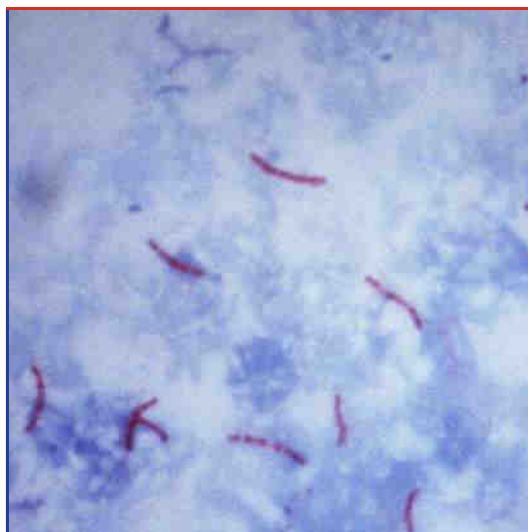




KERALA.HEALTH



A path to wellness:
Kerala's battle against TB

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Message from Honorable Chief Minister



PINARAYI VIJAYAN
CHIEF MINISTER



Secretariat
Thiruvananthapuram-695 001

GOVERNMENT OF KERALA

No.696 /Press/CMO/24

31 August, 2024.

MESSAGE

I am happy to note that the Department of Health & Family Welfare is producing a coffee table book which narrates the 'People's Movement Against TB' in Kerala. Kerala has been a frontrunner in India's fight against Tuberculosis and having made impressive achievements with regard to 'End TB', I am sure that this book will benefit the society at large.

Having always strived to orient healthcare as 'people-centric' the Government of Kerala became the first to endorse international standards of TB care, way back in 2008. Our 'Aardram Mission' aims to transform the public health sector in the backdrop of the UN's Sustainable Development Goals. In order to achieve SDGs related to 'End TB', the Kerala TB Elimination Mission was conceived and a strategic plan was prepared and implemented. Kerala was the first state in a high burden TB country to bring out such a comprehensive strategic plan.

Many solutions originated in the state such as proper nutritional support to people with TB, treatment support groups to ensure successful treatment, System for TB Elimination in Private Sector (STEPS), individual's vulnerability based active surveillance and air borne infection control kits to people with TB. With a 40% reduction in the TB incidence over the last six years, Kerala is the first state to be certified by the Government of India for being on track to achieve the SDGs related to 'End TB'.

I am sure that the book captures all the wonderful stories of success and determination, and can inspire conversations across the global health systems. The journey to TB elimination is a collective responsibility and each of us has a role to play in this endeavour. Let us re-pledge our commitment to 'End TB'.

Pinarayi Vijayan



Message from Honorable Minister for Health Woman and Child Development

VEENA GEORGE
MINISTER FOR HEALTH
WOMAN AND CHILD DEVELOPMENT
GOVERNMENT OF KERALA



Date: 31.08.2024

MESSAGE

It is with immense pleasure that the Department of Health & Family Welfare is bringing out a coffee table book documenting key milestones regarding Ending TB in our state. The long and exciting journey is an affirmation of the fact that 'if we dream and have the ambition and willingness to work hard, then we can achieve anything'.

Over the past years, we have made remarkable progress through innovative, locally customised strategies, all based on an inclusive approach that ensures that no one is left behind. We are leveraging state-of-the-art technology to ensure early detection and accurate diagnosis and we are committed to providing free, accessible, and effective treatment to every individual in need. Kerala is the first state to roll out TB preventive treatment of key populations.

While the annual reduction of TB incidence globally is 2-3%, the state is able to achieve an annual reduction of 7-8%. Kerala is the state which reported the lowest burden of TB in the country and has been certified by Government of India under its subnational certification. The document you are about to read showcases our achievements, strategies, and the journey in our battle against TB.

All these achievements would not have been possible without the dedication of our Kerala health team, the support of our partners and stewardship of our local self- governments. We have a long way to go and we are sure that we will be the first state in any high burden country to eliminate TB. Let us remain united in our mission and continue the good work together to ensure a healthier future for Kerala.


VEENA GEORGE

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Message from WHO Representative to India



Dr Roderico H. Ofri
WHO Representative
to India

Ending the TB epidemic by 2030 is among the health targets of the United Nations Sustainable Development Goals (SDGs). But can we really end TB? Yes, we can indeed turn the tide against TB through strong leadership, collaboration, and sustained tangible actions — this is the message of hope that this book conveys. The story of TB may have begun thousands of years ago, but we have the opportunity to write its final chapter now.

I wish to extend my heartfelt congratulations to the State Government of Kerala on this initiative to capture the state's remarkable journey and significant achievements in the fight against tuberculosis (TB). The comprehensive exploration of the milestones achieved in the state, not only highlight successes, but also provides crucial insights, underscoring the importance of partnership, innovation, and community engagement in public health initiatives.

Kerala's proactive approach and sustained efforts in TB elimination will inspire and inform policymakers, health professionals and communities engaged in ending TB. My best wishes to the state and all its people for the journey onwards.

Foreword



A path to wellness: Kerala's battle against TB

After the COVID pandemic, the way we do our day-to-day activities, the way we work in our personal spheres and work spheres not just at an individual level but also at the societal level, has changed dramatically and drastically. This catastrophic pandemic has awakened all of us to prepare ourselves against what we earlier considered to be the minutest of things : pathogens. The activities against pathogens were going on at a slow and leisurely pace, however, post the pandemic, it has given a message that we need to take even the smallest of things, extremely seriously and kickstart our work on various pre-emptive interventions to control and eliminate diseases with the sense of urgency to avoid a similar calamity from taking place in the future.

In this background, it is important for all of us to think and study our fight against pathogens and in particular, the Micobacterium Tuberculosis. It is giving us valuable guidance to build systems with efficient structures and processes so as to deliver the health services and root out the Micobacterium Tuberculosis.

Kerala Health have been taking various initiatives to combat Tuberculosis. This is one of the programs which has given a new direction in public health approaches in the last decade. The activities such as vulnerability mapping, identifying comorbidity individuals, community involvement, diagnosis and treatment and scientific surveillance are the building blocks of the TB elimination program today. This journey has been arduous but with grit and determination, the planners and teams at the field level continued their efforts by understanding the areas to improve, build capacities and achieve the results we have today. Therefore, it was felt that we should have a record of the Journey of Kerala Health from start till today. With this thinking this task of preparing a

document was taken up. In order to chronicle the developments made in tackling TB and progress made in the last few decades is a laborious work. “A path to wellness: Kerala's battle against TB” is published with the collective efforts of all.

The book covers information from Pre-Revised National Tuberculosis Program (RNTCP) era, RNTCP launch and activities and post RNTCP phases. The most important aspects to understand is community engagement and building partnerships with all stakeholders including the private sector. Today Panchayaths are coming forward and doing community surveillance and declaring “My Panchayath is Child TB free Panchayath” demonstrates the involvement of grassroot governance structures and community ownership of the movement of TB elimination.

The strategic action plan for elimination of Tuberculosis is updated based on the present incidence of TB per lakh population 70, TB deaths per lakh population 7.5 with a target to bring it down to 23 and 2 respectively. The vision was to make a TB free Kerala by setting the Goals to achieve 90% reduction in number of TB deaths by 2030 compared to 2015 baseline, to achieve 80% reduction in TB incidence rate by 2030 compared to 2015 baseline and zero TB affected families facing catastrophic costs due to TB(%). In order to achieve this the additional newer strategies are built by deploying Cy-TB test , ultraportable handheld X-rays for diagnosis, newer diagnosis and screening test etc. This will be further strengthened by building systems such as integrated digital platform, lead role to Block level Public Health units and Genomic surveillance etc.

We are confident that with specific strategies and coordinated efforts we will march ahead to achieve the goal of making a TB Free Kerala.

Dr Rajan Khobragade IAS
Addl Chief Secretary
Health and Family Welfare Department
Government of Kerala

**“I have no business to live this life if I cannot
eradicate this horrible scourge from the
mankind,”**

Robert Koch

The pre-RNTCP Era

Tuberculosis has been identified as a major health issue in the world. The state has taken appropriate clinical facilities for the diagnosis and treatment of TB as a priority. In 1962, Kerala started implementing the National TB Program. The state established a District TB Center (DTC) in all districts with dedicated District TB Officers (DTO) who were specialists in TB and chest diseases. Indoor facilities to manage TB were provided in three TB sanatoria (Pulayanarkotta, Mulankunnathukavu and Pariyaram). The Department of chest diseases of the medical colleges at Thiruvananthapuram, Kozhikode, Kottayam, and Alappuzha provided indoor TB care, including thoracic surgery. Indoor facilities were also attached to DTC Ernakulam and DTC Kottayam. In all other districts, the district or general hospitals provided indoor TB care. TB hospitals were also available in Puthiyakavu, Karuvatta, and Ponnani. All Taluk hospitals were provided with TB services, including x-ray units, microscopy services, and indoor facilities. Odelca photo-fluorographic x-ray sets for miniature radiography were available in all DTCs. Microscopy was seldom utilized, and the diagnosis of TB was mostly based on chest x-rays and clinical examination. The drug supply was often interrupted. However, during scarcity, people with TB managed to acquire drugs through out-of-pocket expenditure, with some interruptions in treatment. Due to the better health-seeking behavior of people and the availability of clinical services, the TB program was performing relatively well in Kerala.

In 1982, the old buildings of the T.B. sanatorium at Mulankunnathukavu were modified to accommodate the pre-clinical and para-clinical departments as well as the administrative block of Government Medical College Thrissur. In 1993, when Pariyaram Medical College was established, the nucleus of the building was Pariyaram TB Sanatorium.



Inauguration stone at TB Sanatorium, Pulayanarkotta, inscribed with "This institution was inaugurated by the Honourable President of India, Dr. Rajendra Prasad", on 12th August 1937.



TB Sanatorium established in 1930's at Pulayanarkotta, Thiruvananthapuram



Kerala Varma Sanatorium, Thrissur during 1960s

KERALA VARMA SANATORIUM MULANKUNNATHUKAVU, TRICHUR DISTRICT, KERALA (Phone: 41)			
Name	Investigation	Treatment given	
Age 32	1. Sputum Negative	1 SH	
Sex M	2. X-ray Chest	2 INH	
I. P. No. 293		3 PDS	
Index No. 26306		4	
Admitted 19/5/76		5	
Discharged 24/9/76		6	
Diagnosis PT	3. Other Investigation	7	
		8	
Advised to attend the Dist. T. B. Centre for further examination and advice.		T. RICHUR	
To corp. T. B. INH 300 k. V. Sanatorium, Mulankunnathukavu		SUPERINTENDENT	

Discharge summary of a patient who received TB care at Kerala Varma Sanatorium, in 1976.

RNTCP piloted at Pathanamthitta

In 1992, the Government of India reviewed the 30 year performance of the National TB control Program (NTP). The comprehensive review observed that the NTP has not achieved its aims or targets. In 1993, India revised the guidelines of the TB program based on the Directly Observed Treatment Short Course (DOTS) strategy. The pilot project of the Revised National Tuberculosis Control Program started in 1993. (In that year, the World Health Organization declared tuberculosis a global health emergency.) Pathanamthitta was one of the national pilot sites.

A high degree of political and administrative commitment, wide access to good quality sputum smear microscopy, uninterrupted supply of quality-assured drugs, treatment adherence support by observation of treatment, and a robust recording and reporting system marked the revised strategy. One TB unit in Adoor and another in Thiruvalla supported decentralized programme management. The District TB Officer, TB Staff and general health staff worked tirelessly under the leadership of the District Medical Officer (Health) to successfully implement the RNTCP pilot project. TB care has been decentralized from the DTC to designated microscopy centres (DMC) and DOT centres at the primary health centre and subcentre levels. A full course of TB drugs for six (new patients) to eight months (previously treated patients) was ensured to every patient in the form of patient-wise supplies. The DTO and staff hand-packed each day's dose in ziplock covers and made them into intensive phase and continuation phase pouches. Each patient was personally visited by the DTO and staff during the course of treatment.

The results of the pilot were overwhelming. Every PHI started referring presumptive TB, and every DMC started reporting TB. Every patient received an uninterrupted supply of drugs for the entire course. The TB detection rates and treatment success rates drastically improved. However, it also cautioned that people with TB treated without direct observation had a substantially higher risk of adverse outcomes than those treated under direct observation and emphasized the need for DOTS.

(<https://pubmed.ncbi.nlm.nih.gov/10815733/>)



District TB Centre, Pathanamthitta, where the RNTCP was first piloted

REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME PATHANAMTHITTA DISTRICT, KERALA STATE	
SALIENT FEATURES PILOT PROJECT PHASE-II Launched on 2.10.1994 Area - 2642 Sq. Km. ² Administrative Structure	
DTC	
Sub Unit - A Julos Population 5.1 Lakhs	Sub Unit - B Thiruvalla Population 5.08 Lakhs
India Structures	
General Hospital - 1	Pathanamthitta
District Hospital - 1	Kochancherry
Govt. Hospital - 1	Kallioyara
Taluk Hospital - 3	1. Thiruvalla 2. Mullaappally 3. Ranti
Community Health Centre - 3	1. Adoor 2. Kanjattukara 3. Ranti - Pennad
Block P.H.C. - 9	1. Chudankary 2. Karamanthuram 3. Echmanthoor 4. Elanthoor 5. Valasa 6. Kormi 7. Uthandungalam 8. Vezhuchira 9. Thumpamon
Primary Health Centre - 44	
Family Welfare Centre - Over 340	

At the moment we have 17 microscopic centres and all hospitals, CHCs, PHCs and Family Welfare Centres act as treatment centres.

