KERALA HEALTH

Making The SDG A Reality

Govt. of Kerala
Department of
Health & Family Welfare

Making The SDG A Reality

Contents

About Kerala

Kerala, the southernmost state of India is well known nationally and internationally for its health care at a low-cost model. Kerala has garnered international recognition for its remarkable improvements in the better health indicators and quality-of-life as evidenced in human development index (0.84). Kerala accomplished this with a per capita health expenditure of Indian Rupees 7169 (US $ 104).

Country/region	Neonatal mortality rate	Under five mortality rate	Life expectancy	Current health expenditure per capita (US $)
India	24	39	68.8	62
China	5	9	76.4	398
Sri Lanka	6	9	75.3	153
USA	4	7	78.6	9870
South East Asia Region	21	36	69.5	96
European Region	5	9	77.5	1990
Kerala	4.4	8	75.2	104

Source: WHO statistics 2019, SRS 2013-17, NFHS 4, National Health Accounts 2015-2016

Since nineteenth century Kerala has initiated several revolutionary movements and gave rise to democratization of public health systems. Kerala attributes its better health outcomes to its focus on high quality of healthcare, equity, access to education, poverty reduction strategies, and the priority placed on welfare measures. Now, Kerala is facing new challenges included of NCD, ageing, emergence of new communicable diseases. Kerala has been on the forefront in the tackling of these issues through its comprehensive primary health care system.

Primary health care services have been organised systematically with a network extending to the village level. There are 230 community health centres and 845 primary health centres (approximately one per 30,000 population) in the State. There are 5320 female and 4728 male Multi-Purpose Health Workers (MPHW), serving every 5000 population. Accredited Social Health Activists (ASHAs), who are community health volunteers, approximately one for every 1000-1500 population. This is supplemented with a vast army of volunteers 'Arogyasena' at the grass roots.

Theme I:
Universal Health Coverage :
Moving towards better health

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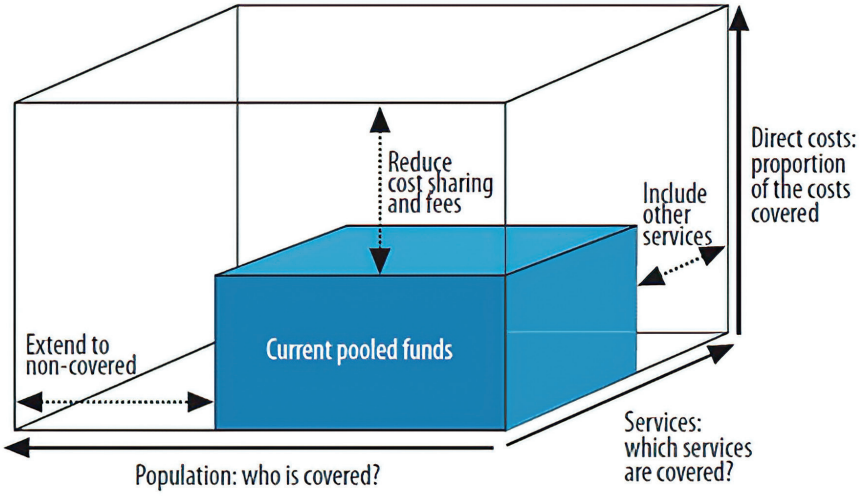
Universal health coverage is a system in which the general public receives health care without incurring any financial burden. The main benefit of such an approach is the presence of universal entitlement to coverage, it does not stigmatize the poor and helps to maintain the necessary political pressure to finance and govern the health sector adequately



Three dimensions to consider when moving towards universal coverage.

Main components of UHC

- Everybody gets access to a comprehensive package of good quality health services
- Financial protection is guaranteed

The state of Kerala pioneered the concept of Universal Health Coverage (UHC) in 2012 through a pilot/ start up project in collaboration with WHO to strengthen the primary health care services and to address the most important cause of morbidity and mortality in Kerala. Three centres were selected. Major activities carried out were introduction of software for electronic patient records; development of evidence-based protocols; task shifting among nurses and paramedics at the facilities to register patients and to conduct pre assessments such as measuring weight, height, body mass index, blood pressure, and blood sugar levels and implementation of mental health protocols at the primary care centres.

The universal health coverage plays a crucial role in achieving the goals and sub-goals of the 3rd SDG goal.

Measures adopted to ensure UHC

1. Aardram mission

The Government of Kerala has launched the AARDRAM Mission in the backdrop of SDG to provide comprehensive health care including **Preventive, Promotive, Curative, Rehabilitative, and Palliative services**.

Objectives of Aardram mission

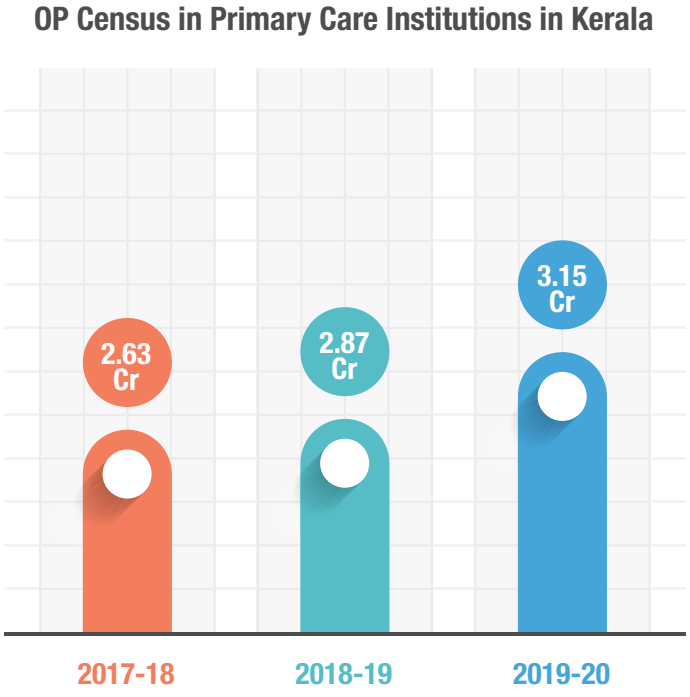
The Government has taken umbrella Program approach and launched a Navakerala Karma Paddhati, as a part of that 'Aardram Mission' was launched in the Health Department with the objective of making it Peoples campaign in betterment of health. The main components are improving quality infrastructure at PHC, CHC, Taluk Hospitals and District, General Hospitals as well as Medical College Hospitals. The conversion of Primary Health Centers to Family Health Centres is one of the major components. The Aadram Mission has brought a paradigm shift in patient care across the state by ensuring the peoples involvement.

How a FHC differ from PHC in terms of services?

	FHC	Existing PHC
Comprehensive care	Will ensure preventive, promotive, curative, rehabilitative, palliative care services	Preventive, promotive, curative, palliative
Universality of care	Ensuring health care for each and every person	Not being ensured for everyone
OP hours	Increased OP time (9 am to 6 pm)	9 am to 2 pm
Quality of care	Development of standard clinical guidelines	Scope for improvements in standardization of care
Addressing out of pocket expenditure	Contained by universality, patient friendly quality care, uninterrupted supply of drugs.	Scope for further improvements in reducing out of pocket expenditure
Addressing social determinants through intersectoral coordination	Complete convergence	Inadequate convergence
Health and medical records	Prepared for everyone and made accessible to different levels of health care through e- health	Records are maintained manually and only have limited access
Referral system	Standardized with forward and backward referral and follow up	Limited compliance to patient referral
Social security missions	Incorporated	Not always
Special attention for Vulnerable and marginalized population	Ensured and more focus.	Inadequate attention

Infrastructure	**Standardized infrastructure and equipment's:** • token system • facility for patient to wait for their turn, • improved amenities in the waiting areas • display boards and signages • privacy ensured consultation rooms • pre check area • scientific waste management	Infrastructure and equipment's are not standardized
Laboratory Services	Available at all centres	Only in few centres
Human Resources	3 doctors,4 staff nurses	1-2 doctors, 0-1 staff nurse
Role of Staff nurse	More of professional	Carrying out minimal clinical services in PHC
Sub Centre Services	Sub centre clinics 6 days per week 2 pm to 4pm	Sub centre clinics are once in a week
Care homes, migrant workers, institution-based care	Becomes regular through staff nurse	Erratic

Fig: OP Census after implementation of FHCs



2. Implementation of State Health Agency in assurance mode

The state health agency mainly aims to

- To provide health cover to the beneficiaries under Ayushman Bharat Pradhan Mantri Jan Arogya Yojana- Karunya Arogya Suraksha Padhathi
- To identify, formulate, implement and support implementation of all projects aimed at the welfare of people in Kerala.
- To identify and negotiate with consultants of repute for implementation of any project of the Central Government or the State Government towards minimizing heavy expenditure on medical care and hospitalization of the citizens which is a major insecurity leading to their poverty.
- To provide technical, financial or other assistance for the formulation of programs meant for health care of the people
- To co-ordinate with various Departments and agencies of the Central or State Government, Financial Institutions, Health Insurance Providers, health Service

Providers, Cooperatives or Non-governmental Organizations (NGOs) for implementation of any project meant for the welfare of the people

- To undertake or sponsor training programs, seminars, workshops etc to create awareness of the various schemes available to the community
- To do such other things as may be incidental or conducive to the attainment of the above object.

3. **Karunya Arogya Suraksha Padhathi (KASP)** has been launched from 1st April 2019 to integrate all existing Health schemes through a Government order to bring in standardization in operations and better management by convergence. This scheme is being implemented in an insurance mode with an annual premium rate per family (42 Lakh families) Rs 1671 for the policy period 2019-2020. Utilization rate from 01.04.2019 to 13.02.2020 shows that about 8,15,385 no. of claims were raised amounting to Rs 556 crore with a public vs. private hospital utilization of 75% and 25% respectively.

