

committee was to meet quarterly in order to take stock of the pollution problems and control measures, it did not meet even once, as of April 2001.

(ii) Evaluation

Though the PCB has been functioning for 26 years, its performance has not been evaluated either by the State Government or by the PCB so as to gauge the impact of pollution control measures undertaken by the PCB on the status of environment. The proposal of the PCB to entrust the evaluation work to the Institute of Management in Government submitted to the State Government in February 2001 was pending clearance as of May 2001.

3.1.15 Conclusion

The review brought out inadequacy in identification of polluting industries and other units. Monitoring and preventing air pollution by smoke emissions from factories, motor vehicles and the stone crushers was ineffective. The PCB, Motor Vehicles Department, Health department and Industries department of the State Government need to co-ordinate effectively for achieving effective implementation of the Air Act/Waste Management Rules in the State.

The matter was referred to Government and the Member Secretary, PCB in July 2001. Reply has not been received (October 2001).

3.2 Prevention and Control of Diseases

As part of Health Care Services, the State Department of Health Services is implementing four National Programmes, viz. National Tuberculosis Control Programme, National Programme for Control of Blindness, National AIDS Control Programme and National Leprosy Eradication Programme. A review of the implementation of these programmes except National AIDS Control Programme was featured in the Report of the Comptroller and Auditor General of India for the year ended March 1987 (Civil), Government of Kerala. The report had not been discussed as of June 2001. The four programmes were reviewed in Audit during January - May 2001.

3.2A National Tuberculosis Control Programme

Highlights

The Revised National Tuberculosis Control Programme (RNTCP), a 100 per cent Centrally Sponsored Scheme, was implemented in the State covering all the 14 districts in three phases. A review of the scheme revealed low detection of TB cases due to low percentage of outpatients detailed for undergoing sputum tests, lack of infrastructure facilities for X-ray examination of sputum smear negative and extra pulmonary TB cases, shortage of microscopy centres and non-involvement of Medical College/ESI/Private hospitals and NGOs.

- Out of Rs 5.90 crore received from GOI by State/District Tuberculosis Control Societies during 1996-2001, Rs 3.14 crore (53 per cent) remained unspent as of March 2001.

[Paragraph 3.2A.4]

- Shortage of Microscopy Centres and non-functioning of existing centres denied the benefit of laboratory testing facilities to TB patients in four districts. In seven out of 12 District TB Centres there were no facilities for X-ray examination for diagnosis of TB cases.

[Paragraph 3.2A.8 and 9]

- During 2000-01 shortfall in detection of TB cases ranged from 39 to 64 per cent in five test-checked districts. Similarly, detection of new sputum positive cases was only 48 to 70 per cent of the estimated national average during 1999-2001. The shortfall was mainly due to non-participation of Medical College/ESI/ private hospitals and NGOs.

[Paragraph 3.2A.10]

- Children suffering from TB had no access to Directly Observed Treatment (DOT) under RNTCP. Failure of the DOT providers in furnishing the progress of treatment to the treatment centres would lead to non-follow-up of TB cases and could result in patients becoming Multi Drug Resistant.

[Paragraph 3.2A.11]

- There was no facility in the State for diagnosis of Multi Drug Resistant (MDR) TB and RNTCP had no provision for management of such patients.

[Paragraph 3.2A.12]

3.2A.1 Introduction

The National Tuberculosis Control Programme (NTCP) launched by Government of India (GOI) in 1962 was revised in 1992 to achieve a higher cure rate of 85 per cent in a phased manner with the World Bank assistance. The Revised National Tuberculosis Control Programme (RNTCP), a 100 per cent Centrally sponsored scheme, was implemented in the State covering all the 14 districts in 3 phases between March 1997 and December 2000.

3.2A.2 Organisational set up

The Kerala State Tuberculosis Control Society (KSTCS) with the Secretary to Government, Health and Family Welfare Department as the Chairman was to

supervise and monitor the implementation of the programme in the State. The State Tuberculosis Officer (STO) and the District Medical Officer (Health) under the Director of Health Services were responsible for implementation of the scheme at State level and District level respectively. The State TB Training and Demonstration Centre (STDC) provided training, guidance, supervision, co-ordination, monitoring and technical assistance.

The District Tuberculosis Control Society (DTCS) was to formulate Annual Action Plan and the District Tuberculosis Officer (DTO) in charge of the District Tuberculosis Centre (DTC) was the nodal officer for implementation of the programme. The DTC functioned as a specialised referral centre. At the Sub District level, implementation was through TB unit (TU).

3.2A.3 Audit coverage

A review of the implementation of the programme was conducted in five* out of 14 districts with reference to the records of DTCSs, DTCs, TUs, Microscopy Centres and peripheral health institutions.