Report submitted to District Collector, Pathanamthitta on RNTCP pilot implementation in 1994



DOTS awareness inauguration by a person with TB at Pathanamthitta district



DOT or not? Direct observation of anti-tuberculosis treatment and patient outcomes, Kerala State, India

Publication comparing the DOT or non DOT regimen in Kerala,2000

First state to achieve 100% coverage of RNTCP

The success of the pilot project encouraged the country to rapidly scale up RNTCP. District TB Control Societies were formed in each district under the chairmanship of the district collectors, with the DTO as the member secretary. All the district collectors frequently reviewed the program and reported progress. Some of the district collectors conducted field visits to see the performance and took on-the-spot corrective actions. The then district collector of Kollam appreciated the hard work of the health staff and community volunteers after an extensive field visit and stated, “RNTCP is the best designed health programme and I believe that this is my internship in Public Health”. The State TB Control Society was formed in 1999 under the chairmanship of the Principal Secretary (Health). Such a high degree of political and administrative commitment and uninterrupted fund flows ensured the rapid scale-up of the RNTCP. By 2000, Kerala became the first state in the country to achieve 100% geographic coverage of RNTCP.

The State TB Training and Demonstration Centre (STDC) in Thiruvananthapuram was strengthened, which rigorously ensured the quality assurance of microscopy. Approximately 350 DMCs were established in the District and Taluk hospitals and CHCs, each serving an approximate population of 100,000. Medical officers, paramedical staff, and field officers of the Kerala state health services delivered the TB care and services through primary health care networks. Dedicated lab technicians were posted at Designated Microscopy Centers. Additional laboratory technicians were recruited on contract by the district TB Control Societies to support the regular laboratory technicians. Quality assured cadre-wise training was provided to all. RNTCP drugs were stocked in all government health facilities, down to the PHCs. All sub-centers acted as DOT centers. Patient-wise, drug boxes replaced zip-lock plastic covers and ensured an uninterrupted supply of drugs. The district-level program management units were decentralized to the subdistrict level by the establishment of Tuberculosis Units (TU) and designating a Medical Officer-TB Control (MO-TC) from the health services as the program manager at the sub district level. Initially 73 TUs were established throughout the state and later 4 more TUs were formed based on population and geographical needs. A Senior Tuberculosis Laboratory Supervisor (STLS) and a Senior Treatment Supervisor (STS) were provided in each TU to support the MOTC. They provided

meticulous supervision and monitoring for the laboratory services and patient treatment services. A state-specific policy to appoint permanent staff for critical positions within the RNTCP was a long-term investment in building a dedicated and skilled workforce to spearhead TB control efforts in the state. The medical officers and the public health staff in the PHCs provided dedicated support to RNTCP. Community volunteers were trained as DOT providers, and DOT was provided as close as possible to the house of persons with TB.



'The Hindu' dated 24-06-2002, quoting
 "Kerala is the only state in the country where
 all the 14 districts have been covered under RNTCP"



Patient wise drug boxes during RNTCP era

Blazing the trail: Public Private Mix in RNTCP

After achieving 100% geographical coverage of RNTCP, the state tried to expand the services to the private sector.

In 2001, Deen Hospital, Punalur, was designated as the first RNTCP-microscopy center in a private hospital. RNTCP organized staff training and provided laboratory consumables, anti-TB drugs, and recording and reporting tools. A memorandum of understanding was signed between RNTCP and Deen Hospital. The PPM model was scaled up in Kollam district, where RNTCP encouraged smaller private hospitals, clinics, and individual practitioners to refer presumptive TB patients to RNTCP facilities and simultaneously supported relatively bigger private hospitals with laboratory facilities to set up DMCs.

During the same period, Kannur district developed another model based on a private laboratory surveillance network for sputum smear microscopy, where free training and quality assurance supervision were provided by RNTCP. The laboratories participated on a voluntary basis, and there was no signed agreement between RNTCP and the laboratories. This model demonstrated an increase in presumptive TB testing rate and also registration of unreported cases. (Kumar MK, Dewan PK, Nair PK, Frieden TR, Sahu S, Wares F, Laserson K, Wells C, Granich R, Chauhan LS. Improved tuberculosis case detection through public-private partnership and laboratory-based surveillance, Kannur District, Kerala, India, 2001-2002. *Int J Tuberc Lung Dis*. 2005 Aug;9(8):870-6. PMID: 16104633.)

In 2003, when the Government of India started a pilot project on PPM (Public Private Mix), Thiruvananthapuram district was one of the 14 national pilot sites.

The Indian Medical Association, Kerala branch took on a facilitator's role by acting as an interface between RNTCP and the private health sector and trained nearly 6000 private providers on RNTCP and International Standards of TB Care (ISTC) between 2006 and 2016. IMA through partnership schemes, provided additional lab technicians to DMCs and established specimen collection and transportation connecting major private hospitals. The Catholic Bishops' Conference of India (CBCI), through a project, supported engaging hospitals run by Catholic hospitals. There were nearly 100 DMCs and 400 PHIs in the private sector by 2015



Inauguration of first private Designated Microscopy Centre at Deen Hospital, Punalur, Kollam



Certificate issued to Deen Hospital, for engagement with the RNTCP.



Declaration of 100% involvement of private sector in RNTCP Kollam (2006)

The first Government to endorse International Standards of TB Care globally

In March 2006, the International Standards for Tuberculosis Care (ISTC) and patient charter were established to define the level of care that all practitioners, public and private, should follow when treating people with TB. Developed by the Tuberculosis Coalition for Technical Assistance, the ISTC aimed to ensure high-quality care for all people with tuberculosis, including those with drug-resistant strains and HIV co-infection.

Realizing the importance of ensuring and providing a high standard of care to restore the health of individuals with tuberculosis, to prevent the disease in their families, and to protect the health of communities, the Government of Kerala endorsed ISTC and the patient charter in August 2006 and became the first Government to endorse ISTC across the globe. Years later, on March 24, 2014, the Standards of TB Care in India were unveiled, receiving strong endorsement from healthcare professionals throughout the state.

The state has also trained private practitioners on Standards of TB care in India. Through the IMA End TB initiative, which was a locally customised partnership between the state TB Cell and IMA Kerala State Branch, IMA has trained approximately 2000 doctors on STCI in the year 2015. A study done to look at the TB prescribing practices of private doctors in the state has revealed that more than 95 percent of them adhere to the standards of TB care. Details of the study available at <https://www.sciencedirect.com/science/article/abs/pii/S0019570716300580>



Release of ISTC Charter by Honourable Minister for Health and Family Welfare, Smt. P K Sreemathi in 2006

It was never vertical !

The Revised National Tuberculosis Control Program (RNTCP) in Kerala has never operated as a standalone, vertical program. Instead, it has been seamlessly integrated into the state's general health system, reflecting a model of shared ownership and collaborative management. This integration is evidenced by the active involvement of health system leadership at various levels. The Director of Health Services regularly reviewed the program alongside District Medical Officers (DMOs), who, in turn, conducted monthly reviews with their teams. At the block level, Block Medical Officers coordinated monthly review meetings with all Primary Health Centers (PHCs). This extensive network of field staff, including Health Supervisors, Health Inspectors, Junior Health Inspectors, Lady Health Supervisors, Lady Health Inspectors, and Junior Public Health Nurses, worked alongside the dedicated RNTCP staff—Senior Treatment Supervisors (STS), Senior Tuberculosis Laboratory Supervisors (STLS), and Tuberculosis Health Visitors (TBHV)—to deliver TB services effectively. The rollout of the National Health Mission (NHM) brought about further integration of RNTCP, aligning it with the broader health initiatives and resources of the NHM.

A critical component of the integration with general health system was the role of the Medical Officer - Tuberculosis Control (MOTC). The MOTC, a key figure within RNTCP, served as a sub-district program administrator, pivotal in bridging the gap between RNTCP and primary healthcare. They were responsible for overseeing the TB program at the sub-district level, ensuring that it aligned with the general health services provided by PHCs and private institutions in their area. This role involved regular visits to all peripheral health institutions within their Tuberculosis Unit (TU), making the MOTC a crucial link in the decentralized approach to TB management. Beyond their administrative and field duties, MOTCs played an active role in district-level program reviews, ensuring that TB control measures were consistently monitored and improved.



Medical Officers-TB Control conducting monthly review with field staff of Tuberculosis Units



Medical Officer-TB Control during field visit

Kerala Health system started seeking the people with TB

From a phase of voluntary reporting of symptoms of TB (passive case finding), 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 or sputum collection, and then to active case search in the community.

Idukki District established a district-wide community-based active case-finding strategy in 2007. Junior Health Inspectors and Junior Public Health Nurses of the general health system started screening people for TB symptoms at their houses, collecting and transporting sputum. This has been believed to have led to minimizing the delay in diagnosis. Within two years, the annual presumptive TB examination rate increased from 500/100,000 to 1400/100,000. This resulted in a nominal increase in case notification and assured access to TB care for the entire population.

By 2010, all districts had started Active Case Finding interventions. Initially, it was among the contacts and the clients attending health facilities, and later among the vulnerable population and general community. Districts were competing to achieve high presumptive TB examination rates. The Presumptive TB test rate per 100,000 population increased from 700 (2005) to 1530 (2023). However, 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.



Active Case Finding activities by field staff



Active Case Finding in an Old age home

Establishment of Culture and Drug Susceptibility testing facilities

The Culture and Drug Susceptibility laboratory that has been a part of STDC Thiruvananthapuram since a long time was elevated to an Intermediate Reference Laboratory (IRL) in 2007. It provided the stepping stone to establish a quality assured diagnosis of drug resistant tuberculosis (DR-TB). Till then, the state relied on the National Institute of Research in Tuberculosis (NIRT) in Chennai for DR-TB diagnosis. The Government of Kerala allotted an amount of approximately one crore INR to establish IRL.

In 2010, the existing laboratory was converted to a Biosafety Level 3 (BSL-3) facility to handle potentially infectious samples safely. IRL received certification for liquid culture and DST in 2011 and Line Probe Assay, a technology that can detect resistance to important drugs, in 2012.

A second laboratory for performing these tests was established at Government Medical College, Kozhikode. The lab received certification for LPA in the year 2019 and NABL accreditation in 2024



Work station at Intermediate Reference Laboratory



Inauguration of IRL, Thiruvananthapuram by Honourable Minister for Health and Family Welfare Smt. P K Sreemathy (2007)



Culture & Drug Sensitivity Lab at Government Medical College, Kozhikode.

Kerala as the pioneer in decentralized management of Drug Resistant TB

Kerala became the first state to establish statewide coverage of DRTB management in 2008. Programmatic Management of Drug Resistant Tuberculosis (PMDT) (erstwhile DOTS Plus) was formally inaugurated by the Hon'ble Minister of Health and Family Welfare in a public function held on 13th January 2008. The first person with Drug Resistant TB was initiated on treatment in the state by the Nodal DR-TB Center at Government Medical College, Thiruvananthapuram, in December 2008.

Second Nodal DR-TB center was established at Government Medical College, Kozhikode in 2009 and started catering to the northern seven districts of Kerala.

In 2010, STDC Kerala was recognized as the 3rd National DOTS Plus Training Centre. The state organized training sessions for clinicians and program managers from all states across the country.

Till 2010, all persons with Multi Drug Resistant TB (MDRTB) had to travel to the respective nodal DRTB centre to undergo pre-treatment evaluation and treatment initiation. Each of them had to be hospitalized for approximately two months. They also had to visit the nodal DRTB centres on multiple occasions, like starting the continuation phase of treatment, managing adverse reactions, and modifying or ending treatment. This caused delays in treatment, challenges in travel, an increase in out of pocket expenditure, the loss of wages of family members, and added burden to the DRTB centre staff. Considering these, the state adopted the policy to decentralize DR-TB care and management at the district level. Ernakulam District TB Centre initiated DR-TB treatment for the first time at the district level in 2010. District DR-TB committees were established in all districts. Based on the experiences, the country adopted the policy to decentralize DR-TB care through the establishment of district DR-TB centers.

In 2023, a third Nodal DR-TB center was established at the Government Medical College in Thrissur, significantly reducing travel time and enhancing convenience for patients in central Kerala.

Since 2021, Kerala has also established a State Difficult-to-Treat TB Clinic (DT3C), comprising experts in TB management from various specialties and decision-makers. The DT3C supports Nodal

and District DR-TB centers to improve patient management, with a primary focus on drug-resistant TB cases. The committee convenes monthly in an online format to discuss clinical cases requiring expert opinions.



Inauguration of DOTS plus site at Chest Disease Hospital, Thiruvananthapuram by Honourable minister for Health & Family Welfare Smt. P K Sreemathy in 2007



Inauguration of MDR-TB Ward at Kollam by Sri. M.A Baby (2014)



Initiation of first person on shorter DR-TB regimen at district DRTB centre Kasargod, 2019



Third Nodal DRTB centre at Govt. Medical College Thrissur, established in 2023

Impactful Communication Campaigns to reach every nook and corner

Kerala Health Services Department has implemented a variety of advocacy, communication, and social mobilization campaigns during the early years of RNTCP implementation.

