RNTCP training head	Rs. 5000	5,000	Training
5	Sensitisation of district level key policy makers and administrators	20th August 2017	STO			0	NIL

6	Media advocacy at state level	25th September 2017	STO	One time expenditure for media workshop from RNTCP ACSM head	Rs. 70,000	70,000	ACSM
7	Formation of district TB elimination board	31st August 2017		Expenditure for formation meeting and quarterly meetings from RNTCP S&M head	Rs. 3000 per meeting x 2 meetings in 14 districts = 84,000	84,000	S&M
8	Formation of district TB Elimination Task Force	31st August 2017	DMO[H] and DTO	Expenditure for formation meeting and quarterly meetings from RNTCP S&M head	Rs.5000 per meeting x 2 meetings in 14 districts = Rs. 1,40,000/-	1,40,000	S&M
9	Formation of TU level TB elimination task forces	31st August 2017	MOTC /STS	Expenditure for formation meeting and quarterly meetings from RNTCP S&M head	Rs.2000 per meeting x 2 meetings in 75 TB units = Rs.2000 x 2 x 75 = Rs.3,00,000	3,00,000	S&M
10	Formation of Block level TB elimination task Force	20th September 2017	MOTC /Block PHC MO/HS	Expenditure for formation meeting and quarterly meetings from RNTCP S&M head	Rs.4000 per meeting x 2 meetings in 152 block panchayats = Rs. 12,16,000	12,16,000	S&M
11	Formation of Private Hospital Consortium for TB Elimination	30th September 2017	DTO in Coordination with IMA DTF Chair Person	Expenditure for formation meeting and quarterly meetings from RNTCP NGOPPS head	Rs. 5000 per meeting x 2 meetings in 14 districts = Rs. 1,40,000/-	1,40,000	NGOPPS
12	Sensitisation of RNTCP Key staff	30th August 2017	DTO	One time expenditure from RNTCP training head	Rs. 200 per head for lunch and refreshments. Approximatel	1,00,000	Training

					y 500 staff Rs. 1,00,000/-		
13	Sensitisation of Major PRI heads	30th August 2017	DTO	One-to-one sensitization by DTO/MOTC	NIL	0	NIL
14	Sensitization of District Program Officers [Health]	30th August 2017	DMO[H] and DTO	One time expenditure from RNTCP training head	Rs. 200 per head for lunch and refreshment. Approximately 20 participants per district x 14 districts = Rs. 56,000/-	56,000	Training
15	Sensitization of District Officers, Other Systems of Medicine	31st December 2017	DTO	Activity to be conducted along with DTO's field visits	NIL	0	NIL
16	Sensitisation of PHI Medical Officers	20th September 2017	DMO[H] and DTO	One time expenditure from RNTCP training head	Rs. 200 per head for lunch and refreshment. Approximately 2000 participants in entire state = Rs. 4,00,000/-	4,00,000	Training
17	Sensitisation of medical Officers and practitioners of other systems of medicine	31st December 2017	DTO	One time expenditure from RNTCP training head	Rs. 200 per head for lunch and refreshment. Approximately 2000 participants in entire state = Rs. 4,00,000/-	4,00,000	Training
18	Facility Airborne risk assessment of Health Service Hospitals	31st December 2017	DTO	Activity to be conducted along with DTO's and MOTC's field visits	NIL	0	NIL

19	Facility Airborne risk assessment of Medical College Hospitals	30th September 2017	STF Chair Person and STO	Activity to be conducted along with DTO's and MOTC's field visits	NIL	0	NIL
20	Sensitization of Supervisory health staff	31st August 2017	DMO[H] and DTO	One time expenditure from RNTCP training head	Rs. 200 per head for lunch and refreshment. Approximately 2000 participants in entire state = Rs. 4,00,000/-	4,00,000	Training
21	Sensitisation of PHI staff	20th September 2017	Superintendent/Block MO	Activity to be conducted as a half-day session during monthly block conference. Lunch and one refreshment may be provided from RNTCP training head	Rs. 200 per head x 5000 participants = 10,00,000/-	10,00,000	Training
22	Formation of gram panchayat (Municipality/Corporation) level TB elimination task force and treatment support group	20th September 2017	MO PHI under guidance of DTO	One expenditure for formation and another for a review meeting	Rs. 2000 in Panchayat, 3500 in Municipalities and 5000 in Corporations for the formation meeting. 941 gram panchayats, 87 municipalities and 6 corporations; (18,82,000 + 3,04,000 + 30,000) x 2 meetings = 44,32,000/-	44,32,000	S&M