Theme II:
COVID-19 pandemic:
Health System Response–
Resilience–Preparedness

Theme II: COVID-19 pandemic: Health System Response –Resilience– Preparedness

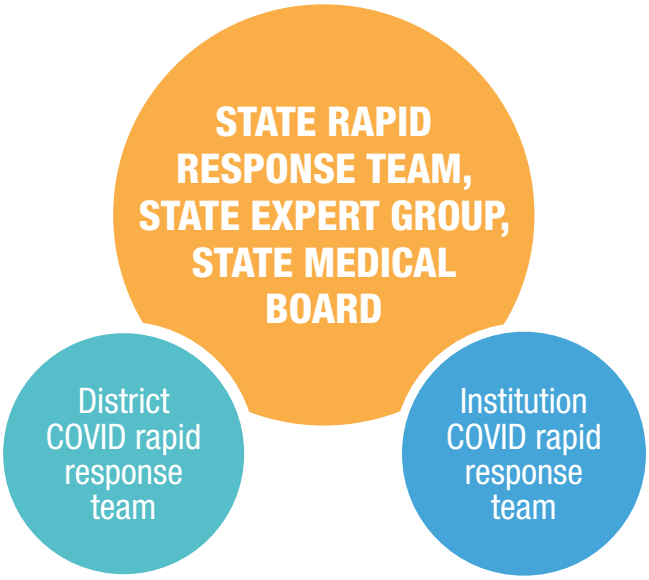
In India, Kerala was the first state affected by COVID-19, and the first case was confirmed in Thrissur district on the 30th of January 2020. By early March the state soon had the highest number of active cases in India mainly due to a huge number of cases imported from other countries and states. Using the five components of trace, quarantine, test, isolate and treat the state has flattened the curve and maintained the case fatality rate due to COVID-19 at 0.4%. This is despite having high density of population, huge proportion of elderly, a high prevalence of cardiovascular and non-communicable diseases and large inflow from other countries.

This chapter provides major strategies the state adopted for combating COVID.

State Level Structures to Combat COVID-19

Chief Minister reviews the situation and address the people daily through media briefings.

Structures at Health Department to combat COVID-19



In the Health department 18 committees were constituted in January 2020 itself with established roles and responsibilities for each of the committees. Eighteen such "mirror" committees were also established in all 14 districts in the state. Daily evening review meetings at fixed timings are being conducted to review the situation so that timely action can be taken.

PILLARS OF COVID FIGHT IN KERALA

Key Strategies which the state adopted for COVID prevention and Control

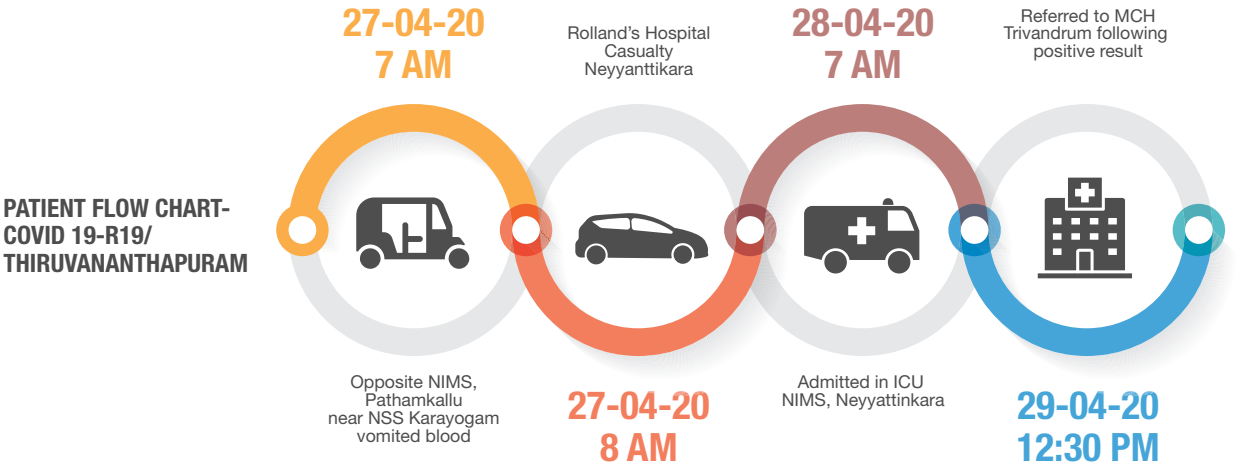
1. Surveillance system which included rigorous contact tracing
2. Ensuring good quality quarantine
3. Measures to ensure community participation in the fight against COVID
4. Testing all eligible individuals
5. Ensuring high quality, satandardized medical care for the COVID affected in designated hospitals and also ensuring Non COVID related health services uninterrupted
6. Proactive care of elderly and addressing the vulnerable groups, which included individuals above 65 years of age, people with morbidity and pregnant women.
7. Advocacy, Communication and Social mobilisation -Break the Chain campaign

Surveillance Activities

System was put in place for screening and follow up of every individual who arrived in the state by air, sea, rail or road from other parts of India or abroad. The symptomatic passengers were taken directly to dedicated COVID hospitals and admitted, tested and treated appropriately. The asymptomatic passengers were advised to follow strict home quarantine, avoid non-essential travel and community/social contact based on their country of origin and contact history. A 'sanitised corridor' protocol was followed for the travellers arriving at portal of entry to their concerned quarantine destinations with special double chambered taxis. If any individual from among the above-mentioned developed symptoms they would be shifted to the designated COVID hospitals for testing and further management. There was a portal created for the same called the COVID Jagratha Portal to facilitate the same.

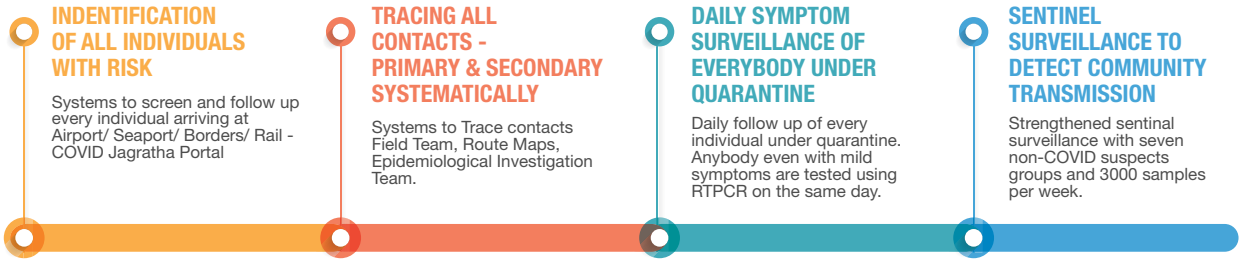
A contact tracing system was put in place to trace all primary and secondary contacts of index cases for which field teams were formed, route maps of travel drawn with diligent follow up on all contacts at the community level.

Example of a route map of COVID case prepared for contact tracing



Regular visits to Milk Society opp. House in Aralumoodu.

Primary contacts are the contacts of laboratory confirmed COVID-19 cases and secondary contacts are the contacts of primary contacts. By ensuring both the primary and secondary contacts were put into quarantine, it was assumed that a water tight compartment would be created to prevent the transmission of infection into the general population. A total of 1598497 contacts were traced till date.



Ensuring Good Quality Quarantine

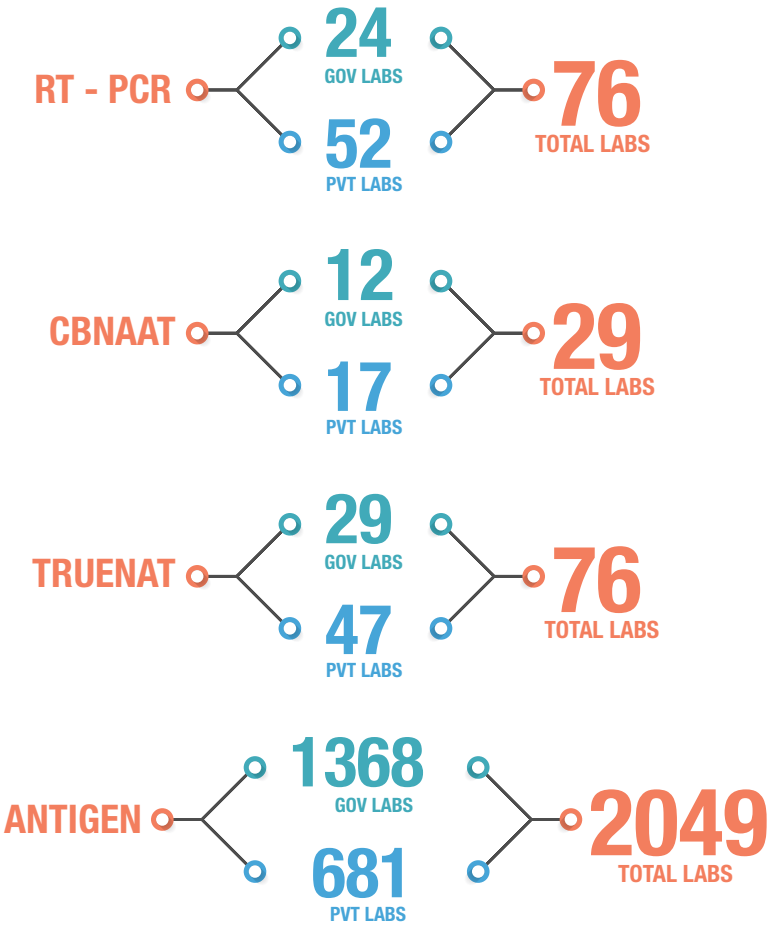
The concept of home quarantine was promoted by the state upfront. Frontline health workers ensured adherence to quarantine with the help of women self-help groups and local panchayat leaders at field. Field workers of the health system were responsible for the initial counselling, education and timely support to those under quarantine as and when needed. The state was also successful in establishing systems to address medical, non-medical and

psychological needs of those under quarantine. People without facility for quarantine at their residence, those without bath attached exclusive rooms or those who had vulnerable individuals at home were offered quarantine facilities at institution. People friendly polices also monitored quarantine violations.

Testing Strategies

First case in Kerala was reported on 30th January 2020, Kerala started testing for COVID within the state by 2nd February 2020 - the first laboratory to be approved by ICMR for COVID -19 testing in states

Registered COVID-19 Testing Labs/Hospitals in Kerala



2230 Labs/Institutions are registered for COVID testing in Kerala

Followed testing of all eligible persons (travellers, contacts) was the primary focus. The risk-based strategy enables judicious use of the scarce testing resources. The comprehensive testing strategy of Kerala was backed by a strong public health approach and epidemiological

inputs. This made the testing strategy of the state smart and intelligent with effective utilisation of resources.