In 2003, Kerala launched a massive public awareness campaign called COMBI (Communication for Behavior Impact) to combat tuberculosis. The campaign was organized with the help of the educational department and involved school students, who played a crucial role in spreading awareness to the members of their family and the community. During a month-long activity, the youth conducted cycle rallies to all designated microscopy centres, nearly 50 lakh school students participated in school-based activities, and local leaders hoisted DOTS flags in all DMCs.

Later, many districts implemented innovative communication activities. In 2006, a 'Padayatra' (journey by foot) was organized by the RNTCP staff and other health staff in the coastal areas of Kasaragod district to generate awareness among villagers, mostly fishermen and farmers, about TB and free treatment. In 2007, a Gram Panchayat in Kozhikode district, renamed a bus stop in Koottalida after DOTS. In 2009 a 'Vahana Sandesa Yathra' was organized by the state TB cell. One van decorated with TB messages started from the southern (Parashala) and another from the northern (Manjeswaram) points of the state. The yathra covered every district and TUs in the state, giving TB awareness messages using an array of communication tools.

In 2012, the State TB Cell, with the support of the Department of Education, organized, 'Akshaya Vidyalayam', which involved awareness and activities at schools, competitions for students including poster making, and quizzes at multiple levels, including the state level. The concept behind Akshaya Vidyalayam was to utilize students as a channel to communicate with families and the communities.

The motto of the campaign was:

"Ente school akshayavidyalayam" (My School-TB free school),

"Ente veedu akshayabhavanam" (My Home-TB free home),

"Ente gramam akshayagramam" (My Village-TB free village).

Building on successful TB advocacy initiatives from previous years, 2023-24 saw a continued focus on training teachers in Ernakulam and Idukki districts to educate students about tuberculosis.

'Yes' Campaign - A district-wide campaign was conducted among students attending 11th and 12th standard in all schools in the Idukki district in Kerala as part of awareness generation activities implemented by the District TB Centre. A multi-pronged approach was used in this classroom-based awareness sessions led by teachers including an audio-visual show, modular training, peer education, and classroom-based activity.

The initiative of Ernakulam, 'CHIRAATH- the lamp of light', is a visionary concept designed to foster enlightenment among students, facilitated by the guidance of teachers. 75,000 students received awareness sessions as part of the intervention. The students demonstrated the knowledge they acquired through poster presentations. Operating on a zero-cost budget, CHIRAATH showcases remarkable cost-effectiveness and scalability, potentially impacting approximately 300,000 individuals (considering family size of 4) within the district. This program is set to expand to other districts in the coming years.



Flag hoisting held as part of the campaign "Communication for Behaviour Impact" (COMBI) at Alappuzha in 2003



DOTS Bus stop as Kootalida, Kozhikode district



Vahanasandesa Yathra organised by State TB Cell (2009)



"Akshayavidyalayam" campaign organised by Department of Health in association with Department of Education, in 2012



Wall painting at State TB Cell, Thiruvananthapuram



District level inauguration of CHIRAATH
at Ernakulam (2023)



Training for high school teachers on
Tuberculosis as part of
CHIRAATH programme at Ernakulam



TB Pledge by school students at Idukki district

Local Self Governments - the rising champions in TB control

In 2007, the honourable ministers for Health Department and Local Self Government Department (LSGD) initiated action to engage all LSGs in RNTCP. A joint call to action was made by them to all LSG leaderships. In four zonal sessions, all the grama panchayat presidents were sensitized on TB and RNTCP, in which the minister for LSGD personally participated. LSG engagement was intended for providing treatment support to needy patients and linking them to social welfare activities. Later, all panchayat presidents were trained at the Kerala Institute of Local Administration (KILA) during 2010-2012. This strategic partnership has empowered panchayats to become the leaders in TB control.

In 2010, an initiative titled, 'TB AWARE PANCHAYATH' was organized to improve the performance of 74 panchayats in presumptive TB referral. A series of activities were held to foster the stewardship of panchayats and to enhance the TB awareness of the community. Based on the activities conducted, the Honourable Minister for Health and Family welfare declared all 74 panchayaths as 'TB panchayats' on 7th April 2010.

Innovative initiatives, including nutritional support, patient support groups, the handkerchief revolution etc. emerged from many Local Self Governments.



"TB Aware Panchayath" declaration & honouring of Panchayath Presidents by honourable Minister for Health & Family Welfare Smt. P K Sreemathy (2010)

Lending helping hands: Nutritional Support to people with TB

Following the strong engagement of grama panchayats in the fight against tuberculosis (TB), the district panchayats soon joined the endeavour. In 2011, the Kasaragod District Panchayat pioneered a nutritional support scheme for individuals with drug-resistant TB, utilizing its development funds. This initiative, named 'Kaithangu,' provided monthly nutritional supplementation kits to all patients with drug-resistant TB for the duration of their treatment. The success of 'Kaithangu' in improving treatment outcomes inspired many local self-governments (LSGs) to implement similar projects. As a result, all 14 district panchayats in Kerala adopted the practice of offering nutritional support to TB patients in need. Building on these efforts, the Tribal Welfare Department of the Government of Kerala launched a program in 2014 to distribute nutritional kits to all tribal individuals with TB in the Wayanad District.

Currently, nutritional support for all needy TB patients in Kerala is provided through a combination of treatment support groups, LSG projects, and Corporate Social Responsibility (CSR) funds. Additionally, the Revenue Department offers a monthly pension of Rs. 1600 to all TB patients with an annual household income of less than 1,00,000 INR. These comprehensive measures underscore Kerala's commitment to ensuring that TB patients receive the support necessary to successfully complete their treatment and improve their quality of life.



'Kaithangu'- Nutritional support programme for people with TB by Kasaragod District Panchayath in 2011



LSG leaders handing over nutritional support kits to people with TB in Kollam and Thrissur districts

Ensuring Social Inclusion for all people with TB through Treatment Support Groups

TB disease has been associated with social stigma, which has been one of the major reasons for delays in seeking care and interruptions of treatment. In a historical endeavor, Pathanamthitta district established Treatment Support Groups throughout the district, starting with the first TSG in Naranammoozhy PHC of Ranni TB Unit in 2013. A treatment support group is a non-statutory body of socially responsible citizens and volunteers to provide social support to each needy person with TB, safeguarding their dignity and confidentiality by ensuring access to information, free and quality services, and social welfare programmes, empowering them to make decisions to complete treatment successfully. All people with TB in the LSG area are eligible for treatment support. However, needy people with TB are being linked to the TSG by a medical officer and staff of PHI after assessing the need. This intervention has brought the lost to follow up rates to zero in the district.

Based on the need, many treatment support groups extended financial assistance, food and nutrition, transportation to health facilities, emotional support, motivation for de-addiction, linkage to welfare schemes, and delivering services at door steps to families affected with TB. The effort has been documented and is available at: <https://pubmed.ncbi.nlm.nih.gov/26970465/>

Recognising the success of the intervention, TSGs were scaled up across the state as a part of the Kerala TB Elimination Mission (2018). 53% of the LSGs formed treatment support groups. 681 LSGs in Kerala had ZERO Loss to Follow up by 2020. Total Lost to Follow Up rate, including the initial loss to follow up, of the state has been reduced to 2%.



'Mukthi Club' , a group of TB survivors
of Thodupuzha TU, Idukki



TB treatment support group at ward level



The Treatment Support Group at Kalloorkad Gramapanchayat has initiated the construction of a house for a homeless person affected by DR-TB, mobilizing local support.
The foundation stone was laid on 17/8/24

Kerala as the pioneer state to address a deadly combo: Diabetes & TB

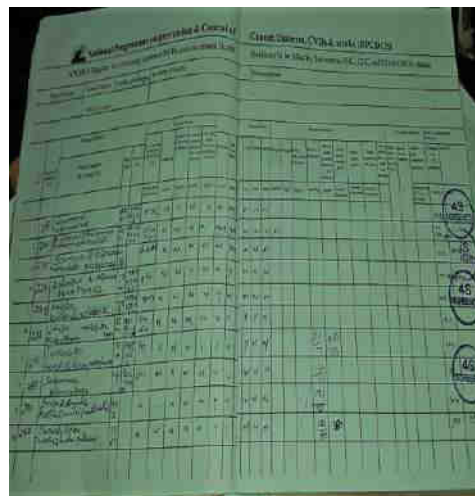
The state has observed an increase in treatment failure rates for people with TB since 2007. During that year, the STDC strengthened the external quality assurance of sputum smear microscopy. As a result, the DMCs improved their performance in identifying the positive slides during follow up of the patient. This led the state to search for the possible reasons for treatment failure. A study conducted in Kerala in 2011 revealed a startlingly high prevalence of diabetes mellitus (DM) among people with TB. Nearly half of the 552 people with TB screened were diagnosed with DM, with a significant proportion of these cases previously undetected. This finding underscored the critical need for routine DM screening in TB patients. The findings served as a wake-up call for the TB community, emphasizing the need for integrated care approaches to address the dual burden of TB and diabetes. Available at: <https://pubmed.ncbi.nlm.nih.gov/23077512/>

Immediately following this, the state established TB- Diabetes collaborative framework. From 2012, the state started screening for diabetes among all people with TB. People with diabetes and TB were followed up meticulously with monthly blood sugars and managed using free drugs, including insulin and oral hypoglycemic agents.

Intensified case finding for TB has been initiated in all diabetes clinics, including primary health centers. A 4 TB symptom (4S) seal was used to ensure that all clients reaching a NCD clinic are screened. District co-morbidity committees were set up for the smooth collaboration of TB and NCD control programs. Joint review meetings with district program managers of TB and NCDs were conducted. This initiative has been scaled up nationwide since 2013.



TB - NCD screening camp



NCD register with recording of TB screening using a 4S seal



Senior Treatment Supervisor taking awareness class on TB at NCD Clinic

The Practical Approach to Lung Health- a national pilot

Practical Approach to Lung-health (PAL) has been a WHO recommended strategy to improve the quality of care for common respiratory diseases in the primary care setting. PAL uses two main approaches to achieve integrated case management of respiratory patients in primary health care: standardization of diagnosis and treatment of respiratory conditions and coordination among health workers of different levels. A technical working group (TWG) on PAL was formed in Kerala in 2008 with national and international experts, and the PAL-Kerala protocol was developed by the TWG in a workshop at Thiruvananthapuram.

In 2015, Practical Approach to Lung Health was piloted in a population of 0.5 million in Kollam district. A burden estimation of chronic respiratory diseases and a needs assessment were conducted. Standard treatment guidelines were developed, all staff of primary health centers were trained, and institutions were equipped with peak flow meters and drugs. Evaluation at the end of the year revealed improved quality of life among people with chronic respiratory diseases, reduced hospital visits and admissions, rational prescriptions, and an approximate 50% reduction in the use of antibiotics and injectables.

Based on these experiences, SWAAS (Stepwise Approach to Airway Diseases) program was designed and scaled up across the state as a public health program to address Chronic Obstructive Lung Diseases.

Experiences on PAL have been documented and are available at:

<https://pubmed.ncbi.nlm.nih.gov/32553312/>

<https://www.sciencedirect.com/science/article/abs/pii/S0019570716300579>



Inauguration of Workshop on Programmatic Approach to Lung health
by Hon. Minister for Health & Family Welfare Smt. P K Sreemathy



District level trainings on 'Programmatic Approach to Lung health' to
Medical Officers, Staff nurses, LS GD members, ASHA,
ICDS staff and volunteers in Kollam.

Expansion of rapid molecular tests

In 2013, Kerala marked a pivotal moment in tuberculosis (TB) diagnostics with the installation of the first Cartridge-based Nucleic Acid Amplification Test (CBNAAT) machine at the District Tuberculosis Center (DTC) in Trivandrum. This introduction laid the groundwork for a phased expansion of molecular diagnostic capabilities across the state. By 2020, TrueNAT, another advanced molecular testing technology, was integrated into Kerala's TB diagnostic framework, further bolstering its capacity to detect TB cases swiftly and accurately.

As of 2024, Kerala boasts a robust network comprising 45 CBNAAT and 104 TrueNAT machines in the public sector, supplemented by an additional 27 CBNAAT and 106 TrueNAT machines in the private sector. This extensive deployment has democratized access to rapid diagnostic technologies, extending their reach to the block level. This strategic expansion has proven instrumental in early detection, facilitating prompt initiation of treatment and containment of TB transmission.

Moreover, the shift from conventional smear microscopy to NAAT-based testing, piloted at Thiruvananthapuram DTC TU in 2020, exemplifies Kerala's commitment to leveraging cutting-edge technology for comprehensive TB management. Concurrently, the establishment of robust specimen collection and transportation systems has streamlined the process of connecting health facilities with NAAT laboratories, ensuring efficient and timely diagnosis.

Beyond its primary role in TB diagnostics, the GeneXpert and TrueNAT machines deployed across Kerala's healthcare landscape have demonstrated versatility during public health emergencies. Notably, these platforms were pivotal in conducting COVID-19 tests during the pandemic, underscoring their adaptability and critical role in addressing emerging health challenges. Kerala's proactive adoption and integration of molecular diagnostics have not only revolutionized TB management but also positioned the state at the forefront of infectious disease control and response strategies.