23	Sensitisation of Medical College State Task Force Members	31st August 2017	STF Chair and STO	Activity to be conducted along with STF meeting	NIL	0	NIL
24	Sensitisation of medical College Core Committee members and faculty	31st October 2017	Core Committee Chair and DTO	Activity to be conducted along with core committee meeting	NIL	0	NIL
25	Sensitisation of IMA state officials and DTF chairpersons	31st October 2017	STO and IMA RNTCP state nodal person	One time expenditure from RNTCP ACSM head	Rs. 25,000/-	25,000	NG OP PS
26	Sensitisation of IMA branch officials	15th November 2017	DTF RNTCP nodal persons and DTO	One time expenditure from RNTCP ACSM head	Rs. 10,000 per district = 1,40,000/-	1,40,000	NG OP PS
27	Sensitisation of IMA members	31st December 2017	IMA local branch president and MOTC	Activity to be conducted along with branch meeting	NIL	0	NIL
28	Mapping of gram panchayat wise TB cases for past 1 year	20th August 2017	DTO	Activity to be done by STS of respective TU	NIL	0	NIL
29	Mapping of gram panchayat wise presumptive TB examination for past 1 year	25th August 2017	DTO	One time expenditure from RNTCP office expenses head @ Rs.1/- per presumptive TB case	4,00,000 presumptive TB cases per year = Rs.4,00,000/-	4,00,000	Office
30	Spot mapping of TB cases in the panchayat/municipality/corporation for past 5 years	15th September 2017	Health Inspector of respective PHC & STS in urban areas	NIL	NIL	0	NIL

31(a)	Health System strengthening	30th September 2017	DMO[H]/DPM/DT O	Lab technicians may be posted under RNTCP partnership scheme with IMA. 13 months' salary to IMA.	Additional Lab Technicians in 14 CBNAAT sites. Rs.12000 x 13 x 14 = 21,84,000/-	21,84,000	NG OP PS
31(b)	health System strengthening	30th September 2017	DMO[H]/DPM/DT O	X-ray outsourcing may be budgeted under special SDG budget in disease flexi pool	Approximately 3,39,000 x-rays may be outsourced to private out of the total expected 7,84,000. Rs.200/ x-ray; 3,39,000 x 200 = Rs.6,78,00,000/-	6,78,00,000	State Initiated flexi fund (SDG)
32	Microplanning for TB elimination campaign	25th September 2017	DTO/MOPH I/Hi	PHI level activity	NIL	0	NIL
33	Training of teams for awareness generation and vulnerability survey and active case finding	25th September 2017	MO/Hi	One time expenditure for tea and snacks @ Rs.25 per head and travel support @ Rs.50/head from RNTCP training head	78,00,000 households. Two volunteers for 200 households= and 78000 volunteers. 78,000 x 75 = Rs.58,50,000/-	58,50,000	Training
34	House to house campaign for awareness generation and vulnerability survey	From 15th September 2017 to 24th March 2018	MO/Hi	One time expenditure from RNTCP ACSM head @ Rs.10/household	78,00,000 households x 10 = 7,80,00,000/-	7,80,00,000	Rs, 5,80,00,000 from RNTCP ACSM and Rs. 2,00,000

							0,000/- from state initiated ACS M flexifund
35	Vulnerability data compilation	31st March 2018	HI of respective institution and statistical assistant at district level	Rs.1/- per house for data entry given to a hired data entry operator	Rs.78,00,000/-	78,00,000	Office
36	Active case finding	First episode from 15th September 2017 to 24th March 2018	MO, HI	Included in vulnerability survey	NIL	0	NIL

37(a)	External supervision of the campaign by Medical College faculty team	2nd October 2017 to 24th March 2018	DTO	Supervision charges @ Rs.250 per day for 14 faculty/PGs and 14 interns for 20 days from RNTCP S&M head	Rs.250 x 2 x 14 x 20 = Rs.1,40,000	1,40,000	S&M
37(b)	External supervision of the campaign by Medical College faculty team	2nd October 2017 to 24th March 2018	DTO/MOTC	Vehicle hiring charges @ Rs.2500/- per day for 12 district teams of faculty/PGs/interns and @ Rs. 3500/- per day for Idukki and Wayanad for 20 days from RNTCP vehicle hiring head	Rs.(2500 x 12 x 20) + (3500 x 2 x 20) = Rs.7,40,000	7,40,000	Veh Hiring
38	Universal DST with CBNAAT	From 1st August 2017 in Idukki and Wayanad followed by phased scale up to other districts	DTO/MO PHI	Cartridges and LPA kits, sputum collection transportation facilities are already available. Scale up needs more HR in IRL, to be planned in PIP 2018-19	NIL	0	NIL
39	Comorbidity screening of all TB patients	With immediate effect	MO PHI	No additional expenditure for screening. All patients with comorbidity are to be linked to NCD	NIL	0	NIL
40	Fortnightly clinical review of all TB patients on treatment	With immediate effect	MO PHI	NIL	NIL	0	NIL