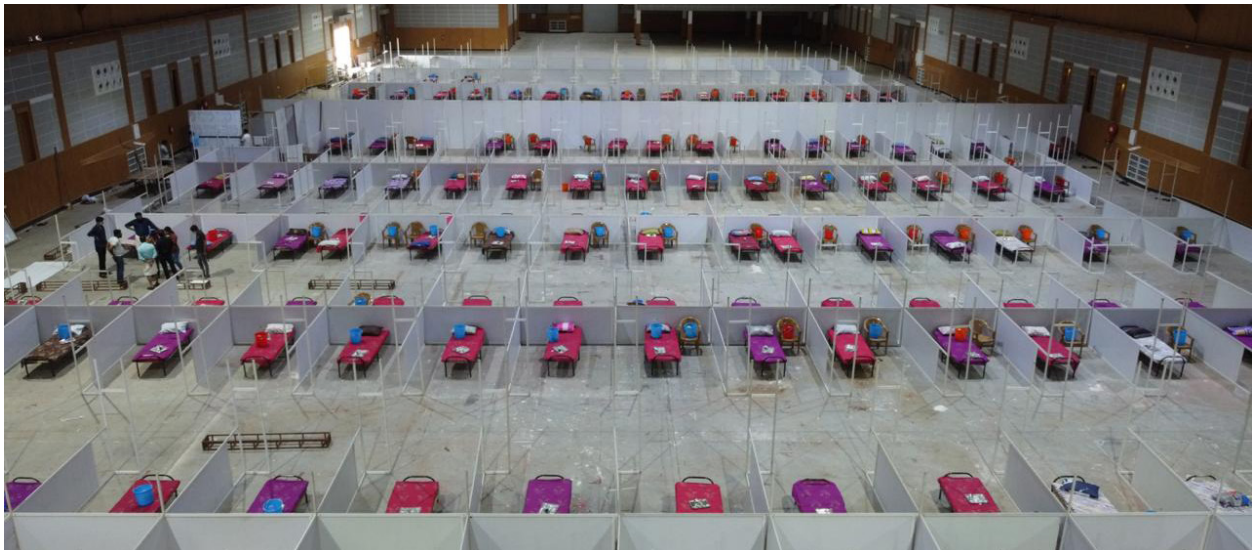
The testing strategy was expanded to the community through sentinel surveillance using RT-PCR to detect any local or community spread. This strategy is unique to Kerala as no other state or country has implemented sentinel surveillance using RT-PCR for COVID-19. The details of sentinel surveillance could be obtained from https://health.kerala.gov.in/thematic-paper-launched/

Walk in Sample Kiosk (WISK) established for sample collection

Mobile Unit for Sample Collection

High Quality COVID care and Uninterrupted treatment services

Twenty-Nine dedicated COVID hospitals were set up. All confirmed cases were shifted immediately and managed at COVID hospitals till they became negative. The COVID care delivery is designed as a five-tier structure comprising of COVID Care Centre (CCC) for those who are not able to get home quarantine, Domiciliary care centres (DCC) for treatment of asymptomatic persons who are not treated at home, COVID First Line Treatment Centre (CFLTC) for In-patient care of mild positive cases, COVID Second Line Treatment Centres (CSLTC) for in-patient care of persons with moderate symptoms and COVID Hospitals (CH) for the care of moderate and severe cases. The COVID Hospitals are tertiary care Hospitals in the state and model allows movement of patients across the levels according to their clinical category.



A COVID First Line Treatment Centre set up for treating COVID cases

At the same time, the state ensured uninterrupted treatment services to the non-COVID patients, especially for conditions like NCDs, cancer care, special conditions like haemophilia, thalassaemia and haemodialysis etc.

Triage system was set up at all hospitals priorly itself for screening, education and fast tracking of respiratory symptomatics. Triage stations were reinforced with temperature screening and hand washing.

Infection Control Help Desks at Hospitals

Simultaneously teleconsultations facilities were set up and medicines were delivered at door steps to elderly individuals from the primary health centres.

The clinical team at COVID hospital

Community Participation

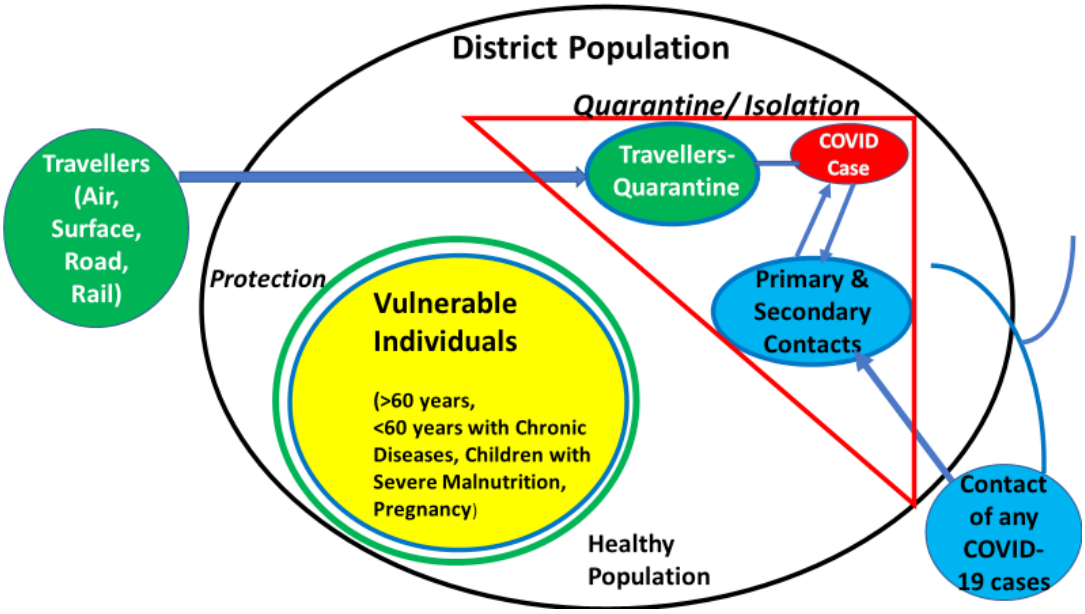
State focussed on educating and empowering every citizen to follow the advisory. “Healthy volunteers” services were utilised to the maximum for screening of passengers, addressing needs of houses under quarantine including community kitchens, medicine delivery and the care of elderly/palliative care patients. Kudumbasree members visited all households with adequate precautions, educated elderly people, provided psychological support and ensured continuity of care for them.

Proactive Care of Elderly and people with co-morbidity

Village wise lists of people above the age of 60 with morbidity were prepared. Women self-help group members, volunteers and palliative care teams contacted all individuals and their family based on the line list for education on special precautions. ASHAs with the support of health system front line workers did regular surveillance of elderly and people with

morbidity to address their medical needs. The state has been successful till date in containing the infection among healthy and controlling transmission to the vulnerable. This again is one of the important reasons for low case fatality despite high general morbidity of cardio vascular risk factors in the community. 26475 ASHAs, 270267 Kudumbasree volunteers and 14200 palliative care volunteers were in the field throughout.

Thematic representation of 'quarantine of people with high exposure' and 'protection of vulnerable groups' in the community.



Advocacy Communication & Social Mobilisation for behavioural change

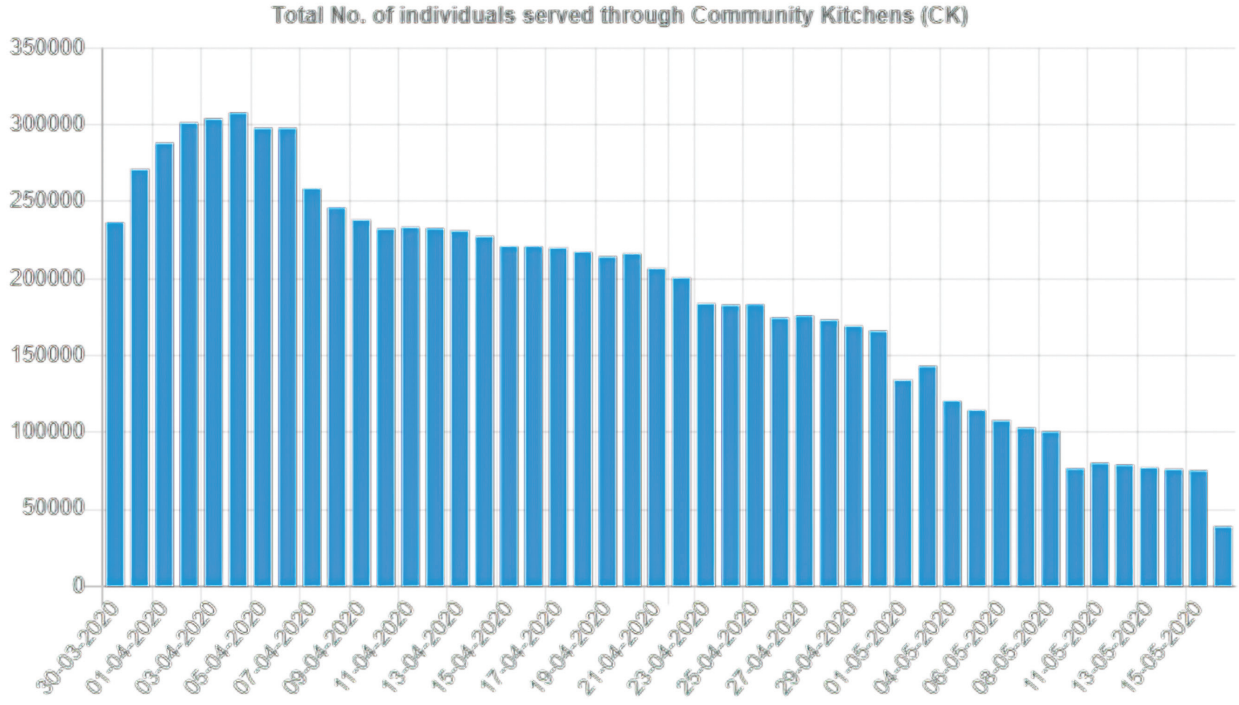
'Break the chain campaign'- a campaign for behaviour change communication focussing on physical distancing, handwashing and using face masks were put in place. Chief Minister of the state conducted regular detailed press briefings every day at a fixed time for communicating to citizens.

Thrust was on community education by ASHA, women self-help group members and panchayat leaders and mass media and social media campaigns focussing on basic concepts of prevention..