16 module CBNAAT machine
at DTC Kozhikode



TrueNAT machine at
Taluk Headquarter Hospital,
Thamarassery, Kannur



Mobile van with CBNAAT machine for active case finding at field level

The Drugs Control Department Joining hands for drug sales surveillance

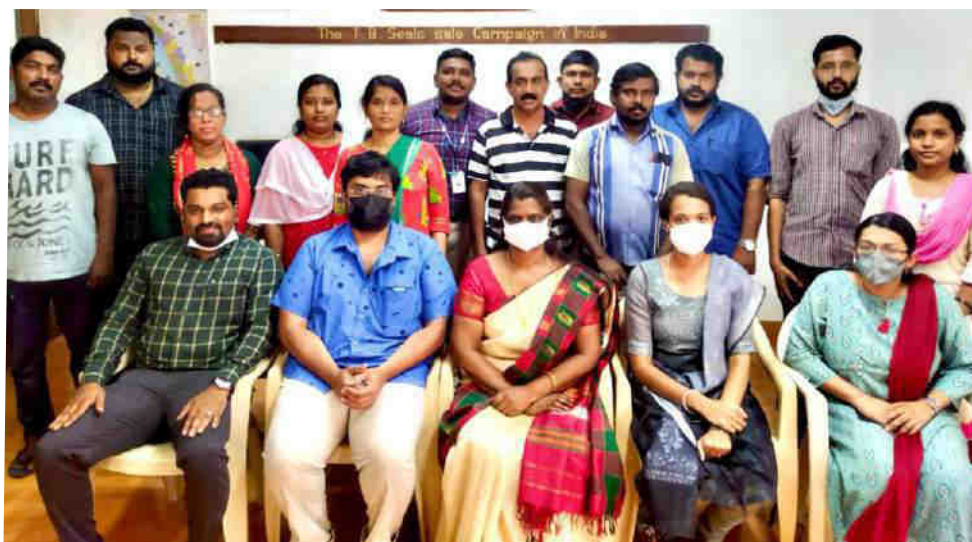
Along with the drugs control department and with the support of various chemist's associations, the state TB program sensitized all chemists to follow Schedule H1 for anti-TB drugs in the state. Month long campaigns were conducted twice, first in 2015 and then in 2018 with high-level monitoring to sensitize all chemists in the state. The Drugs Control Department started regular monitoring of TB drug sales, and department officials were participating in the quarterly RNTCP review meetings.

The sale of anti TB drugs was monitored for surveillance purposes. The sale of rifampicin containing products showed a decline of 40% between 2015 and 2021.

Program managers used the information from Schedule H1 registers to identify missing TB cases and improve TB notification, identify providers who prescribe private anti-TB drugs and sensitize them to the Standards of TB Care in India, and sensitize providers on prescribing practices for TB.

The efforts have been documented and are available at:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8691886/>



Focussed group discussion of private pharmacists conducted by public health experts in 2023 at Thiruvananthapuram



DTO Malappuram conducting awareness class to the pharmacist and medical shop owners



Meeting with regional and district drug inspectors on digital tracking of private drug sale (2024)



Staff visiting chemist shop for sensitisation on schedule H1 register

International workshop for the ‘Strategic Plan Towards Rapidly Ending TB’ in Kerala

With a view to understand the TB epidemiology in Kerala in the backdrop of decreasing case detection in spite of steadily increasing case finding efforts and to develop strategies for TB elimination in the state taking advantage of the declining burden that may subsequently be expanded to the entire country, a workshop for the Strategic Plan Towards Rapidly Ending TB in Kerala was held on February 6–7, 2017 at Thiruvananthapuram. The workshop was jointly organized by the Department of Health and Family Welfare, the Government of Kerala, and World Health Organization Country Office for India.

In addition to the experts within the state, 110 clinical, public health, program management experts, and developmental partners of international and national stature attended the workshop and gave their inputs on the state strategic plan for TB elimination. There was the participation of officials from the Government of India, WHO Geneva, WHO Country Office for India, The Global Fund, the International Union Against Tuberculosis and Lung Diseases South East Asia Office, the Indian Medical Association, the Association of Pulmonology and Critical Care Medicine, and development partners of the Government of India, including BMGF, CHAI, PATH, and USAID.



International workshop on 'Sustainable Development Goals for ending TB' conducted in February 2017 in Thiruvananthapuram.

TB Free Cochin- The urban body's stewardship for ending TB

The Corporation of Kochi declared its commitment to end TB during World TB Day on March 24th, 2017 before a thousand civil society members at Town Hall Kochi. This was the first formal declaration to End TB by an Urban Local government. Later, a workshop was held at Amrita Institute of Medical Sciences to develop a strategy document for TB Free Kochi. It was followed by a series of training sessions for civil society volunteers.

Later, the major interventions were expanded to the entire district under the district administration's 'Unite for Healthy Ernakulam' movement. A private hospital in Kochi came and formed a consortium to End TB. The objective of the consortium was to ensure standards of TB care for all the clients reaching the private hospitals in Kochi. It was facilitated as part of the Unite for Health Ernakulam movement by IMA Kochi.

Under the 'Unite for Healthy Ernakulam' movement, a policy was taken to keep RNTCP drugs at all private hospitals. This was to promote Standards of TB Care to all clients reaching the private sector. The District Collector distributed the RNTCP drugs to all private hospitals.

TB care was integrated into the 'Atithi Devo Bhava', the migrant welfare scheme of the District Health Mission, Ernakulam.



Stakeholders pledging for
TB Free Kochi campaign in 2017



Inauguration of TB Free Kochi
movement, 2017



Ernakulam District Collector distributing
patient wise drug boxes to private hospital



Panel Discussion on strategies for TB Free Kochi

Guidance document for the peoples' movement against Tuberculosis in Kerala

The Principles, Strategy, and Activity document of the Kerala TB Elimination Mission was released in August 2017. The document was brought out with the joint efforts of experts from all across the world to find ways to move towards TB elimination, starting with the lowest burden setting in a high burden country. The document has been published by the Government of Kerala as a Government Order [GO Rt No 246/2018/H&FWD dated 24.01.2018].

The Kerala TB Elimination Mission is envisaged as a people's movement against TB under the leadership of local self-governments. The Mission was formally launched during January 2018. The 122 page guidance document narrates 5 core principles, 10 strategies, and 48 activities with clear monitoring indicators. The five core principles are:

1. Stop new TB infections
2. Prevent active breakdown of disease among the infected
3. Diagnose TB early and completely
4. Treat TB correctly and completely
5. Prevent emergence of resistance

The document was the first of its kind from a region in a high burden country. The document is considered a 'bible' of TB elimination activities for low burden settings within high burden countries, and many states in the country and many countries referred to this document for framing their strategy document for ending TB.

Document available at: https://dhs.kerala.gov.in/wp-content/uploads/2021/01/KeralaTB-Elimination-Mission_Strategy-activity-plan-and-budget..pdf

Local Governments recommitting themselves for TB Elimination

In 2017, the Government of Kerala planned and implemented the Kerala TB Elimination Mission as a joint initiative by the health and LSG departments with the theme "My TB free [name of LSG]". A Joint call letter was issued to all Local Self Government Heads by the Minister for Health and Minister for LSGD in January 2018.

In the State TB elimination mission meeting in January 2019, there was a discussion on the program regarding how to encourage Local Self Government to tackle TB. During the discussion, it was decided to start the certification for the Panchayath and motivate the good performing Panchayath by declaring TB free. This initiative caught imagination of political executive and people at grassroots and they involved to ensure case detection and treatment and as a matter of pride achieved the status of no TB in their respective Panchayaths. It has further demonstrated "Our Health Our Responsibility" at practice

98.6% of Local Self Government heads were formally sensitized on Kerala TB Elimination Mission. LSG level TB elimination task force was constituted at 83% of the LSGs. The LSG TB Elimination Task Force plans local activities, implements, mobilizes resources, monitors themselves, adopts mid-course corrections, and reports to the district TB elimination task force.

Panchayat/municipality/corporation wise mapping of TB cases and presumptive TB was made, and quarterly reports of LSG wise statistics were released by the district TB elimination program.

In 2019, the Hon.Health Minister released a handbook on the role of LSGs for TB Elimination including 10 model projects. In 2020, 35 LGs funded their TB elimination projects with their own development funds. Another 48 had a funded project to address TB determinants such as tobacco control and malnutrition. In addition, 60 LSGs directly contributed to infrastructure development in health facilities linked to TB (e.g. labs, cough corners, improving ventilation, etc.).

561 Panchayats had ZERO TB Under 5 years of age, 688 Panchayats had ZERO Lost to follow up in

2019 and 709 Panchayats had ZERO DR-TB in 2019. Awards were issued to all the LSGs by the Government of Kerala on October 2, 2020. 324 Panchayats met all three criteria. In 2023, Government of India, declared 60 Panchayats in Kerala as TB-free under the TB Mukth Panchayath (TB-Free Panchayat) initiative.

The story of Local Self Government stewardship for TB elimination in Kerala has been scientifically documented and is available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9983805/I>



Distribution of 'Akshaya Keralam' awards to various Local Self Governments in 2020.



Joint Call Letter by Department of Health and Department of Local Self Government for Kerala TB Elimination Mission



Active case finding activities led by Ward members of Grama Panchayath



Release of Guidance Document for Local Self Governments
by Honourable Minister for Health & Family Welfare, Smt. K K Shailaja in 2019



State level training for LSGD officials at Thiruvananthapuram in 2024

Individual's Vulnerability based active surveillance: an innovative effort to improve health system efficiency

Realizing that ACF is not well targeted and may end up with a less-than-desired yield, the wastage of scarce resources, and the burdening of health systems, there was a felt need to optimize resources and workloads while maximizing the yield. Kerala state developed and implemented the concept of “individual’s vulnerability based active surveillance” as a substitute for the blanket approach for population/geography-based Active Case Finding (ACF) for TB. Weighted scores, based on an estimate of relative risk, were assigned to reflect the TB vulnerabilities of individuals. Vulnerability data for 22,042,168 individuals was mapped through a door-to-door campaign in 2018 and was available with the primary healthcare team. Validation of the vulnerability scores revealed that 3.5% of the population constituted nearly 50% of the incident TB occurring in the state.

Individuals with higher cumulative vulnerability scores were targeted for serial ACF from 2019 onwards. Individual’s vulnerability-based ACF was first conducted from October to December 2019.

The mapping of individual’s vulnerability helped the program managers to identify the individuals who needed to be serially followed-up. It also provided the opportunity for the primary healthcare system to reduce the vulnerability of individuals by linking them to appropriate programs.

Experience has been documented and available

at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9781449/>



Inauguration of State level vulnerability mapping survey
by Hon'ble Health Minister Smt. K K Shylaja



DTO Idukki with the
hard copies of the individual's
vulnerability data of the district



The official inauguration of Ernakulam district
vulnerability survey on 8th January 2018
at the residence of Hon'ble Chief Justice of
High Court of Kerala

Even the floods could not submerge the TB care

Floods in 2018, classified as a "calamity of a severe nature," led to the displacement and relocation of more than 1.5 million citizens. There were major landslides, which left many hilly habitats isolated. One-sixth of the total population of Kerala had been directly affected by the floods and related incidents. Over 3274 relief camps were opened to accommodate the flood victims.

The Department of Health and Family Welfare, Kerala state, successfully prevented the disruptions in TB services. Structural damages to institutions were assessed, and all TB laboratories were made functional within 10 days. With 100% recording of electronic case based data, all people with TB were contacted by the field staff of the health services department through telephone, active search in relief camps, and active search in all possible places to which the patient could move. The state has ensured continuity of TB treatment for all notified people with drug-sensitive and drug-resistant TB (9608 and 434, respectively), including those who were displaced and relocated. The control room facilitated coordination among the service providers to ensure continuity of TB care. An additional 2-week supply of anti-TB drugs was issued to 148 people on TB treatment, who lost/could not access their drugs due to relocation.

The experiences were documented in detail and available at: <https://pubmed.ncbi.nlm.nih.gov/32183921/>



District Medical Officer Pathanamthitta conducting review of TB service delivery during Kerala Floods in 2018



Primary health care team reaching out to all flooded areas to ensure continuity of services.

System for TB Elimination by the Private Sector (STEPS): A private sector led initiative to End TB

Many private sector engagement models implemented across the globe that aimed to improve the quality of care among clients reaching the private sector could not scale up due to a lesser emphasis on creating lasting partnerships and huge long-term financial implications. The System for TB Elimination in Private Sector (STEPS) was initiated in Kerala as a solution for ensuring standards of TB care in a patient-centric approach for all clients accessing care in the private sector. STEPS is envisioned as an equal partnership between the public and private sectors for the benefit of society, with TB elimination as the outcome. STEPS is based on self-initiated business promotion by the private sector fostering customer loyalty.

STEPS has three main components: (1) STEPS center in each private hospital; (2) Private Hospital Management's Consortium, which provides policy and resource support to STEPS centers and reviews the STEPS center's performance; and (3) the Coalition of Medical Professional Associations, which advocates with medical practitioners and sensitizes them on the Standards of TB Care in India and STEPS.

STEPS was formally launched in February 2019 by Dr. Soumya Swaminathan, Chief Scientist of World Health Organization, in the presence of state health administrators and private hospital management representatives. City officers of Project JEET helped in the implementation of STEPS for the initial two years.

STEPS centers were established in 446 private hospitals and served as a one-stop location for the entire TB-related cascade of care. Of the total people with TB notified from these private hospitals, 99% had their treatment outcome reported, with a treatment success rate of 88% after the implementation of STEPS. STEPS has also shown resilience during the COVID-19 pandemic without a drop in TB notification or services.