41	Treatment adherence support for all TB patient patients (in need)	30th September 2017	MO PHI	Expenditure for quarterly meeting of treatment support group from RNTCP honorarium and treatment support head @ Rs. 500 per meeting	1000 treatment support groups x Rs.500 x 2 meetings = Rs.10,00,000/-	10,00,000	Patient support
42	Airborne Infection Control Kit for pulmonary TB patient	With immediate effect	DTO/MOPHI	Rs. 150 per patient for 6 months from RNTCP patient support head budget	20,000 patients x 150 = Rs.67,50,000/-	30,00,000	Patient support
43	Nutritional support for eligible TB patient	Project to be submitted to District Panchayat/ Corporations by 15th August 2017	DTO	To be budgeted in district panchayat project.	NIL	0	NIL
44	TB pension for eligible TB patient	Coordination Mechanism by 31st August 2017	MOPHI	To be budgeted under Revenue expenditure	NIL	0	NIL
45	Formation of consortium of other systems of medicine	31st December 2017	DTO	Activity may be linked with Project Axshya	NIL	0	NIL
46	Special initiative for migrant support	31st August 2017	DMO[H], DTO, other district program officers	Activity may be budgeted under NUHM	NIL	0	NIL
47	Diagnosis and management of			Yet to be decided		0	NIL

	latent TB infection						
a	Additional expenditure for laboratory consumables due to increased sputum examination for active case finding			Procurement of additional lab materials from RNTCP lab material head	Approximately 8,50,000 additional patients' sputum to be examined beyond the routine OPD patients. Approximately 90,00,000	90,00,000	Lab materials
b	Additional expenditure for printing of survey formats, awareness pamphlets and referral slips			One time expenditure for printing from RNTCP printing head	78,00,000 survey formats, 78,00,000 pamphlets and 6,00,000 referral slips	1,50,00,000	Printing
c	Additional expenditure for box files, minutes books in peripheral institutions			One time expenditure for box files@Rs.100/- and notebooks @ Rs. 25/- from RNTCP Office expenses	1000 peripheral institutions x 125 = Rs. 125000/-	1,25,000	Office
d	Additional expenses for transportation of sputum samples to CBNAAT machines			Transportation of samples to CBNAAT machines by courier @Rs.100/- per sample	10,000 samples may have to be transported. 10000 x 100 = Rs.10,00,000/-	10,00,000	Office
e	Expenses for supervision and monitoring of campaign team towards POL charges of supervisors			Supervisory charges @ Rs. 100 per PHC per week for 20 weeks for the field supervision of HI/LHI from RNTCP supervision and monitoring head	Rs.100 x 20 x 1000 PHCs = Rs.20,00,000/-	20,00,000	S&M
	Estimated expenditure for TB elimination activities from RNTCP head					11,51,62,000	
	Estimated expenditure for TB elimination activities from State Initiated Flexihead					8,78,00,000	
	Estimated Total expenditure for TB elimination activities					20,29,62,000	

Annexure II: Forms for microplanning:

KERALA STATE TUBERCULOSIS ELIMINATION MISSION					
<i>House to House visit planning form</i>					
District :		Block :		Form No.1A	
Panchayath:		PHC/CHC :			
Ward :		Sub Centre/ Basic Section :			
Sl. No. of campaign unit:		Name of Team members:			
Details	Week 1	Week 2	Week 3	Week 4	Week 5
Description of area to be covered with land mark					
Number of first house					
Number of last house					
Total No. of houses to be visited					

KERALA STATE TUBERCULOSIS ELIMINATION MISSION					
<i>Campaign unit level consolidation report form</i>					
District :		Block :		Form No.2A	
Panchayath:		PHC/CHC :			
Ward :		Sub Centre/ Basic Section :			
Serial No. of Campaign unit:		Month:			
Names of Team Members:					
Week	Total No. of houses covered	No.of population covered	Presumptive TB identified and referred	Sputum container used	Remarks
1st Week					
2nd Week					
3rd week					
4th week					
5th week					
Total					

Instructions to use the microplanning forms:

Form 1A is the planning form for the lowermost level, ie, the campaign unit of 200 houses. This form is prepared by the campaign volunteers with the help of concerned JHI/JPHN. After the identification details in the upper portion of the form, the volunteers have to give the details of area to be visited during each week of the month, name/number of first house and the last house and the total number of houses planned to be visited during each week. Though the total number expected per week is 10, up to 15 houses may be planned according to the convenience of the team. One sheet is for a month.