Complimentary Activities

1. Community Kitchen

853 community kitchens were opened under Local Self Government stewardship and 8651627 individuals including guest workers were served food during lockdown. 7551860 home delivery of food was done to ensure that nobody in the state is hungry.



2. Social Volunteers

374930 social volunteers were unified and coordinated during COVID control activities. Volunteers helped the state in identifying persons in need, delivery of food and essential medicines for those in quarantine, proactive care of elderly and call center operations.

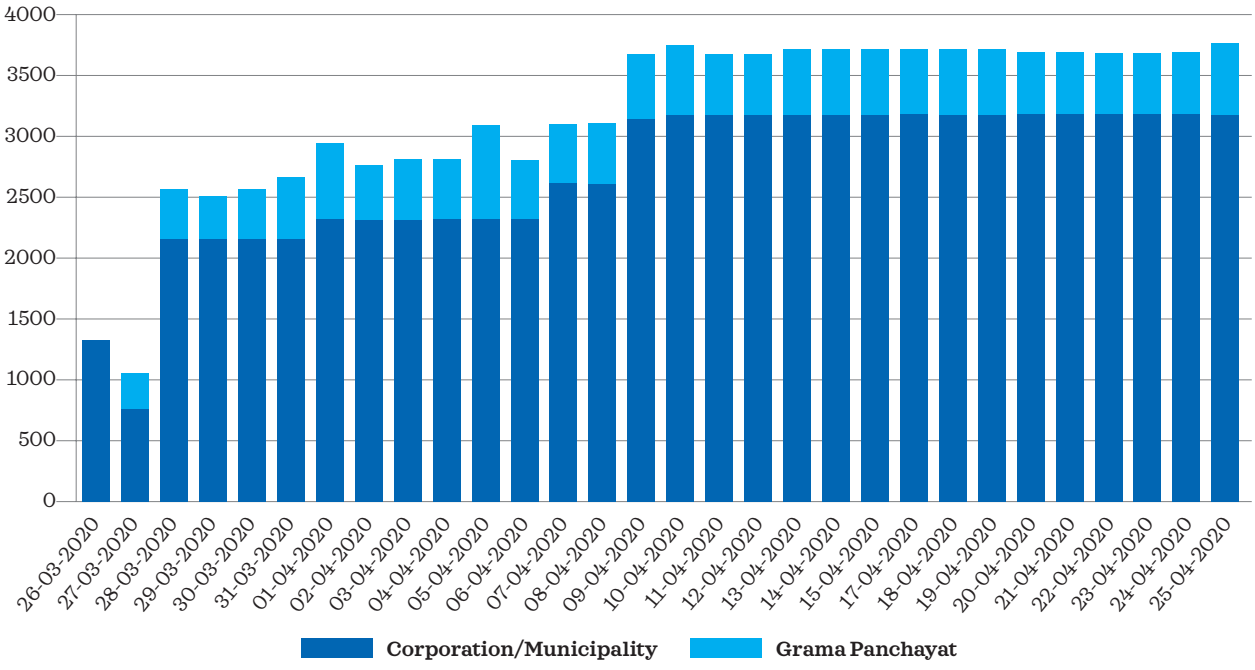
3. Psychosocial Support

For providing Psychosocial Support, 1334 Personnel are working and have given psychosocial support calls to 2656096 numbers of persons in quarantine/ isolation. In addition to this, Psychosocial Support calls are given to Mentally ill patients, Children with Special Needs, Guest Workers, and Elderly People living alone. Counselling service is also given to alleviate stress of personnel working in corona outbreak control activities. Co-ordination of Community Based De-addiction is also being done. A total of 6271155 psychosocial support calls were made from January 2020 till 31st December 2020.

4. Destitute Rehabilitation

3766 destitute and homeless people were rehabilitated with help of Local Self Governments during the lockdown period providing them shelter, food, medical care.

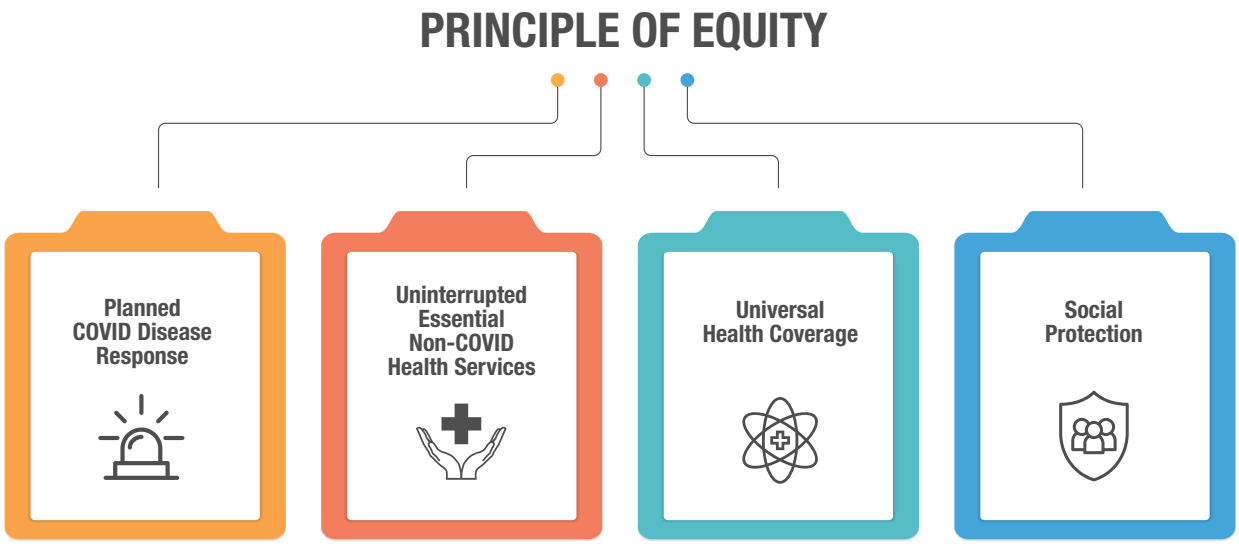
Details of Destitute and Homeless Rehabilitated



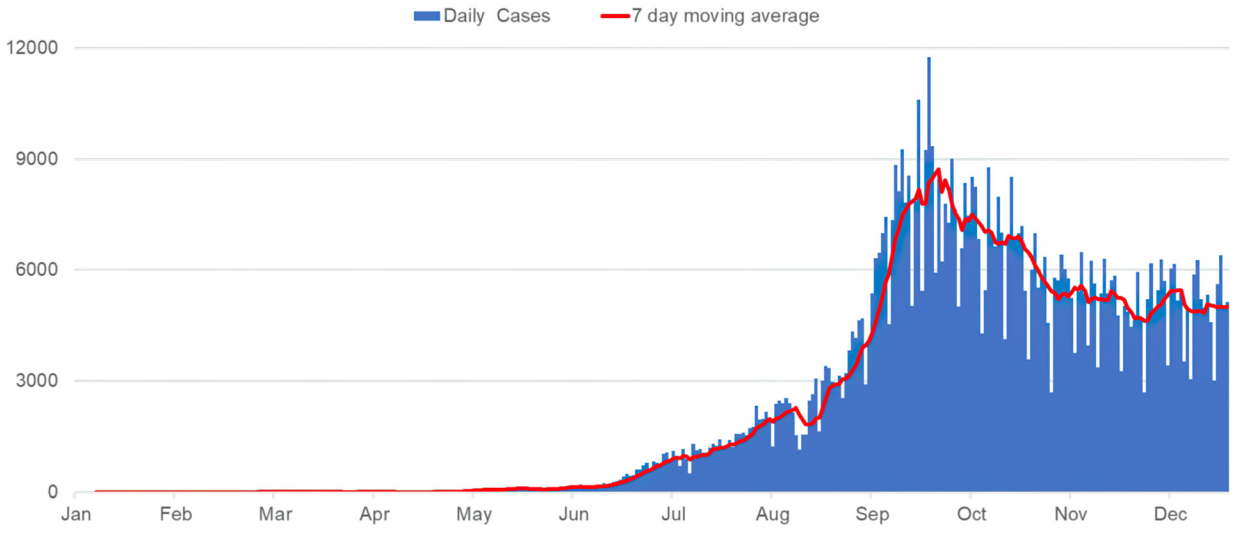
5. Care of 'Guest Workers'

Government of Kerala cared for and supported the guest workers (migrant labourers) during lockdown period with shelter, food, ensuring basic needs including recharge of mobile phones for communication. 4603 relief camps were opened for accommodating nearly 3.6 lakhs guest workers during lock down period.

Summary of Principles followed by Government of Kerala during COVID-19



To summarize, a proactive state government, executive and administration, along with a strong public health system backed by community participation is what ensured a limited spread in a densely populated state like Kerala with a significant proportion of cases imported from outside the state. Kerala's social investments in rural health care, universal education, decentralisation of powers and resources and women empowerment have helped the state to fight against the coronavirus. The system of ensuring quarantine and isolation of all 'at risk' individuals and at the same time protecting the vulnerable through 'proactive care' has certainly helped lowering the case fatality in the state. The lessons from Kerala state underline the importance of a strong public health system with active community participation.



As on December 31st 2020

Current Scenario	
Total Cases	760933
Active cases	65202
Recovered	692480
Deaths	3072

Key Indicators	
Test positivity rate	9.62
Case per million	21783
Test per million	226493
Recovery Rate	91%
Case Fatality Rate	0.40%
Persons Quarantined	3403825
Contacts traced	1598497

Theme III:
Achieving SDGs Related to MMR & IMR – Dream or Reality?

Theme III: Achieving SDGs related to MMR & IMR – Dream or Reality?

Maternal Mortality Ratio (MMR) in Kerala is the lowest in India compared to other states.

MMR

Year	MMR per 100000 live birth
2001-03	110
2004-06	95
2007-09	81
2010-12	66
2011-13	61
2014-16	46
2015-17	42
2016-18	43

Source SRS

Programmes to reduce maternal mortality in Kerala.

1. Maternal Death Audit - All maternal deaths in Government and private sector are audited by a committee constituted by the District Medical Officer (DMO). Kerala is the first state to implement confidential audit of maternal deaths.

2. Disposable Kits - Disposable delivery kits and disposable caesarean kits has been introduced in hospitals, to improve the quality of care, reduce hospital infections and also to measure the blood loses during the delivery.