Details of STEPS available from:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8324185/>

<https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-024-02151-1>

<https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-021-07342-y>



Dr Soumya Swaminathan, Chief Scientist,
World Health Organisation inaugurating 'STEPS'.



All the private hospitals of Wayanad district joined STEPS (2019).

Private Hospital Consortia for TB Free Kerala

The STEPS strategy for public private partnership for TB free Kerala needed formal structures to organize private hospitals. The private hospitals of Kochi came together and formed the first consortium for TB Free Kochi in 2017. The objective of the consortium was to ensure uniformly high Standards of TB diagnosis and treatment for all citizens of the city who seek care in the private sector. The Health Minister of the state, the Mayor of the city and District Collector had frequent interactions with the consortium members. The IMA Cochin branch facilitated the formation of the district consortium.

Later, as part of STEPS, similar consortia were formed in all the districts. All private hospitals, irrespective of bed size, became members of the consortium. Each district consortium was chaired by one private hospital on rotation every year. Consortia ensured that all hospitals were part of STEPS and provided them with policy support. Consortia also reviewed the activities of STEPS centers every quarter. It also provided a venue for dialogue between the private and public sectors. The district consortia facilitated the participation of the private sector in the fight against COVID-19 and established their relevance in partnerships beyond TB.

Mission of the private hospital consortium for TB free Kerala

1. To ensure uniform high Standards of TB diagnosis and treatment to all citizens who seek care in private sector
2. To ensure all public health services including contact tracing, TB preventive treatment, Air Borne Infection control and treatment adherence support to the patients, relatives, health care workers of the private health sector in each district of Kerala and the community at large



Private Hospital Consortium held at Thrissur



Private Hospital Consortium reviewing activities
of STEPS centers at Ernakulam

Coalition of Professional Medical Associations for TB Free Kerala

The fight against TB needed leadership from medical professional associations in the state. All associations formed a coalition under the patronage of the IMA. Each association chaired the coalition in rotation every year. The first chair of the state coalition was the Academy of Pulmonology and Critical Care Medicine (APCCM). The strategic objectives of the coalition were to (1) technically support the state in formulating policy decisions on strategy and operations for the Kerala TB Elimination Mission(2) plan, execute, supervise, monitor, and review activities by its member organizations to ensure uniform high standards of TB diagnosis and treatment; and (3) advocate for ensuring all public health services, including contact tracing, TB prevention, Airborne Infection control and treatment adherence support to all patients, relatives, health care workers of the state and the community at large. The Indian Medical Association is still the permanent patron of the state and district coalitions. In 2024, the Clinical Infectious Disease Society has been elected as the Chair of the coalition, and the General Practitioners Association as the Vice Chair, with the Indian Medical Association continuing as the patron



Meeting of State Coalition of all Professional Medical Associations for TB Elimination in April 2024



First meeting of State Coalition of all professional Medical Associations for TB Elimination in 2019



District Coalition meeting of all professional Medical Associations for TB Elimination, Ernakulam

Airborne Infection Control at households, community and health facilities

The state has planned and implemented Airborne Infection control at three levels as a part of the Kerala TB Elimination Mission.

At the household level, an airborne infection control kit (AIC kit) containing five reusable and washable cloth masks, a spittoon, and a litre of disinfectant solution was supplied to all people with TB at the time of diagnosis of TB, along with education material to use the kit. Health workers educated the person with TB on infection control processes. During house visits, the health worker ensured that the person used the materials and observed cough etiquette. It was for the first time that such a domestic AIC kit was provided to persons with TB in the country.

‘Handkerchief Revolution’ has been implemented to empower the community to follow cough etiquette. The campaign focused mainly on school children and was implemented in many districts through the Department of Education.

At the health facility level, 75 Taluk/District hospitals have established AIC help desks [Cough Corners] where patients with respiratory symptoms were screened and provided with masks and education on cough hygiene. All the measures were further strengthened during the COVID-19 pandemic.



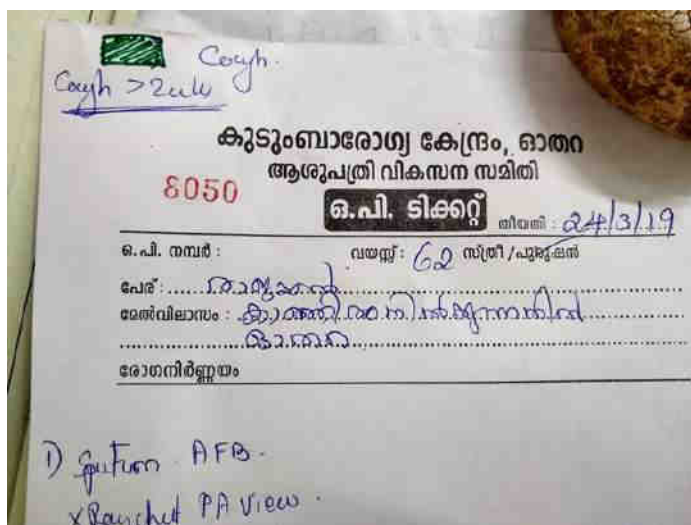
Handkerchief Revolution to promote cough etiquette at schools



Inauguration of Airborne Infection Control(AIC) help desk at CHC Pazhanji, Kottayam



Demonstration of services by AIC help desk at FHC Ambalavayal, Wayanad



OP ticket showing a green mark indicating the need to fast track the client in the health facility



Airborne Infection Control Kit

TB Elimination Boards ensured multi-sectoral coordination and accountability

The District TB Elimination Board was conceived as the district level apex body to take policy decisions on the adaptation of TB elimination strategy, operations, resources, and timelines. The board meets once a quarter, monitors the implementation of TB elimination strategy at sub district levels and adopts appropriate corrective measures upon recognition of shortfalls or gaps.

The board is chaired by the District Collector and includes representatives of various departments including health and allied, LSGD, social justice, education, labor, revenue, tribal, urban affairs, and representatives of the private sector, professional medical associations, medical colleges, civil society, and development partners. The presence of a TB survivor has been ensured on all district TB Elimination boards.

The District TB Elimination Board ensures multi sectoral coordination and accountability for TB Elimination.



District level TB Elimination board chaired by the District Collector, Palakkad



A TB Survivor talking in a District level TB Elimination board chaired by the District Collector, Wayanad



TB Elimination Board at Thiruvananthapuram district

Tribal TB Elimination: Reaching the last mile

Compared to the general population, a higher incidence of TB has been observed among the tribal population in Kerala. Specific measures were adopted from time to time to address the issue of TB among tribes. Realizing the difficulties faced by tribal people, in 2001, the District Collector of Wayanad initiated a travel support scheme of 50 rupees for every visit of a tribal person with TB. Travel support for a person with TB was non-existent before that.

Tribal department has been providing nutritional support to all tribal people with TB from 2014 onwards in Wayanad district. Tribal promoters were trained on the basics of TB. The tribal department reimburses all medical costs and transportation costs of tribal people for visiting a health facility. When the Direct Benefit Transfer schemes were introduced, the TB Program and the tribal department put tremendous efforts in ensuring that all people with TB from the tribal area had a bank account.

In 2019, a workshop was organized with 'Tribal chiefs' of hamlets to specifically discuss action plans for 'Tribal TB Elimination'.



Smt. Vellai, a tribal chief, speaking on the need for "culture sensitive" interventions for ending TB among tribal people.



Tribal Chiefs of Wayanad met to discuss the 'Tribal TB Elimination' plan



State TB Officer visiting tribal hamlets at Attappady, Palakkad (2023)



TB case finding camp at Tribal areas of Kuttampuzha, Ernakulam

International experts appreciates Kerala during the Joint Monitoring Mission

Every three years, the World Health Organization (WHO) and Government of India (GoI) organize an external evaluation of the program called Joint Monitoring Mission (JMM). JMM teams consisting of international and national experts, visit states to evaluate program performance. During the seventh JMM, a team of 21 international and national experts visited Kerala in November 2019. In addition to the state headquarters, the team visited Thrissur and Wayanad districts, interviewed patients and their families, TB staff, general health staff, community volunteers, LSG officials, tribal chiefs, private providers, and medical colleges. They also interacted with the health minister and officials of the State health department.

The JMM team has documented its appreciation of Kerala's achievements towards TB Elimination. The plan for Kerala TB Elimination Mission and its implementation including (1) vulnerability mapping exercise, (2) establishment of District TB Elimination Board, (3) cough corners, AIC awareness campaigns and home AIC kits (4) Local self-government stewardship (5) community empowerment efforts were recommended as best practices. STEPS (System for TB Elimination by Private Sector) has been recommended for national scale up. The team especially appreciated the patient-centric services and the compilation of the epidemiological evidence.

JMM report available at: <https://tbcindia-wp.azurewebsites.net/jrm-reports/>



JMM team with District Collector, Wayanad



JMM team members meeting honourable
Minister for Health and Family Welfare Smt. K K Shailaja



JMM team members debriefing
Principal Secretary, Health



JMM team visiting KIMS hospital,
a STEPS centre

Akshaya Keralam Campaign: delivering TB services at door steps

Despite concerted efforts, the state recognized that persons with TB are still missing to be diagnosed and treated. The COVID-19 pandemic was a challenge to ensure TB care for all. In order to find out the '1600 missing people with TB' a two month long special campaign was designed and implemented during October-November 2020. The campaign was launched by the Hon'ble Minister for Health and Social Welfare.

An advisory for ensuring TB services was released by the State Government. A special catch up campaign was designed to identify the missing people with TB in the community, with a focus on vulnerable individuals, including the elderly, and individuals identified through vulnerability mapping exercises previously. Through the campaign, samples were collected from the door steps, and integrated screening and testing for TB and COVID-19 were implemented. A provider-oriented behavior change communication campaign - 'If not COVID, may be TB' was conducted. Bilateral screening of COVID and TB were established and bilateral TB/COVID screening for all ILI/SARI cases reported in COVID vaccination center's and post-COVID clinics was continued.

Cine actor Mohanlal joined as ambassador for the Akshaya Keralam campaign. Numerous Padma awardees, cine actors, and celebrities joined in propagating the TB messages in the community. A digital social media campaign was successfully implemented.

The campaign has been recognised by the Government of India as a best practice in the country.



A staff collecting sputum during COVID-19 pandemic period



Screening for TB and medical check up in plantation areas during COVID-19 pandemic period

ക്ഷയരോഗലക്ഷണങ്ങളെ അവഗണിക്കരുത്

ഈ ലക്ഷണങ്ങൾ നിങ്ങൾക്കുണ്ടോ?

രണ്ടാഴ്ചയിലധികം നീണ്ടുനിൽക്കുന്ന ചുമ,
ഭാരം കുറയുക, വിശപ്പില്ലായ്മ, രാത്രികാലങ്ങളിലെ
പനി, ശരീരരക്തപ്പിണ്ടിക്കുക, രക്തംചുമച്ചതുപോലുള്ളവ.

കുറേ പരിശ്രമം നടത്തൂ...

ക്ഷയരോഗമില്ലെന്ന് ഉറപ്പുവരുത്തൂ...

കുടുംബശ്രീ പരിപാടികൾക്ക് കീഴ്ത്തിയിട്ടുള്ള ക്ഷയരോഗ നിരീക്ഷണ കേന്ദ്രങ്ങൾക്ക് വിവരങ്ങൾ നൽകുകയും ക്ഷയരോഗ നിരീക്ഷണ കേന്ദ്രങ്ങൾ സന്ദർശിക്കുകയും ചെയ്യുക.

സർക്കാർ ആശുപത്രികളിലും തിരഞ്ഞെടുക്കപ്പെട്ട സ്വകാര്യ ആശുപത്രികളിലും ക്ഷയരോഗ നിരീക്ഷണ കേന്ദ്രങ്ങൾ പ്രവർത്തിക്കുന്നു.

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An IEC material with Sri. Mohanlal, who was engaged as the brand ambassador for Akshaya Keralam campaign



Continuing H1 schedule surveillance during COVID pandemic

Health System resilience for ensuring TB services during COVID-19 pandemic

COVID-19 pandemic has affected TB case detection and continuity of care globally. Kerala has experienced a reduction in TB notifications during the second and third quarters of 2020. Through (1) causal analysis, (2) meticulous planning and establishment of systems, (3) locally customized guidelines (4) better management of resources (5) integration with other programs and (6) good partnership with the private sector, Kerala was able to catch up the TB notification and ensure that TB services remain intact even during the COVID-19 pandemic. The approach to catch up TB diagnosis included (1) Field based active case finding among the vulnerable individuals, (2) bilateral screening for TB and COVID-19, (3) enhancement of biosafety in laboratories, (4) strengthening of specimen collection and transportation systems, (5) targeted advocacy and communication to find out missed cases and (6) effective partnership with the private sector and most importantly (7) Community-based and community-led responses that take diagnosis, care, and support to the doors of those affected

The efforts for ensuring TB services during COVID-19 have been documented and available at:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8511626/>



Primary Health Care team performing Active Case Finding in tribal areas during COVID-19 time



**COVID-19 Outbreak Control and Prevention State Cell
Health & Family Welfare Department
Government of Kerala**

Advisory for Ensuring TB Services in Kerala in the context of COVID-19

NO: 31 /F2/2020/Health- 20th April 2020

COVID-19 pandemic has posed challenges to the health care services worldwide. While we fight the pandemic with all our strength, it is important to see the paces to TB care services are maintained without interruption. TB patients are at increased risk of missing diagnosis and unfavorable treatment outcome during COVID-19 pandemic. While all citizens are encouraged to stay at home and follow the government orders on state lock-down, health system has to ensure that the specific health care services are maintained uninterrupted. This guidance document is issued to ensure that the interruptions to TB care service delivery in the state is foreseen and prevented.