Form 1B is the ward level planning consolidation form. JHI/JPHN in charge of the ward consolidates this form. Information is taken from form 1. Name/number of Ward is either the number allotted for the campaign or the number allotted by the panchayat. In a district, one of these should be adopted uniformly. Serial number of the campaign unit is allotted by JHI/JPHN, names of campaign volunteer of that unit, name of area allotted to the campaign unit, total number of houses in the campaign unit and name of preferred DMC are recorded in this form. Adequate numbers of sheets need to be used according to the number of campaign units.

Form 1C is the Panchayat/PHC level consolidation of all ward level form 1B. In panchayats where there are more than one PHC, this will be consolidated at PHC level. HI/LHI of the PHC consolidates this form. Adequate numbers of sheets need to be used according to the number of wards.

Form 1D is the Block PHC/CHC level consolidation of all Panchayat/PHC level form 1C. HS/LHS of the Block PHC/CHC consolidates this form. Adequate numbers of sheets need to be used according to the number of wards.

Form 1E is the district level consolidation of all ward level for 1D. Technical Assistant/DPHN of the district consolidates this form. Scanned copy of final consolidated format may be sent to State TB Officer by email.

KERALA STATE TUBERCULOSIS ELIMINATION MISSION						
<i>District level consolidation report form</i>						
District :		Month:			Form No.2E	
Name of TA:		Name of DPHN:				
name of DMO[H]						
Sl.No	Name of Block	Total No. of houses covered	No.of population covered	Presumptive TB identified and referred	Sputum container used	Remarks

Instructions to use activity reporting forms:

Form 2A is the campaign unit level monthly report of house visits and referral of presumptive TB cases. The campaign volunteers enter information at the end of the day's visit every week and hand

<p>over the filled form to the JHI/JPHN at the end of every month.</p>
<p>Form 2B is the ward level monthly report of house visits and referral of presumptive TB cases. It is consolidated from form 2A by JHI/JPHN and sent to the PHC at the end of every month.</p>
<p>Form 2C is the panchayat/PHC level monthly report of house visits and referral of presumptive TB cases. It is consolidated from for 2 B by the HI/LHI of the PHC and sent to the block PHC at the end of every month.</p>
<p>Form 2Dis the Block PHC PHC level monthly report of house visits and referral of presumptive TB cases. It is consolidated from form 2 C by the HS/LHS of the block PHC/CHC and sent to the DMO[H] at the end of every month.</p>
<p>Form 2E is the district level monthly report of house visits and referral of presumptive TB cases. It is consolidated from for 2 D by the TA/DPHN of the district and a scanned copy is sent to the State TB Officer at the end of every month.</p>
<p>In the urban areas, where general health system staffs are not available, STS, STLs and TB Health Visitor will carry out the responsibility of microplanning and reporting.</p>

Annexure V

Tuberculosis Vulnerability Screening Interview Guide

Step 1. Introduce yourselves. Tell them why you are meeting them.

Step 2. Tell them briefly about TB using the TB brochure/ pamphlet, hand over one pamphlet to the family

Step 3. Write down the names of all members, their sex, age and Aadhar number. Only after filling this information, start the interview. Question set one is common to all.

Q1. Does the house have any of the following characteristics? If yes, mark yes against all members. If no, mark no against all members.

1a. Tribal	Yes / No
1b. Coastal	
1c. Slum	
1d. A past or present TB patient in the family	

Question sets 2, 3 and 4 are to each individual. If any member is absent at the time of interview, information can be collected from another appropriate member.

Q2. Does the person belong to any of the following occupation classes?

2a. Health care worker (Doctor/nurse/lab technician/nursing assistant/attender)	Yes / No
2b. Mine/quarry worker	

Q3. Does the individual fit into any of the following Key population classes?

3a. Past or present TB patient	Yes / No
3b. Diabetic	
3c. Chronic respiratory disease	
3d. Liver/ kidney disease	
3e. Bed ridden/ under palliative care	
3f. Past/present smoker	
3g. Regular consumer of alcohol	

SCREENING FOR TB

Q4. Ask each member if he/she has the following symptoms.

1. Cough for more than 2 weeks
2. Fever for more than 2 weeks
3. Weight loss
4. Haemoptysis

If any two of these symptoms is present, mark yes in the column 4a. Then fill a referral slip and mark yes in column 4b. In the referral slip, appointment date is to be marked. Presumptive TB persons in the first two houses should be given appointment on following Monday, from next two houses on following Tuesday and so on. Ask the person to report to DMC before 9.00 am on the date of appointment. Only individuals with definite symptoms are to be referred.

In case the presumptive TB person is bed ridden, hand over two sputum containers to the family member and ask to take two sputum samples to the designated microscopy centre.