3. Obstetric Rapid Response Team in major hospitals

4. Skill lab trainings conducted at the Kerala State Institute of Health and Family Welfare, Kozhikode to train staff nurses on delivery services.

5. Emergency obstetric care trainings for the Gynaecologists and staff working in the labour room were conducted in association with the KFOG. Doctors and staff from the Government and private sector are included in the training.

6. In 2012, the government of Kerala joined with the NICE International and KFOG to implement Quality Standards in obstetric care. Five simple steps were recommended to address the problems of postpartum hemorrhage(PPH), the leading cause of maternal deaths in the State and globally. Similarly,five steps were recommended to address the problem of hypertension in pregnancy, the second common cause of maternal deaths. The different levels of hospitals, both under the government and private sector, were included in the training programme to implement the Quality Standards.

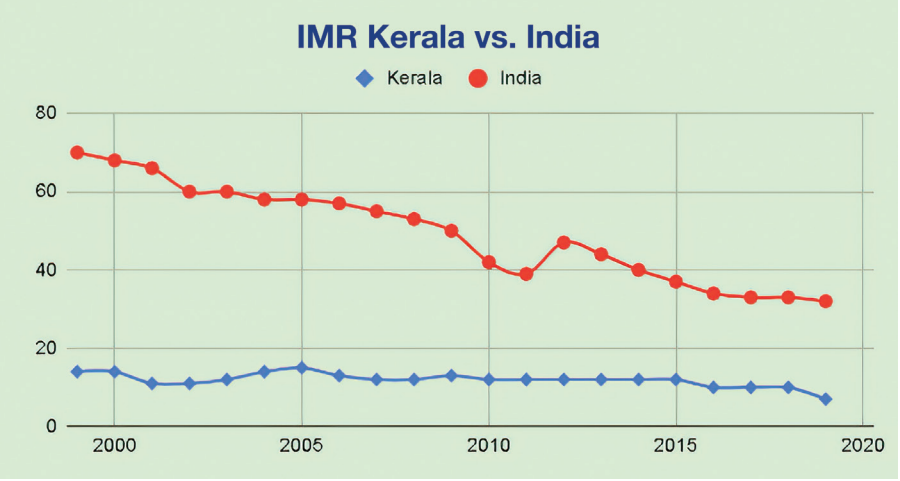
7. In 2014 -15 period, Government of India recommended to start Near miss reviews which was started in Kerala. We started the review as a pilot project involving all major government medical colleges and it is still continuing.

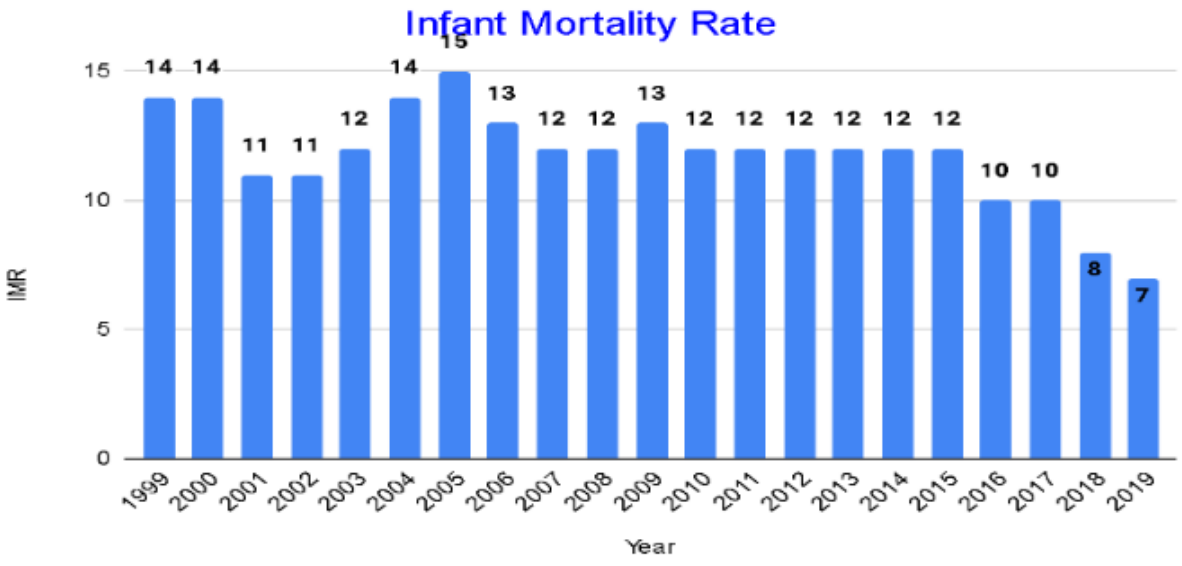
As a result of all these different activities the Maternal Mortality Ratio of the State has now come down to below 30 for the year 2019 -20"

Kerala achieved an IMR of 7

Based on the SRS figure (SRS 2014) IMR in Kerala was 12 and based on a projection there may be around 6000 infant death occurring every year. After setting the targets under SDG, GoK was committed to improve the figures on IMR and MMR, which was also one of the mandates under National Health policy 2017.

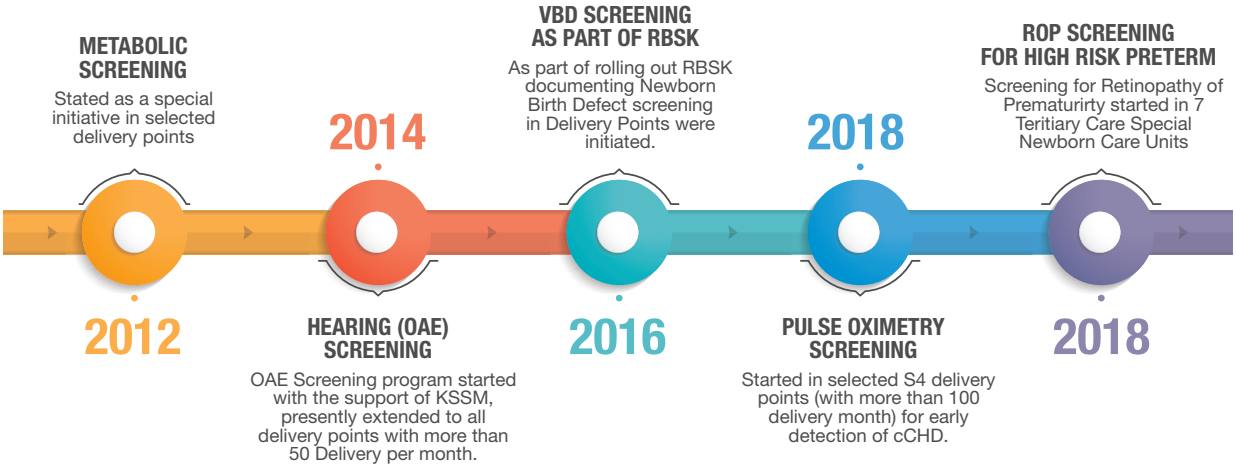
The state government has taken steps in this regard through concrete and clear evidence-based policy statements put forth by Department of Health Services, DME and technical partners and other professional bodies like IAP, KFOG, etc.





Strategies adopted by the state in MMR reduction (13 standards) and IMR reduction (10 standards this line

1. Prioritize the policies, strategies and activities based on evidences
2. Strengthening public sector for managing Newborn and infants requiring intensive critical care by infrastructure development, capacity building, etc.
3. Implementation of set quality standards throughout the state, in the first phase public sector hospitals and in private through the partnership with professional bodies.
4. Special focus on long term quality survival of newborn especially premature and Low Birth Weight babies, who graduated Newborn ICUs after intensive care.



5. Focused intervention on Congenital Anomalies, especially on improving survival of all salvageable babies like those with Congenital Heart Disease by streamlining the care pathways

6. Efforts to improve quality of survival through comprehensive Newborn Screening, Management and community based follow up of all those high risks and identified.
7. Strengthening Primary care by effective implementation of national programs with focus on RMNCH+A strategies like National Iron plus Initiative or Anemia Mukthbharat, Mothers Absolute Affection, rolling out LaQshya activities, etc.

CHD Demographics in Kerala	
33 Million	Population
0.5 Million	Children Born/year
7	Mortality Rate, per 1000 live births (IMR)
3500	Infant deaths/year
8 per 1000 est.	CHD prevalence
4,092 est.	New CHD/year
1,023-1,364 est.	New Critical CHD/year (25-35% of all new CHD)
350-450 est.	Deaths from CHD/year *50% reduction from 2016
700-900 est.	Infant CHD Surgeries performed
84% est.	Estimated Surgical Treatment Coverage *critical cases
Total/Infant Cases Registered under Hridyam	8385/5567
Total/Infant cases Operated under Hridyam	2873/1456
60% of children born with Critical CHD will die before 1st birthday; 90% will die before reaching 5th birthday if not treated.	

Theme IV:
Meet the SDG–Beat the NCDs

Theme IV: Meet the SDG –Beat the NCDs

The state of Kerala has garnered international recognition for its better health indices like low MMR, high life expectancy, low birth rate, better sex ratio etc, which is often compared at par with developed countries. Despite these achievements, the rising prevalence of NCDS and its poor control rate is alarming.

The NCD control Division of department of Health & Family Welfare, Government of Kerala has initiated many innovative programmes.

- Screening, prevention and management of diseases through NCD clinics at district and sub district level hospitals, Community health centres, Primary health centres , and all sub- centre
- Free distribution of NCD drugs at Sub centres based on the protocol
- Primordial preventive activities with the support of the LSGD for reduction of risk factors.

NCD clinics are now functional in over 5400 subcentres, 848 Primary Care centres, 227 CHCs, 87 Taluk level Hospitals and 36 District/General Hospitals. All medicines as per the approved protocol are provided up to subcentre level, free of cost.

Kerala
Hypertension Protocol

Screen **all adults** over 18 years.

High BP: **SBP > 140** or **DBP > 90** mmHg

Step 1

If BP is high

Check S. Creatinine and Urine Protein

Start on lifestyle modifications for 3 months. Review every month.