Principle:

As of 16th April 2020, 88855 people who are at any risk of contracting COVID-19 (from close contacts of a confirmed case) are kept under home isolation and surveillance in Kerala. Additional precautions are needed while dealing with diagnosis, treatment and public health action for TB services among those kept under isolation/quarantine or those with suspected/confirmed COVID-19. Rest of the citizens in the state (3.4 Crore) can go through non-COVID (routine health care track i.e. PHC, PHC-CHC-Taluka Hospital- General Hospital) for their illness where the hospitals and health care staff follow standard infection control precautions.

Diagnosis

Active Case Finding: Individuals vulnerable to TB (Elderly above 60 years, People with diabetes, tobacco users, Chronic Respiratory Diseases, Homebound and Bed ridden cases, people on chronic immunosuppressants, children with severe acute malnutrition, household contacts of TB cases) are also vulnerable to COVID-19. War



**COVID-19 Outbreak Control and Prevention State Cell
Health & Family Welfare Department
Government of Kerala**

Intensified Case Finding for TB among Post COVID patients

No 34/31/ F2/2020/ Health- 14th June 2021

Many studies across the world have reported the possibility of re/activation of TB infection leading to TB disease among COVID-19 recovered patients. Temporary immunosuppressive effects and lung inflammation caused by COVID-19 along with steroid induced immunosuppression might be leading to re/activation of dormant bacilli to TB disease. At least 10 cases of re/activation of TB disease have been reported recently from state of Kerala among post COVID patients within four weeks of recovery from COVID. Delay in diagnosis of TB have been reported since symptoms of post COVID respiratory diseases mimics symptoms of TB. In this context, following advisory is issued regarding intensified case finding for TB among COVID recovered patients.

1. Persistence of respiratory symptoms among COVID-19 recovered patients shall be evaluated for TB.
2. All post COVID clinics to incorporate TB screening routinely. All patients attending post COVID clinics to be asked for symptoms suggestive of TB (fever for more than 2 weeks, Cough for more than 2 weeks, night sweats, significant weight loss, chest pain, symptoms of extra pulmonary TB including enlargement of any lymph node). If any of the above symptoms are present, appropriate specimens for the person need to be tested for tuberculosis. If a Chest X-ray is available, anybody with an abnormality in Chest X-ray shall be offered TB testing using optional NAAT.
3. While following up post COVID patients at field by the primary health care team, all patients to be asked for symptoms suggestive of TB. If any of the symptoms are present, they shall be offered testing for TB.
4. Patients recovered from COVID with persistence respiratory symptoms approaching tele-consultations shall be guided for ruling out TB.
5. NTEP machinery shall parallelly telephonically follow up all patients who required hospitalisation for COVID-19 and ensure that they are screened for TB.

(Signature)
Principal Secretary



**COVID-19 (nCoV) Virus Outbreak Control and Prevention State Cell
Health & Family Welfare Department
Government of Kerala**

Integrated TB diagnosis algorithm in the context of COVID-19

No.31/F2/2020 H&FW, 11th September 2020

Ref: DO No-1280/9/01/2020-01 September 2020 from Secretary, GOI

Kerala state is committed to eliminate Tuberculosis by 2035. COVID-19 has posed many challenges for TB diagnosis especially delay in diagnosis. TB and COVID-19 may present with similar symptoms of cough, fever and difficulty in breathing although TB has a longer incubation period and slower disease onset. Studies have shown that history of active or latent TB is an important risk factor for COVID-19. Vulnerability to develop TB (old age, malnutrition, tobacco use, chronic respiratory illness, diabetes, immunosuppression/medication) and latent COVID-19 are also same.

GOI has issued guidelines for TB diagnosis in the context of COVID. State of Kerala has customised the algorithm based on local epidemiology of TB and COVID. This algorithm has been piloted at field, in these contexts, following advisory is issued regarding diagnosis of TB in the context of COVID-19.

1.TB Screening for IUI/ARI cases

- a. All influenza like illness cases are being tested for COVID-19.
- b. Influenza like illness in a person with any vulnerability (contact with TB, elderly, diabetes, immunocompromised conditions, malnutrition, chronic respiratory diseases, tobacco use) shall be tested for TB also concurrently.
- c. All COVID-19 negative IUI/ARI cases to be followed up by PHC/PHC/CHC/THQ where patient is residing. If the symptoms persist for >14 days, TB tests to be offered irrespective of vulnerability/contact status.
- d. Patient shall not be referred to any centre for performing TB testing. Instead samples need to be collected at the institution and to be transported to nearest laboratory in Hub and spoke model.
- e. All specimens from a COVID confirmed cases shall be handled in a laboratory with Biosafety Level 2 (with Biosafety Cabinet Class II type 2A/2B). All precautions including additional precautions as per the advisory 31/F2/2020/H&FW dated 20th April 2020 and communicated.

Orders released during COVID pandemic to ensure uninterrupted TB diagnostic and treatment services by Department of Health and Family Welfare.

‘TB Free Air’ declared as a right of every child in Kerala by the IAP Kerala

The Indian Academy of Pediatrics Kerala Chapter, the vice chair of the State Coalition of Professional Medical Associations for TB Free Kerala, recognised breathing TB Free air as the 'right' of every child. IAP has raised the voice for the children and advocated with other professional organizations for the rapid adoption of evidence based strategies for Ending TB.

During November 2020, Governor of Kerala inaugurated the 'TB Free Air for every child in Kerala' initiative of IAP Kerala in the presence of the Health Minister of the Government of Kerala.

IAP's advocacy and technical support have resulted in framing the strategy document and rolling out TB Preventive Therapy for children more than 5 years who are household contacts of a person with pulmonary TB, using a test and treat policy. TPT was extended to childhood contacts of more than 5 years for the first time in the country.

The IAP Kerala chapter had also trained 1000 pediatricians across the state on the management of pediatric TB and TPT, formed difficult to manage childhood TB committees at district levels, and initiated peer audits for standardizing the pediatric TB diagnosis.



**‘TB free Air’ campaign inaugurated
by Hon.Kerala Governor Sri Arif Mohammed Khan in 2020**



State level Training for Trainers on diagnosis and management of Pediatric TB organised by IAP Kerala

Making the SDG a reality: Kerala Health Global Conference

The journey of people's movement against TB in Kerala was disseminated in a global forum conducted as a part of the Kerala Health Conference: Making the SDG a reality. Moving towards TB Elimination: A call to action was held in March 2021.

Dr. Lucica Ditue, Executive Director of Stop TB Partnership appreciated Kerala state for the impressive progress in the TB Elimination efforts.

Link to the conference recording available at: https://www.youtube.com/watch?v=C4Yr_FTMdgQ



Dr Rajan Khobragade, Principal Secretary (Health), presenting the story of People's movement against TB in 'Kerala Health Conference: Making the SDGs a reality' in 2021



Lucica Ditiu, Executive Director of Stop TB Partnership appreciating Kerala's efforts during the Kerala Health Conference in 2021



International TB Experts discussing 'TB Free sunrise in South East Asia' during the Kerala Health Conference

First state to roll out Programmatic Management of TB Preventive Therapy

TB Preventive Therapy (TPT) with 6 months of Isoniazid was being provided to all eligible children less than 6 years who were household contacts of microbiologically confirmed pulmonary TB from the year 2003 onwards. Apart from this, all People Living with HIV (PLHIV) were also being offered TPT, after ruling out active TB disease.

Kerala was among the first in the country to adopt a "test and treat" policy for TB preventive therapy (TPT) for the groups beyond this. TPT was first scaled up to children and adolescents less than 15 years who are household contacts of a microbiologically confirmed person with pulmonary TB with a full-fledged rollout of services from January 1, 2021.

A State Technical Working Group was constituted with 15 members, including subject experts, program managers and Indian Academy of Paediatrics (IAP) leaders and a detailed implementation plan was developed. The Interferon Gamma Release Assay (IGRA) was considered as a test for TB Infection (TBI) among children above 5 years. Treatment with three months of daily isoniazid and rifampicin was considered as TPT.

Later, TPT was expanded to all age groups and special groups as per the National guidelines on Programmatic Management of TPT. Kerala was selected as one of three pilot sites to evaluate the CyTB test, a promising new diagnostic tool for TB infection.



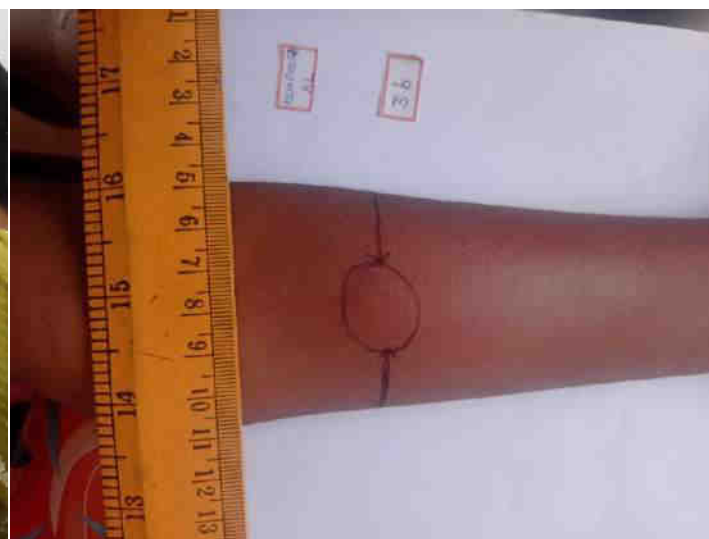
State Technical Working group for programmatic management of LTBI



Inauguration of 'Zero service cost' IGRA testing laboratory at MES Medical College Malappuram in 2022



Lab technicians processing samples for IGRA testing



Camps held at Kannur for the validation of Cy-TB, the newer diagnostic test for TB infection

Kerala: the only state to be certified to be on track to meet the SDG targets of ending TB

The Government of India with the support of the Indian Council of Medical Research and World Health Organisation has initiated a sub-national certification for TB Elimination.

In the year 2021, Kerala secured a bronze medal for reducing TB incidence by 37% compared to the baseline year of 2015. Kerala was the only state (in the state category) to receive certification for being on track to achieve the SDG targets of ending TB. This initial success was further amplified in 2022 when it was upgraded to a silver medal, reflecting a commendable reduction of over 40% in the TB incidence compared to 2015.

At the district level, Kerala showcased even more impressive results. Two districts - Malappuram and Wayanad earned the recognition of a gold medal by achieving a remarkable reduction of over 60% and eleven other districts secured silver medals for a reduction of more than 40%.



A TB Health Visitor and a Junior Health Inspector receiving the first Sub National Bronze Certification Award on behalf of the Government of Kerala in 2021



Kerala Health Team after receiving the silver medal for a 40% reduction of TB incidence compared to 2015



Certificate and Silver category medal secured for the progress made towards TB Elimination

Kudumbasree for TB Elimination

Kudumbashree is the poverty eradication and women empowerment programme implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala. Kudumbasree has always been at the forefront of TB control activities.

The earliest formal engagement with Kudumbasree dates back to 2007 when the TB Program tried to increase case finding in selected geographies. 250 Health Inspectors of the selected geographies were trained at the state level training. They in turn trained the health volunteers of all Kudumbasree units in their area. Kudumbasree volunteers talked about TB in their neighborhood TB groups and actively searched for TB.

Kudumbasree also managed specimen collection and transportation in Thiruvananthapuram district. 2-3 Kudumbasree members were designated per block to transport specimens from the health facilities to the NAAT lab.

Leveraging the District Kudumbasree Mission, Idukki district in 2023 has implemented the project 'Nalumanipookal' to transform community attitudes towards TB. By empowering women as peer educators and engaging the neighborhood groups of Kudumbasree, the initiative sought to reduce stigma, disseminate accurate TB information, and foster a collective commitment to TB elimination. TB handbooks in the local language were given to 12,536 neighborhood groups. They discussed the content in their weekly meetings reaching approximately 188,000 women.

Nupaal sample collection by IDUKKI District-A microenterprise led by women has successfully implemented a cost-effective sputum hub-and-spoke mechanism in Idukki, Kerala. Given the district's vast, mountainous terrain and limited public transportation, this initiative has been crucial in ensuring timely access to TB testing services for its rural population. By providing a safe and efficient means of sample transportation, the microenterprise has significantly reduced costs associated with hiring vehicles while complementing the doorstep delivery services of ASHA workers. This has resulted in a major boost to core NTEP activities, particularly in remote areas. .



DTO, Idukki handing over the customised bag and box to Nupaal sample collection unit.



Neighbourhood leaders of kudumbasree discussing the handbook on TB with the members. as part of 'Naalumanipookkal'

Revolutionizing TB detection: Ultra portable hand held Xray devices

The National TB Prevalence Survey was conducted between 2019-2021. Kerala State had 17 clusters. Out of 15 microbiologically confirmed cases of pulmonary TB detected during the survey, more than 60% did not have typical TB symptoms. Many of them were asymptomatic (subclinical TB). This highlighted the need to use X-ray for screening asymptomatic vulnerable individuals.