If BP is high at monthly review, start on drug treatment

Step 2

Review in 3 months. If BP is high

Start **Amlodipine 5mg (CCB)**

Step 3

Review in 1 month. If BP is high

Add **Telmisartan 40mg (ARB)**

Along with Amlodipine 5mg

Step 4

Review in 1 month. If BP is high

Intensify **Telmisartan to 80mg**

Along with Amlodipine 5mg

Step 5

Review in 1 month. If BP is high

Intensify **Amlodipine to 10mg**

Along with Telmisartan 80mg

Step 6

Review in 1 month. If BP is high

Add **Chlorthalidone 12.5mg (diuretic)**

Along with Amlodipine 10mg and Telmisartan 80mg

•••

Review in 1 month. If BP is high

Confirm **compliance** to treatment. If confirmed, **refer** to specialist.

Blood pressure measurements

At least 2 readings at an interval of 2 minutes. If readings differ by more than 5mm Hg, take a third reading. The lower of the readings should be taken as the representative SBP and DBP.

If SBP ≥ 180 and/or DBP ≥ 110
Refer immediately to higher centre after starting treatment.

If SBP ≥ 160-179 and/or DBP ≥ 100-109
- Do basic investigations: ECG, S. creatinine.
- Start on lifestyle modifications.
- Start drug treatment.

If SBP ≥ 140-159 and/or DBP ≥ 90-99
Start on lifestyle modifications.

Measuring blood pressure

- Use a mercury sphygmomanometer or electronic digital oscillometric device that is validated using a standard protocol and calibrated regularly.
- Patient should relax for 5 minutes before measurement.
- Patient should not have had caffeine in the past hour or smoked in the past 30 minutes.
- Patient should be seated comfortably with back supported, arm at heart level, and legs uncrossed.
- Appropriate cuff size: length of bladder 80% of arm circumference, width 40% of arm circumference.

Lifestyle modification

All patients require lifetime lifestyle modification.

Change diet
Salt restricted (<5g/day), low-fat diet.

Reduce weight
Target BMI 18.5 - 22.9 kg/m²

Regular exercise
Moderate intensity, 30 minutes, 5 days a week

Alcohol and Smoking
Avoid unhealthy intake of alcohol. Stop smoking.

India Hypertension Management Initiative: Kerala 1.00-6-7

Department of Health & Family Welfare

TREATMENT PROTOCOL FOR TYPE 2 DIABETES MELLITUS

Screen all individuals above 30 years and if diagnosed

1. Advice Life Style Modifications (LSM) & Assess for complications

   Start T. Metformin 500mg OD or BD

   Monitor FPG/PPPG monthly

2. Review in 1 month, if FPG,PPBG values are high,

   Intensify T. Metformin 1000mg BD

   Along with LSM

3. Review in 1 month, if FPG,PPBG values are high

   Add T. Glimepiride 1 mg OD

   (½ hour before breakfast and reduce to 0.5 mg/day depending if there is hypoglycemia.)
   Along with LSM, T.Metformin 1000mg BID. Give hypoglycemia training.

4. Give hypoglycemia training.

   Intensify T.Glimepiride 1 mg BD up to 2mg BID

   (½ hour before meals)
   Along with LSM, T.Metformin 1000 mg/day BID.

If plasma glucose not under control after second drug and if any complications present,
Refer to District hospital

5. If there is no complications, Continue LSM, Metformin 1 gm BD, Tab. Glimepiride 2mg BD,

   Add T.Pioglitazone 7.5 mg OD

   (to a maximum 15 mg once daily)
   Avoid in cardiac failure, fluid overload patients

6. If plasma glucose not under control after third drug,

   Start Insulin

7. **If plasma glucose not under control**

   Refer to District hospital

If patient is under control by any of the above steps, continue same treatments if no complications is identified and follow up shall be done every month with FBG and 2hour PPBG

Diagnosed diabetes with symptoms & FPG ≥ 250 mg/dL at presentation.

Repeat testing once a week and start combination therapy with Tab. Metformin 500 mg BD & Tab Glimepiride 1mg daily , up titrate , monitor weekly and to start Insulin if not getting controlled. Refer if not controlled

Hypoglycemia

Symptoms
Cold sweat, trembling of hands, hunger, palpitation, confusion etc

Treatment
Ingestion of glucose or carbohydrate containing foods. Consume 15 gms of glucose i.e. 1 tablespoon sugar, fruits, next meal & recheck blood glucose after 15 minutes, repeat if hypoglycemia continues

If any of the following complications are present, ***refer*** to higher centre.

- Uncontrolled plasma glucose with symptoms
- Visual symptoms
- Foot ulcer
- Nephropathy/ frothing of urine
- Painful neuropathy
- Infections/sepsis.

LIFE STYLE MODIFICATIONS

- Restrict sugar & sweets
- Restrict fried and oily foods
- Increase fiber in diet (green leafy vegetables, lentils or peas, whole grains, apple, banana)
- Regular consumption of seasonal vegetables
- Brisk walking for 30 minutes daily
- 5 minutes warm up
- 5 minutes cool down
- Avoid Tobacco and Alcohol

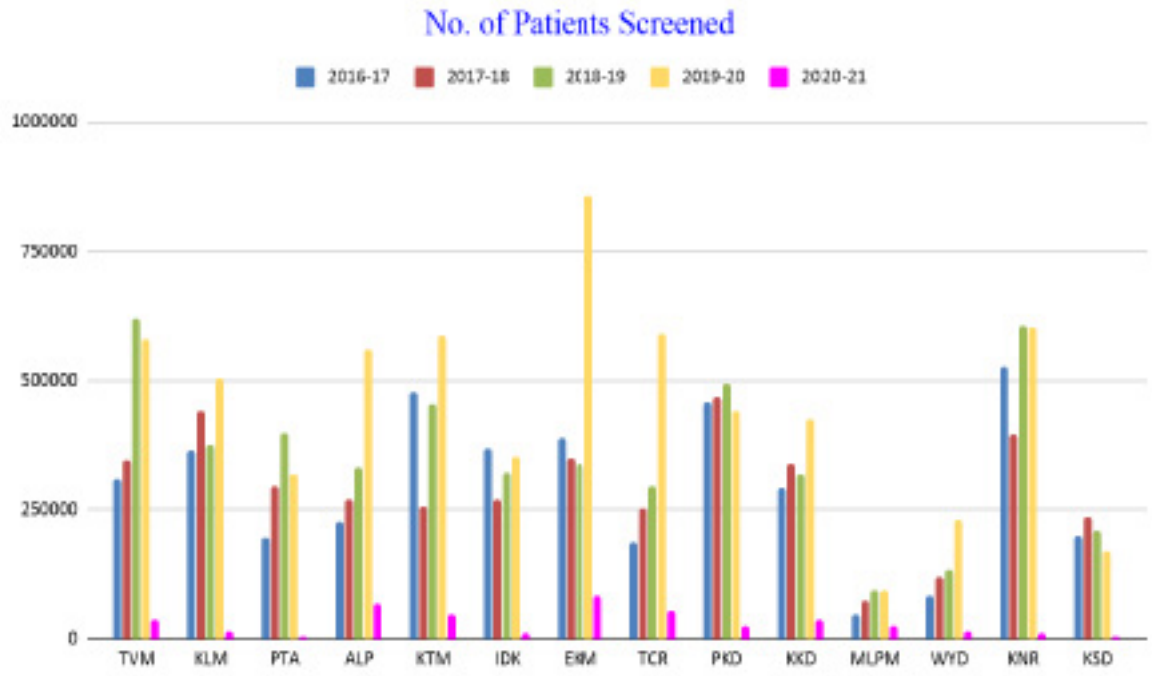
Base Line Lab Investigations
Urine Albumin
Blood Urea
Serum Creatinine

Target mg/dL
FPG: 80-130
PPPG: >180

STATE NCD DIVISION

NCD screening-Achievement 2020-21

Non Communicable disease screening: District wise



Care on wheels:
Mobile NCD clinic in Hilly areas

Care on Waves:
Mobile

NCD clinic in coastal areas

Bridging the gaps in specialty care in primary care services-the Kerala success saga

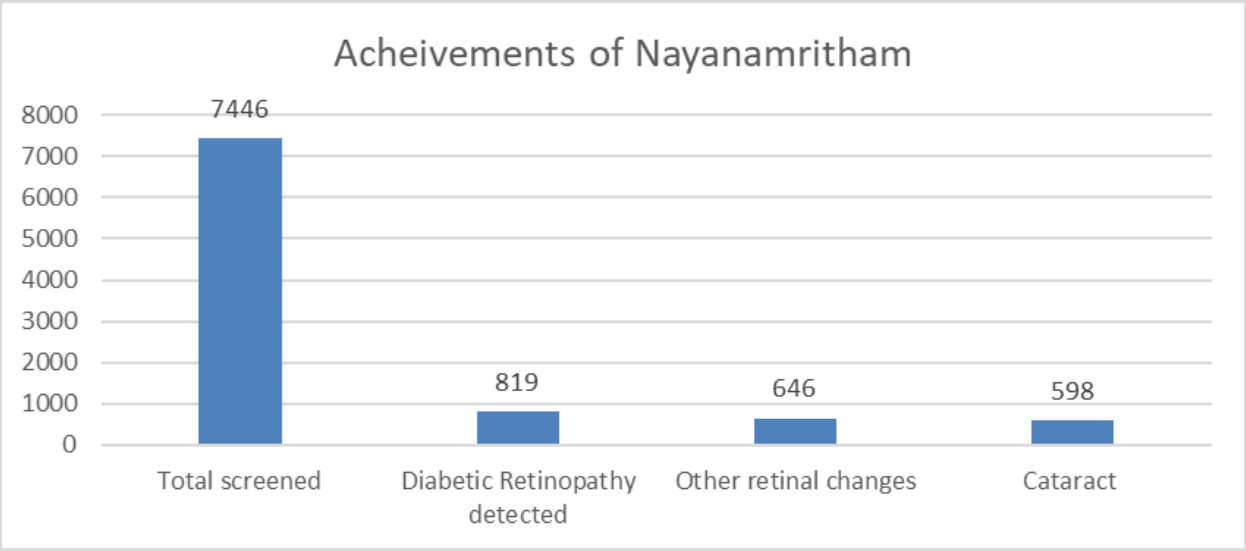
The state NCD division has also initiated field level screening and management of

- COPD through SWASS clinics where spirometry is done at FHC level
- Mental health services through "Sampoornamanasikarogyam" and "Aswasm program"
- Diabetic Retinopathy screening by taking retinal photography through Non Mydriatric camera at FHC level
- Diabetic foot examination through diabetic foot clinics
- Rehabilitative services through the well-established network of palliative care programme.
- Stroke rehabilitation through the service of physiotherapists