In 2023, with the support of the Corporate TB Pledge of The Union, a demonstration project to screen asymptomatic vulnerable individuals in the community was started in Wayanad district using ultra portable handheld X-rays with artificial intelligence. In 2024, with the help of Project C19, active case finding was conducted in Ernakulam district using the technology.

Similarly, in Alappuzha The National Institute of Virology is supporting the district in active case finding using Ultra Portable Handheld X-rays under mega TB project.



Initial screening for active case finding using ultraportable handheld X rays



A tribal woman undergoing X-ray evaluation at an anganwadi in Wayanad

Integrated approach for resilient health systems

State has always taken an integrated health system approach to promote sustainability and improve efficiency. TB services have been well integrated into primary health care since the inception. An integrated approach was followed across policymaking, planning, service delivery, and monitoring and evaluation efforts.

Multi disease elimination plans, integrated air borne infection control measures, integrated specimen collection and transportation systems, integrated screening and guest worker's welfare strategies, vulnerability reduction strategies, collaborative efforts to address TB-HIV, TB-Tobacco are some examples.

Recently, the state has taken a significant step towards enhancing TB case finding by integrating TB screening into its existing Non-Communicable Disease (NCD) surveillance system. Building upon the successful implementation of the SHAILI app for NCD screening and surveillance in 2023, the state incorporated TB screening into the app in 2024.



Screenshot of questions for TB screening in the SHAILI app



Training for field staff and ASHA on active case finding of TB using Shaili app.

System for Workplace Engagement for Elimination of TB (SWEET)

Creating a workplace free of TB is a critical component in the broader public health initiative to eliminate this infectious disease. A TB-free workplace not only safeguards employees' health but also enhances productivity and fosters a safe and supportive work environment. It requires a proactive approach that includes regular health screenings, awareness campaigns, and access to preventive measures and treatment options.

Kerala introduced 'TB free workplace' initiative in 2021. The initiative begins at a workplace with education and awareness. Health department engage with employers to provide regular training sessions to ensure all employees understand TB transmission, symptoms, and the importance of early diagnosis and treatment. This education emphasizes that TB is preventable and curable, reducing stigma and encouraging employees to seek medical advice if they exhibit symptoms of TB. By promoting an open and supportive culture, employees will feel more comfortable coming forward for testing and treatment, which is essential for controlling the spread of TB.



Inauguration of SWEET programme by District Collector on
1st November 2021 at Kozhikode



STS taking TB Awareness class at Tubes and Tubings, Pipe Manufacturers, Ernakulam



Integrated medical camp conducted in Marine world aquarium at Thrissur



HIV -TB Screening camp for migrants at Mencheri Industries at Angamaly

Medical Colleges in Kerala TB Elimination Mission

Medical colleges in Kerala have played a pivotal role in advancing the state's TB Elimination Mission. Since the 1930s, these institutions have been integral to the delivery of TB services. During the RNTCP era, a key decision was made at the national level to establish microscopy and treatment observation centres in every medical college, supported by district TB officers. This initiative was fully adopted by the medical college faculty in Kerala.

In addition to diagnostic services, a robust referral system was established, whereby physicians from all major outpatient departments (OPDs) in medical colleges would refer patients with a persistent cough lasting three weeks or more to dedicated microscopy centers. Physicians in these colleges adhered to the RNTCP guidelines for managing TB patients, particularly those residing in designated RNTCP areas. The program also prioritized operational research (OR) to enhance understanding and improve the implementation of TB control strategies.

In 2002-2003, in alignment with the National Task Force and Zonal Task Force, Kerala established a State Task Force Mechanism. To further enhance operational research capacity, a series of workshops was organized to develop research proposals in collaboration with medical colleges. These efforts were coordinated through mechanisms established at the national, zonal, and state levels.



National Task force meeting hosted by Kerala in 2016



Inauguration of Zonal Task Force meeting by Smt. Tinku Biswal I.A.S
Principal Secretary, Health in March 2023



Inauguration of State Task Force meeting by A P M Mohammed Hanish I.A.S
Principal Secretary, Health in December 2023

Partnering with corporates for TB free Kerala

Several corporate organizations in Kerala are making significant contributions to the state's TB Elimination Mission through their Corporate Social Responsibility (CSR) initiatives. These efforts have provided direct support to individuals affected by tuberculosis and have strengthened the overall National Tuberculosis Elimination Program (NTEP) in Kerala. By partnering with the government and healthcare providers, these corporates are playing a critical role in combating TB and enhancing public health.

The State Bank of India (SBI) has shown its commitment to the cause by distributing nutritional kits to 2,500 individuals with tuberculosis across Kerala. These kits, which contain essential food items, have been instrumental in improving the nutritional status of TB patients, thereby aiding their recovery and enhancing treatment outcomes. By focusing on the nutritional needs of TB patients, SBI has contributed to their overall well-being and supported their journey to recovery.

Cochin Shipyard has also played a significant role in supporting NTEP efforts in the districts of Ernakulam and Wayanad. In Ernakulam, the shipyard has provided nutritional kits to TB patients and engaged in Information, Education, and Communication (IEC) activities to raise awareness about TB and promote preventive measures within the community. In Wayanad, Cochin Shipyard also provided NAAT machines. The Union's 'Corporate TB Pledge' supported in mobilizing Corporates.

Additionally, ASTER Medicity has initiated a valuable CSR program by offering free IGRA testing for children aged 5-15 who have been in contact with individuals with tuberculosis. Conducted at various ASTER labs, this initiative has significantly supported the coverage of TB preventive services in the state. Other corporates, including KIMS Health and Fujifilm, have also been actively involved in supporting TB programs, showcasing the collective effort of the corporate sector in the fight against TB.

These CSR initiatives have not only provided essential resources and support to TB patients but have also helped create a more enabling environment for the effective implementation of NTEP in Kerala.



Launch of Aster Medicity's CSR initiative to support TB Infection testing



SBI Director Board members handing over the cheque for nutrition support to State Mission Director NHM Shri. Jeevan Babu K IAS and State TB Officer

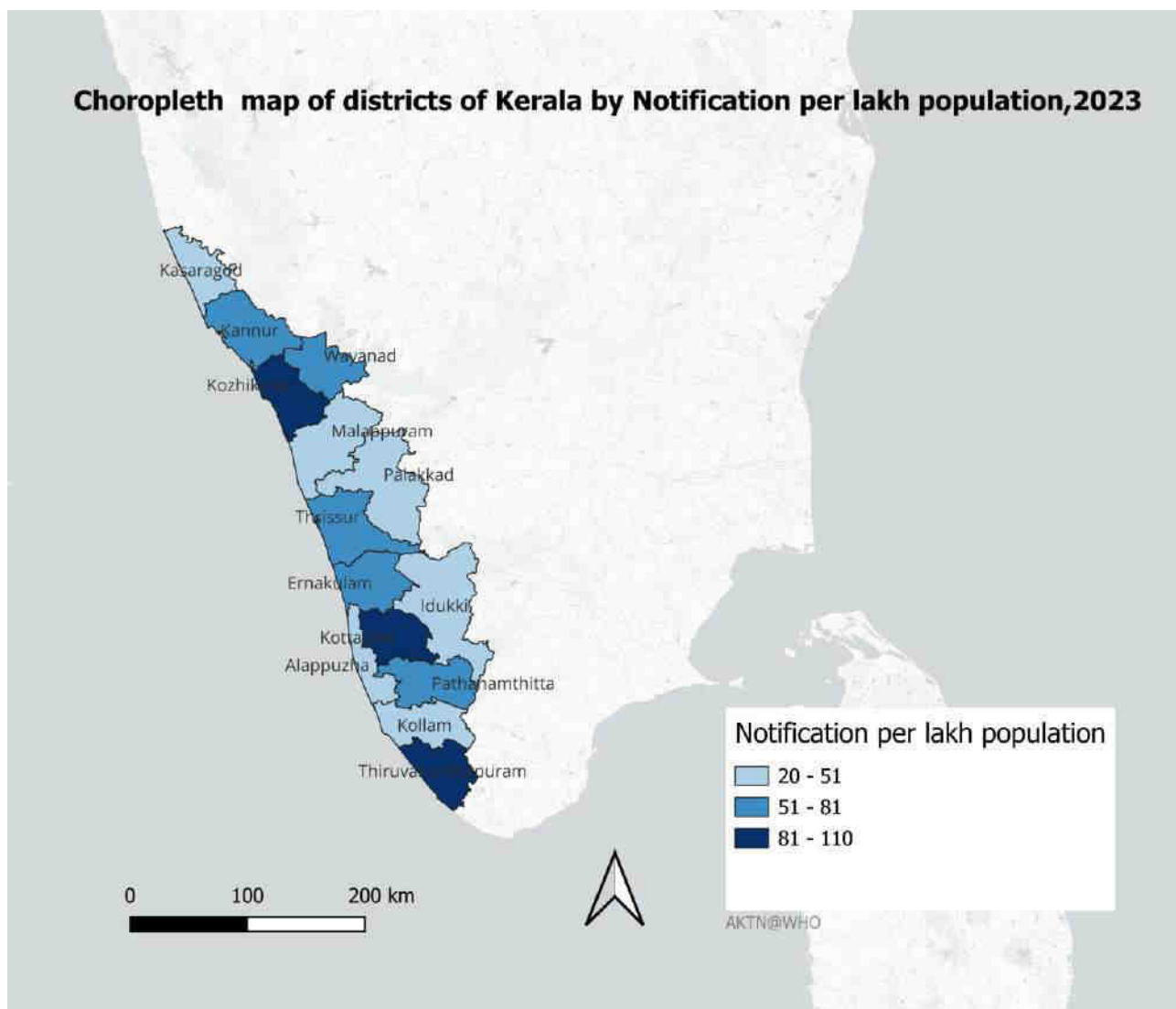


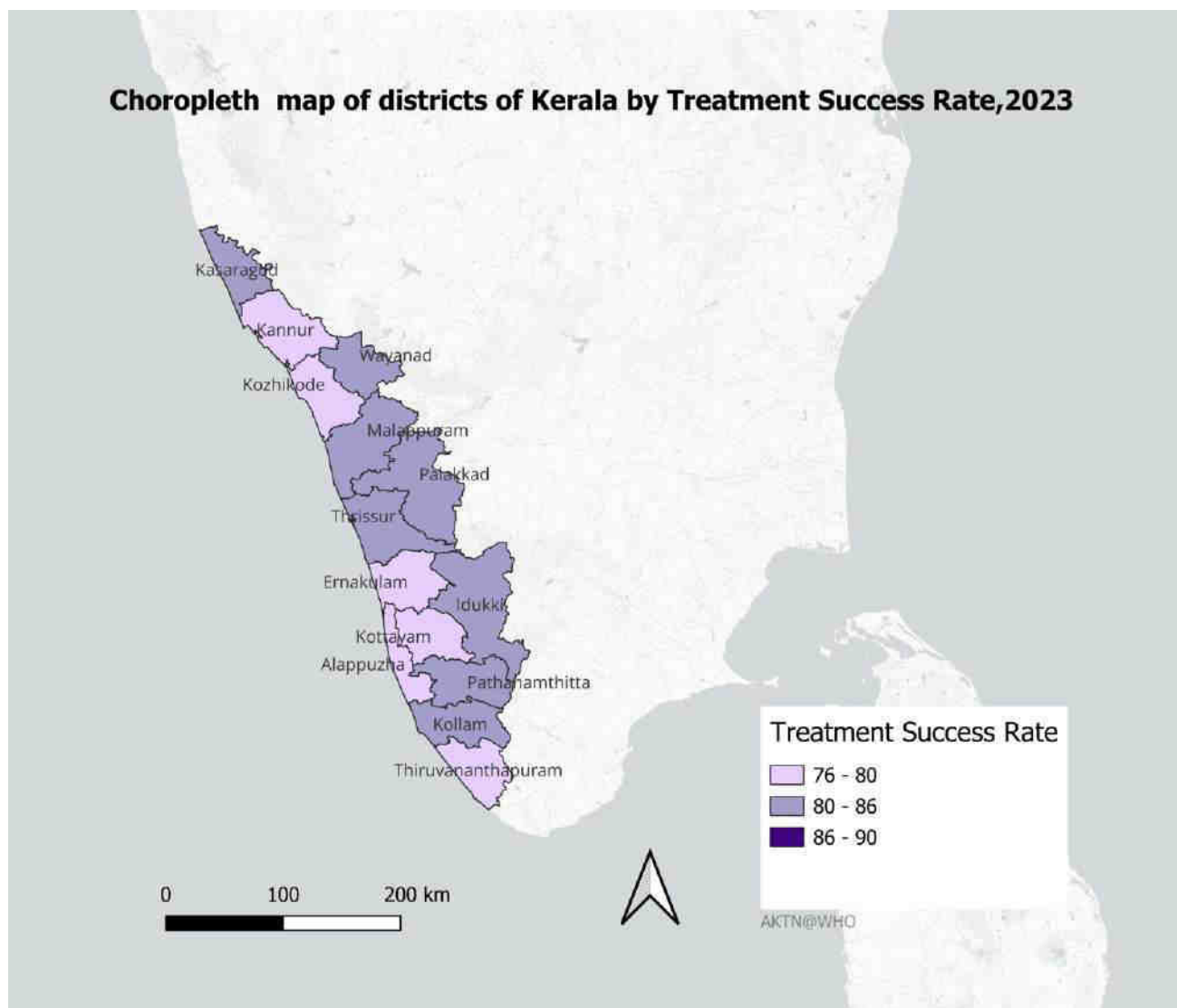
Handing over the MOU of the Project titled 'Strengthening of TB infrastructure and nutritional support for TB patients' under the CSR fund of Cochin Shipyard Limited to the District Collector, Wayanad