Number of patients undergone symptomatic screening (Attended SWAAS clinic)	148870
Number of patients screened with Spirometry	29527
Number of COPD diagnosed	19943
Number of Asthma diagnosed	13055
Number of patients received smoking cessation services	13752
Number of patients who Quit smoking	2503

Number of patients received pulmonary rehabilitation services	12298
Number of alternate diagnosis made (TB/Cancer, ILD, Bronchiectasis, Cardiac Diseases etc)	740

Diabetic Retinopathy Screening programme - **NAYANAMRITHAM**



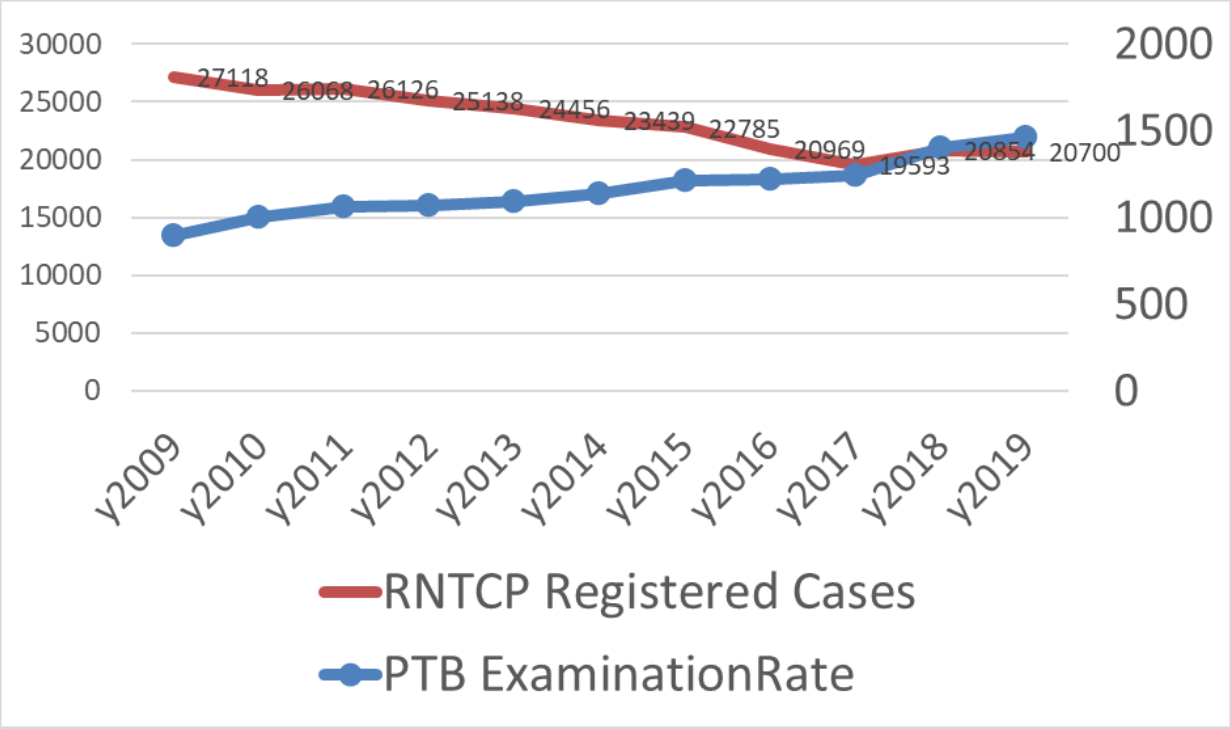
Theme V:
Moving towards TB Elimination – A Call for Action

Theme V: Moving towards TB Elimination – A Call for Action

Introduction

In Kerala, since inception, TB Control program is fully integrated with general health system, against its conceptual verticality. Notification of TB patients from public sector in Kerala state is steadily decreasing since 2009 at a rate of 3.5% per year and TB drug sale in open market (as a proxy of private notification) is declining at a rate of 10% per year. Public sector notification was 27500 in 2009 which has declined to 20992 in 2018. Age specific notification of TB patients in Kerala has shifted to the right showing significant decrease of disease burden in younger age groups. Paediatric drug sale had a steeper decline. Pharmaceuticals reported sale of kid formulations for 16,000 during 2006, while 2018 sales figures were for 2030 indicating a decline by 90%. Districts like Idukki has incident TB notification as low as 40 cases/100,000population/year, which the country is planning to achieve by 2025.

Presumptive TB Examination Rate (per 100000) Vs Registered cases for Treatment under RNTCP



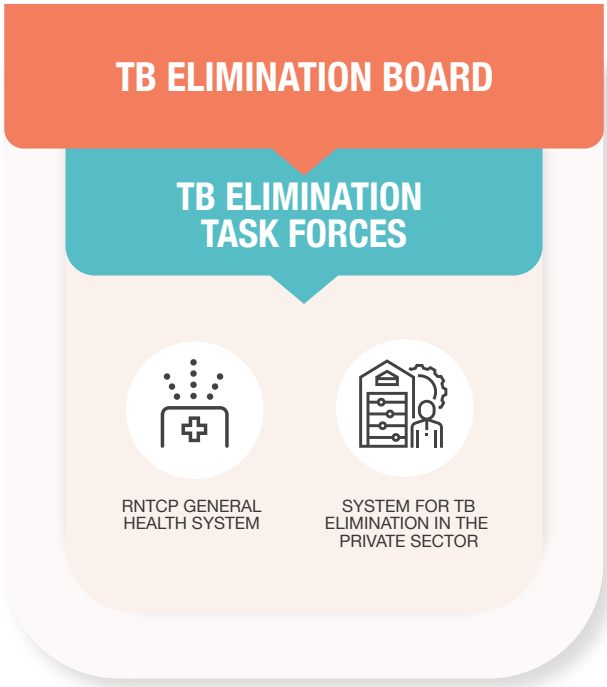
This decline is in the background of increased case finding efforts with laboratory investigations and diagnostic practices conforming to standards. The state tested 1408 TB symptomatic/100,000 population in 2018 with the help of highly sensitive rapid molecular diagnostic tools like CBNAAT against 888/100,000 in 2009. Estimated Annual Risk of TB Infection (0.4) is only 1/5th of the national estimates (1.5). Proportion of TB patients with MDRTB is the lowest in Kerala. Among new it is less than 1% and among previously treated it is 3.5%. Reported recurrence is less than 5% and long term follow up confirms low recurrence.

Kerala TB Elimination Mission

Government of Kerala has launched "Kerala TB elimination mission" aligning with the Sustainable Development Goals, with objectives to achieve TB Elimination by 2025, zero preventable deaths due to tuberculosis and zero catastrophic expenditure for the families of tuberculosis patients. The consultative workshop of local, national and international experts conducted in February 2017 with support from Government of India and World Health Organization finalised the Kerala TB Elimination Mission strategy document. The mission is envisaged as a peoples' movement against TB under the leadership of local self-governments.

Strategy Document for Kerala TB Elimination Mission

Strategy document for Kerala TB Elimination Mission was brought out with 10 principles and 48 activities. The document has been published by Government of Kerala as a Government Order [GO Rt No 246/2018/H&FWD dated 24.01.2018]. The Mission was formally launched during January 2018. Based on the mission document, the following activities have been completed or ongoing.



Conceptual diagram representing reinforcement of health system with additional structure

Health System Strengthening

- 181 new Designated Microscopy Centres (DMC) have been started in the state during last two year. 17 Urban PHCs were upgraded to DMCs. 85 Family health centers have DMCs. Currently 602 DMCs (1 DMC per 56000 population) are in place in Kerala, of which 116 are in private hospitals.
- 36 CB NAAT (Cartridge Based Nucleic Acid Amplification Test) machines and 75 Truenat machines are being used efficiently in public sector at fixed facilities, 2 Vehicle mounted CB NAAT machines are serving in areas with difficult health access and additional 24 CB NAAT machines and 54 Truenat machines are with private sector where arrangements have been done for doing tests at subsidised rates through IPAQT (Initiative for Promoting Affordable and Quality TB tests) scheme. Additional Lab

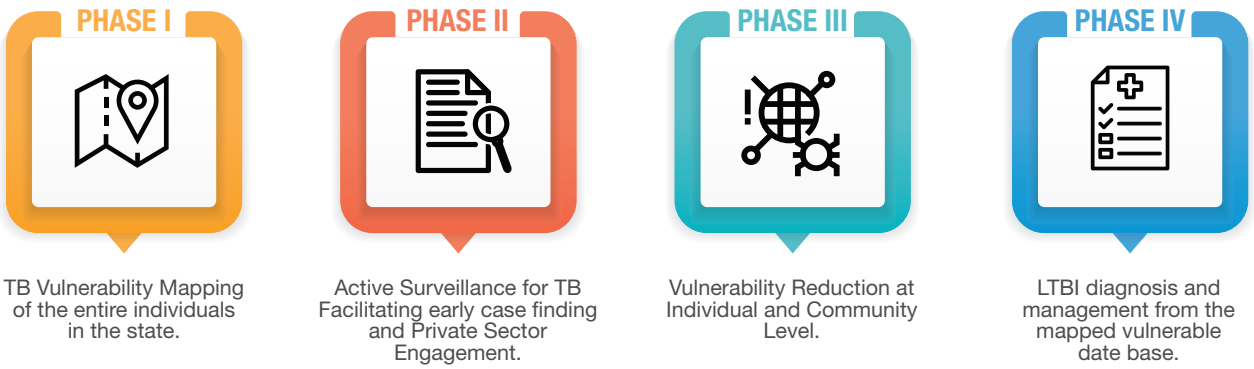
technicians are being provided for the 14 CB NAAT sites through NGO PP scheme with Indian Medical Association to handle samples from patients reaching private sector.

- Mechanisms are there to provide X rays free of cost to presumptive TB cases through 224 Designated X ray Units (123 in public sector and 101 in private sector) in the state. Special allotment of Rs. 200 lakhs have been sanctioned in the 1st Supplementary RoP 2017-18 under SDG Goals TB to ensure free access to X rays to all eligible presumptive TB cases.
- New laboratory facility has been developed and certified for performing First Line - Line Probe Assay (FL-LPA), a test to detect resistance to Isoniazid at Government Medical College Kozhikode in addition to the Intermediate Reference Laboratory at Thiruvananthapuram.
- Drug Resistant TB Treatment has been decentralised at district level. District DR TB Committees are in place in 14/14 districts and facility for IP admissions in present in 12/14 districts.
- A separate initiative- STEPS (System for TB Elimination in Private Sector) has been launched to ensure standards of TB care to all patients reaching private sector also.