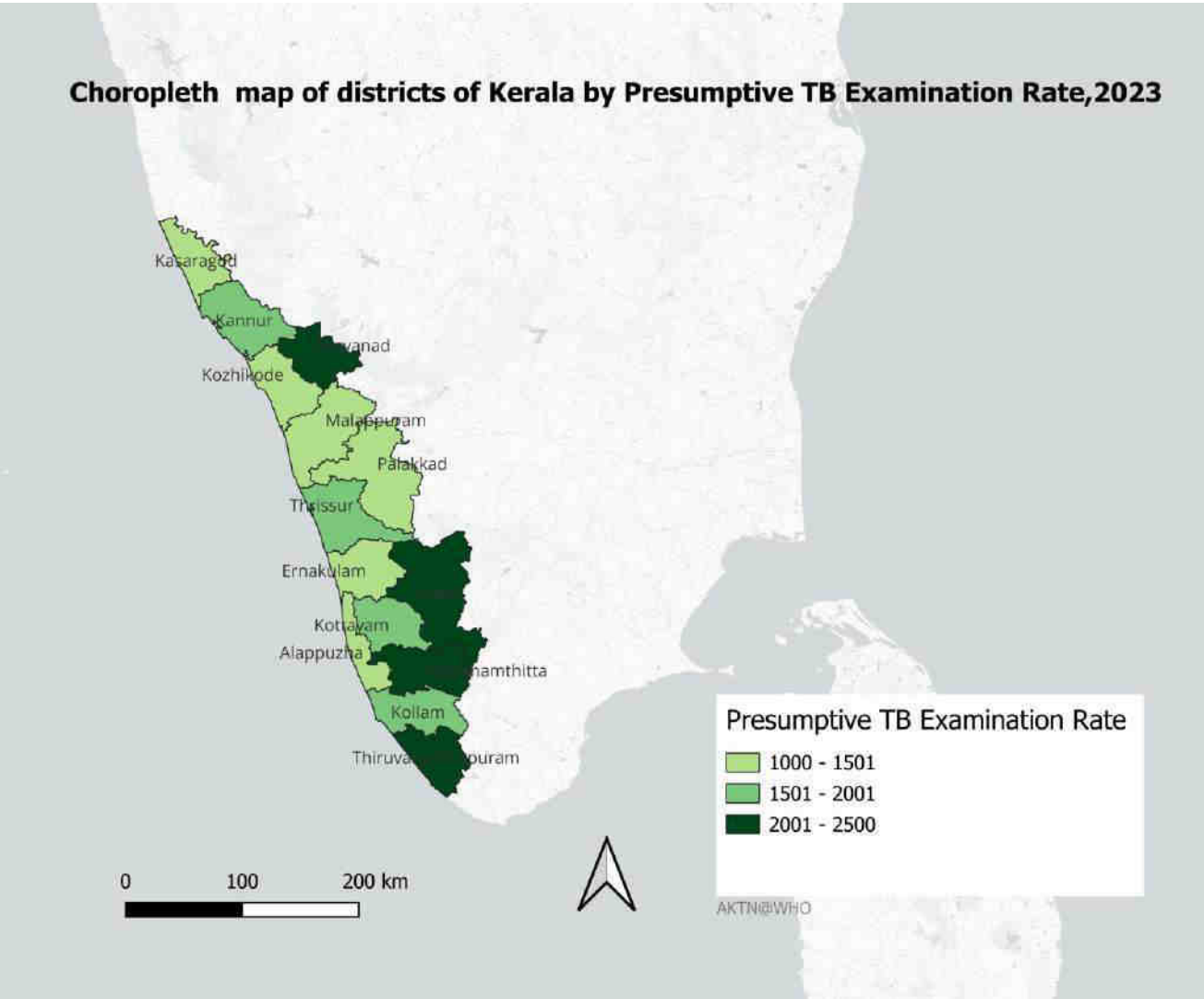


"TB is a crucial social indicator, reflecting the health and well-being of our communities. We must channel our best efforts to eliminate this dreadful disease from our society."- Hon'ble Minister, Department of Health and Family Welfare Smt. Veena George in her inaugural speech on World TB Day

Annexures







Key Infrastructure for NTEP services

State TB Training & Demonstration Centre (STDC)	1
District TB Centres (DTCs)	14
TB Units (TU)	77
Designated Microscopy Centres	630
Intermediate Reference Laboratory	1 (IRL Thiruvananthapuram)
Culture & Drug Sensitivity Laboratory	C& DST Lab, Govt. Medical College, Kozhikode
Liquid Culture Laboratories for 2nd line DST (please mention names)	IRL Thiruvananthapuram
Cartridge Based Nucleic Acid Amplification Testing (CBNAAT) laboratories	45
No. Of TrueNat laboratories	106
Nodal Drug Resistant TB Centre	1. Govt. Medical College Thiruvananthapuram 2. Govt. Medical College, Kozhikode 3. Govt. Medical College, Thrissur
District Drug Resistant TB Centre	14

Trend of TB Notification in Kerala

Year	Target for Public Sector	Number Notified by Public Sector	Percentage Achievement Public Sector	Target for Private Sector	Number Notified by Private Sector	% Achievement for Private Sector	Target for Total (Public + Private)	Number Notified by Total (Public + Private)	Percentage Achievement for Total
2017	20000	19593	98%	8000	3666	46%	28000	23259	83%
2018	20280	20900	104%	12000	3747	32%	32280	24647	76%
2019	22000	20689	94%	10000	4931	49%	32000	25620	80%
2020	22000	15085	69%	6000	5807	97%	28000	20892	75%
2021	22000	15295	69%	6000	6658	108%	28000	21953	78%
2022	18000	16751	93.1%	6000	6638	110.6%	24000	23389	97.5%
2023	16000	15166	94.8%	6000	6546	110.4%	22000	21788	99%

District wise Performance

Name of the District	2019		2020		2021		2022		2023	
	Total TB Cases Notified	Annualized TB Case Notification rate	Total TB Cases Notified	Annualized TB Case Notification rate	Total TB Cases Notified	Annualized TB Case Notification rate	Total TB Cases Notified	Annualized TB Case Notification rate	Total TB Cases Notified	Annualized TB Case Notification rate
Alappuzha	1154	50	918	42	945	43	980	45	853	40
Ernakulam	3287	97	2736	80	2721	80	2,852	84	2,769	79
Idukki	434	39	364	33	352	32	333	28	297	27
Kannur	1792	69	1619	62	1833	71	1,597	61	1,524	57
Kasaragod	712	55	529	38	598	43	657	47	573	40
Kollam	1725	64	1288	48	1333	49	1,367	51	1,339	50
Kottayam	1964	98	1809	90	1851	93	1,856	93	1,859	93
Kozhikode	2944	92	2732	85	2772	87	3,092	97	2,856	85
Malappuram	2187	52	1696	40	1693	39	1,996	46	1,687	35
Palakkad	1934	67	1449	50	1532	53	1,670	58	1,561	51
Pathanamthitta	1022	85	811	68	810	68	858	66	832	72
Thiruvananthapuram	3108	91	2290	67	2579	76	2,904	85	2,952	87
Thrissur	2762	86	2254	70	2309	72	2,517	79	2,242	68
Wayanad	576	72	430	48	407	45	479	53	444	51
Total	25601	75	20925	61	21953	63	23389	67	21788	61



KERALA HEALTH

KERALA TB ELIMINATION MISSION



Shri Pinarayi Vijayan
Hon. Chief Minister of Kerala



Smt. Veena George
Hon. Health Minister of Kerala

Kerala, with its strong and resilient health system has stood as a forerunner in reducing the TB burden by ensuring access to TB care and prevention services to all who are affected with TB. The state also has ensured a multisectoral approach to end TB. The Government of Kerala launched the “Kerala TB Elimination Mission - The People’s Movement Against TB” in alignment with the Sustainable Development Goals (SDGs) in 2018. The concerted efforts to end TB has a strong impact on the TB burden in Kerala. The latest national TB prevalence survey (2020) has reported that among all the states, the burden of infectious TB is the lowest in Kerala. The state’s TB notification rate is significantly lower at 67 per lakh, compared to the national rate of 171 per lakh and the global rate of 93 per lakh. It is imperative to realign Kerala’s TB elimination strategy with the latest research and advancements in diagnosis, treatment, preventive measures, and changes in the state’s healthcare delivery system. Hence, the Government of Kerala is now releasing the second version of the State Strategic Plan, incorporating newer strategies.

Snapshot of Current Scenario

Estimated TB incidence and deaths- 2022

	Global	India	Kerala
TB incidence per lakh population	133	190	70
TB deaths per lakh population	16.4	24	7.5

Source: Global TB report 2023
SNC Survey Data 2023

Sustainable Development Goals and Kerala

	2015 (Baseline)	2022 (Achievement)	2030 (Target)
TB incidence per lakh population	112	70	23
TB deaths per lakh population	19	7.5	2

Source: Global TB report 2023
SNC Survey Data 2023

Kerala TB Elimination Mission

Vision

TB Free Kerala

Mission

To achieve a rapid decline in TB incidence through a people's movement against TB by emphasizing comprehensive case-finding efforts, ensuring complete treatment and diligent follow-up, implementing TB preventive treatment among contacts and high-risk groups, reducing vulnerability risk, and fostering robust community engagement and leadership of local self governments.

Goals

- ▶ To achieve 90% reduction in number of TB deaths by 2030 compared to 2015 baseline
- ▶ To achieve 80% reduction in TB incidence rate by 2030 compared to 2015 baseline
- ▶ Zero TB-affected families facing catastrophic costs due to TB (%)

Kerala TB Elimination Mission

In 2024, 59 Panchayats and 1 municipality declared as TB free

Kerala also secured silver medal at National level for reducing TB incidence in 2022

2022- Integrated TB-NCD community screening using SHAILI Digital App

In 2019, System for TB Elimination by Private Sector (STEPS) was launched

2018- Launch of Kerala TB Elimination Mission- People's Movement Against TB

2023- Third Nodal Drug Resistant TB centre at Government Medical College, Thrissur

In 2020, the first State to expand TB preventive therapy among Household Contacts beyond 5 years of age

2018- Individual level mapping of vulnerability for developing TB done

2017- State specific action plan for TB elimination was developed

Existing Strategies

1. TB vulnerability mapping and reduction at individual level.
2. Airborne infection control practices at household, institutions and community.
3. Interferon Gamma Release Assay (IGRA) test for TB infection diagnosis.
4. TB preventive therapy (TPT) for household contacts and five clinically high risk groups.

Prevention of TB infection and active disease

Early diagnosis and treatment

1. Vulnerability based active surveillance using symptom screening.
2. Intensified case finding at all health care facilities.
3. Upfront Nucleic Acid Amplification Tests (NAAT) for diagnosis.
4. TB treatment with the support of community.

1. Bi-weekly clinical follow up.
2. Management of comorbidities.
3. Post treatment follow up for TB.

Avoid complications, prevent relapse and limit disability

Building systems

1. TB Elimination Board.
2. TB Elimination Task Force by LSGDs.
3. Medical College Task Force.
4. Supportive supervision and evaluations as per NTEP norms.
5. System for TB Elimination By Private Sector (STEPS).

Newer Strategies

1. Cy-TB skin test for detection of TB infection at field level.
2. Expanding TPT among other vulnerable groups.
3. Newer shorter regimens for TPT.
4. TB vaccines, as and when available.

Prevention of TB infection and active disease

Early diagnosis and treatment

1. Ultraportable Handheld Xrays for diagnosis of subclinical TB.
2. Inclusion of newer diagnostic and screening tests for TB.
3. Shorter drug regimens for treatment of TB.
4. Digital recording of treatment adherence and clinical follow up.

1. Differentiated TB care.
2. Post treatment rehabilitation.

Avoid complications, prevent relapse and limit disability

Building systems

1. Integrated digital platforms.
2. Lead role of Block level Public Health Units in TB elimination.
3. Social benefit package and necessary linkages with line departments to reduce TB incidence and mortality.
4. Genomic surveillance.

Key Indicators

	2026	2030
Proportion of public healthcare institutions adhering to Airborne Infection Control norms	70%	90%
TB preventive therapy coverage among eligible population	95%	95%
Proportion of vulnerable individuals screened for TB using Chest Xray annually	80%	95%
Proportion of people with TB who were initially tested with a WHO-recommended rapid test	95%	95%
TB treatment success rate	85%	90%
Proportion of people with TB who underwent two year post treatment follow up	90%	95%

TB FREE KERALA MAKING SDG A REALITY



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The Health and Family Welfare Department have been taking various initiatives to combat Tuberculosis. In order to chronicle the developments made in tackling TB and progress made in the last few decades is a monumental task. However, the team of officers and other staff have taken all efforts to work out an easy to read and yet highly informative view on the battle against TB with this manuscript “A path to wellness : Kerala's battle against TB”. They all extensively interacted and archived the photos which were previously, lost in time. The very objective of this book is to acknowledge the efforts taken by each and everyone who were a part of this fight against Tuberculosis.

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We hope this book “A path to wellness: Kerala's battle against TB” will definitely be informative and useful to readers across the country and the world at large.

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