Local Self Government Stewardship: Kerala TB Elimination Mission is being implemented through the LSG Bodies with a theme "My TB free [name of LSG]".

- Joint Call letter was issued to all Local Self Government Heads by Minister for Health and Minister for LSGD.
- 85% of Local Self Government heads (1020/1200) were formally sensitized on Kerala TB Elimination Mission.
- TB Elimination taskforces chaired by the head of the LSG are formed in all the LSG bodies. The LSG Task Force plans and implements local activities mobilizes resources, monitor self, adopts mid-course correction and reports to the district task force.

Four Phases of Kerala TB Elimination Mission



PHASES OF KERALA TB ELIMINATION MISSION

Vulnerability Mapping: Kerala has evolved a novel surveillance model to maximize the number and minimize the delay in detection by identifying all individuals in the state with various degrees of risks to develop TB infection and disease. Fifteen potential risk factors (vulnerabilities) for TB infection and disease in the state were identified. Weighted scores were assigned to each vulnerability based on the state specific individual relative risks and population attributable risks of the vulnerabilities. A survey questionnaire was prepared and piloted, community health volunteers (CHV) were trained, entire households in the state was divided into units containing 200 houses, 10 houses were visited on Sundays completing 200 over 20 Sundays to interview all members. The volunteers visited houses from January to July 2018, collected data on paper, and compiled electronically. 7019794/ 8560731 (82%) of households in the state were visited by trained community volunteers, educated them on TB and assessed their vulnerability to develop TB. Approximately 3-5% of the population are found to have high vulnerability to develop TB in each LSGDs.

Inauguration of TB Vulnerability Risk Assessment Survey from residence of Smt. KK Shylaja, Hon. Health Minister, Kerala

Vulnerability Data

Individual Vulnerability data in electronic form is available till date for 2,20,42,168 individuals in the state. Of them 41,36,420 has been found to have at least one vulnerability [13,45,944 has reported diabetes, 41,07,34 reported Chronic Respiratory diseases, 5,61,468 reported current tobacco use]. Weighted Scores have been given for individual risk factors and anybody with a score of 5 and above has been considered as highly vulnerable to develop TB. In this category there are 7,75,802 (3.5%) individuals. Compiled vulnerability data has been made available to concerned PHCs in electronic format.

Active Case Finding among vulnerable individuals

In phase II, identified vulnerable individuals are screened every three months for TB symptoms to facilitate early case finding.

PHASE 2 - PERIODIC REPEATED ACTIVE CASE FINDING FORM VULNERABLE INDIVIDUALS (SCORE >5)

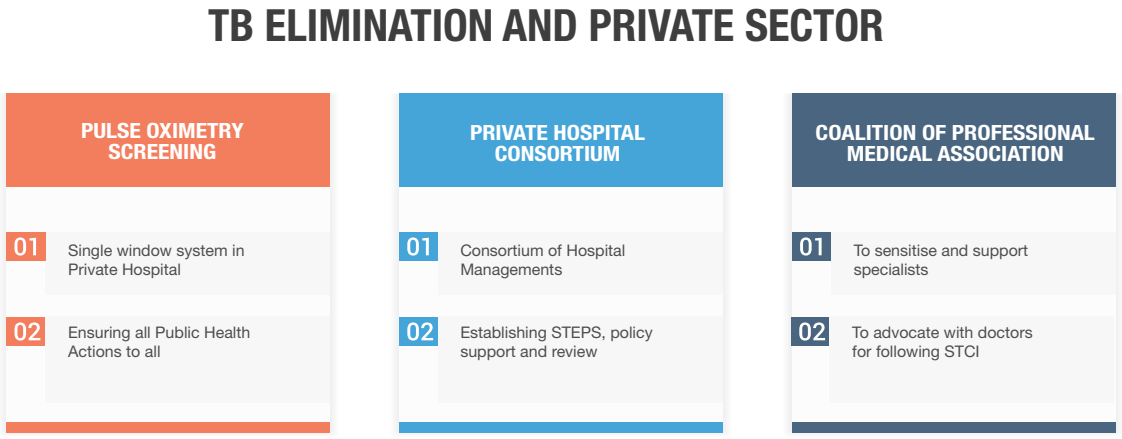
In 2015, 20% of all new pulmonary TB were diagnosed at Medical Colleges in the state, which dropped down to 9% in 2018 indicating that diagnosis is happening at periphery and early.

Patient Support:

- Government of Kerala is providing TB pension of Rs.1500/- per month during the entire treatment period through Revenue Department for all persons affected with TB with an annual income less than Rs 100000.
- State government also provides nutritional Support through LSG projects. Currently 4 District Panchayats and 1 Corporation has Nutritional Supplementation project for Drug Resistant TB patients and Tribal TB patients worth Rs 27, 25, 711 per year.
- State Government has also taken initiatives to provide social support to TB affected families through community treatment support groups. 319 Gram Panchayats have formed Treatment Support Groups for TB patients. TB survivors also extended their support in doing advocacy and support for forming support groups in other LSGs also. The lost to follow up rate has come down to 2% [from 5%] in the state.

Private Sector Engagement:

Government of Kerala has the following mechanisms to engage private sector for ensuring standards of TB care to the patients reaching there and reducing their out-of-pocket expenditure.

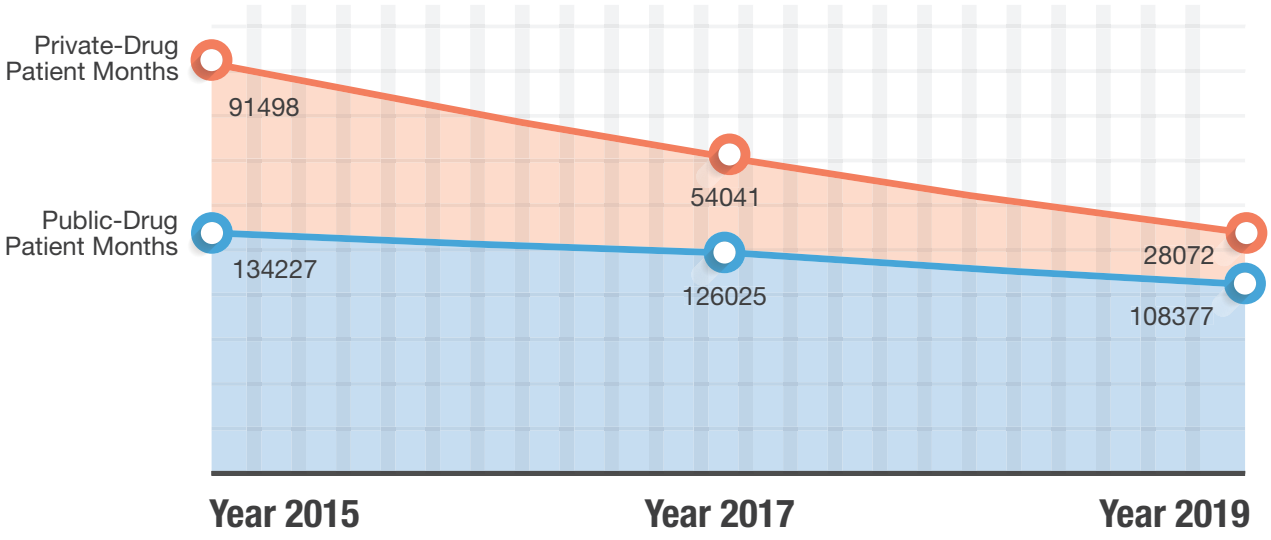


STEPS (System for TB Elimination in Private Sector): STEPS is a single-window in a private health facility serving as a nodal centre to systematically track every TB patient diagnosed by in-house clinical departments, units and clinicians, notify them to RNTCP, follow them up during the entire treatment and report treatment outcomes to RNTCP in the most patient centric way so that each patient receives highest standards of TB care from the health facility of his choice, protecting the dignity and confidentiality. STEPS centres are established in 380 health facilities. RNTCP drugs have been stocked at STEPS centres and linkages to free diagnostics have been established through specimen collection and transportation schemes. This will reduce out of pocket expenditure to the TB patient.

Schedule H1 surveillance for anti TB drug sales

Recent initiatives of Government of Kerala to enhance notification is enforcing schedule H1 surveillance through a joint monitoring by the State Drugs Controller and RNTCP, effected through a government order. It has also served as an opportunity to closely monitor anti-TB drug sale for an improved TB surveillance.

40% reduction in anti TB drug consumption in 2019 compared to 2015



Airborne Infection Control

- An air borne infection control kit containing five reusable and washable clothed masks, a spittoon and a litre of disinfectant solution is being provided to all patients at the time of diagnosis of TB along with education material to use the kit. Health worker educates the patient on infection control processes. During house visits, the health worker ensures that patient uses the materials and observes cough etiquette.
- 'Handkerchief Revolution' is ongoing to empower the community to cover cough- campaign is being conducted at schools and through National Service Scheme and Social media
- 75 Taluk/District hospitals have established AIC help desk [Cough Corners] where patients with respiratory symptoms will be screened and provided with mask and education on cough hygiene.

Co-morbidity detection and Fortnightly Clinical Review

Poorly managed co-morbidities like diabetes and adverse drug reactions (ADRs) are observed to be the most important causes for loss to follow up and death. Periodic monitoring of ADRs and NCD status by medical officers was ensured by another government order. Collaboration between RNTCP and NPCDCS program for vulnerability reduction, early case finding and mortality prevention also has advanced immensely with bidirectional screening for TB and

NCDs through NCD clinics, free insulin scheme for TB patients, control of COPDs through SWAS clinics and tobacco cessation clinics.

Programmatic Management of TB Preventive Therapy

TB Preventive Therapy (TPT) is being provided to all eligible children less than 6 years who are household contacts of microbiologically confirmed pulmonary TB from 2000 onwards. Apart from this, all People Living with HIV are also being offered TPT. The state aims to eliminate TB first among the children and give them full potential for growth and development. So, first group among which TPT was scaled up were children and adolescents less than 15 years through a 'test and treat 'policy.

Govt. of Kerala

Department of

Health & Family Welfare

Thiruvananthapuram, Kerala