3.2A.4 Financial outlay

Fund released by GOI to the State during 1996-2001 and its utilisation are indicated below:

53 per cent of GOI funds remained unutilised

(Rupees in lakh)

Year	Opening Balance	Funds Released	Funds Utilised	Closing Balance
1996-97	..	Nil	Nil	..
1997-98	..	124.64	14.81	109.83
1998-99	109.83	103.07	44.49	168.41
1999-2000	168.41	295.10	94.99	368.52
2000-01	368.52	67.53	122.39	313.66
Total		590.34	276.68	

During 1996-2001, the DTCSs/KSTCS spent only 47 per cent of total funds released by GOI. In five* DTCSs test-checked Rs 75.26 lakh (out of total release of Rs 1.75 crore) allotted for purchase of computers, photocopiers, consumables, Information Education & Communication and printing, etc., remained unspent.

3.2A.5 Delay in implementation of RNTCP

Starting of the programme in six@ districts, approved by Government of India in November 1996, was delayed by more than a year due to non-availability of supervisory staff and delay in imparting training to staff.

3.2A.6 Annual Action Plan not prepared

In none of the test-checked districts the DTCSs prepared (May 2001) the Annual Action Plan ever since the implementation of RNTCP in the State. The

* Ernakulam, Kannur, Malappuram, Palakkad & Pathanamthitta.

@ Ernakulam, Kannur, Kasaragod, Kozhikode, Malappuram and Palakkad.

Annual Action Plan for 2001-02 prepared by the State TB Cell contained merely the requirement of funds under various activities and was thus hardly an Action Plan.

3.2A.7 Identification of patients and treatment outcome

Prior to October 1998, the programme was implemented only in Pathanamthitta District. The year-wise details of identification, treatment and discharge of patients in the State during 1998-99 to 2000-01 are indicated below:

Year of identification	Number of patients identified	Treatment outcome after 12-15 months						
		Cured	Treatment completion	Death cases	Failure cases	Defaulters	Transfer to other district	Total
1998-99	6377	2699	2674	253	163	453	135	6377
1999-2000	9442	4332	3971	395	192	479	73	9442
2000-01	19422	Treatment outcome is assessable only by April 2002.						

The achievements of the programme were as shown below:

Indicators	Expected level	Achievement on implementation (cases registered in previous year)		Achievement in test-checked districts (cases registered in previous year)	
		1999-2000	2000-01	1999-2000	2000-01
		(Percentage)			
Conversion rate	> 90	88	88	88	89
Cure rate	>85	84	87	89	90
Defaulter rate	<5	6.2	4.5	5	3
Death rate	<4	3.17	4	4	4
Treatment completion rate					
i) Retreatment	90	70	77	74	79
ii) Sputum negative cases	90	86	90	89	93

The above table showed that the conversion rate and the treatment completion rate of retreatment cases were below the expected level. Inappropriate treatment and irregularity in the administration of medicines could result in drug resistant TB. Absence of testing facilities for drug resistant TB in the State coupled with high cost involved in treatment could result in non-detection and non-treatment of such cases leading to increase in the number of drug resistant TB patients. Thus, low treatment completion rate carried the risk of increase in the rate of incidence of MDR TB cases.

3.2A.8 Shortage of TB units and microscopy centres

Shortfall in number of TB units and microscopy centres

One TB unit was to be established for every 5 lakh population and one microscopy centre was to cover a population of one lakh. However, as of May 2001 only five TB units were set up in Palakkad district against the requirement of six. Against the requirement of 122 numbers, shortfall in number of microscopy centres in four districts test-checked as at the end of May 2001 were 20 (7 in Palakkad, 5 in Kannur and 4 each in Ernakulam and Malappuram). The reasons for shortfall were attributed to non-receipt of sanction from Central TB Division, non-completion of civil works and want of

Laboratory Technicians. In Palakkad, three centres at Agali, Anakkatty and Nelliampathy were not functioning as of April 2001 for want of Laboratory Technicians. The tribal patients of these hilly areas were, therefore, deprived of the free laboratory service under the Programme. Further, non-functioning of the microscopy centres also resulted in the lack of following up of the patients suffering from pulmonary TB through periodical sputum tests.

3.2A.9 Lack of infrastructure facilities

X-ray facility was lacking in 7 out of 12 DTCs

X-ray examination was essential for the diagnosis of smear negative TB and some forms of extra pulmonary TB. Information collected by audit (May 2001) from 12 districts showed that X-ray facility was available only in five DTCs. In the absence of X-ray facility in seven other districts, the patients were referred to nearby Government hospitals or private institutions.

3.2A.10 Shortfall in case finding

i) Low detection of cases

Shortfall in detection of TB cases ranged between 39 and 64 per cent

Magnitude of incidence of TB was not adequately assessed in any of the districts test-checked. As per the guidelines of the programme for active case finding at least 2 per cent of adult outpatients were to be persuaded to undergo sputum smear examination for diagnosis of tuberculosis against which State level percentage during 2000-01 was only 1.3. Failure in conducting the minimum percentage of smear examination would result in non-detection of TB patients. The shortfall in detection against the national average of 135 per one lakh population during 2000-01 was between 39 per cent and 64 per cent in 5 test checked districts as indicated below:

District	Population in lakh	Percentage of adult out- patients who underwent sputum test to total no. of adult out-patients	Target no. of cases to be detected @ 135 per 1 lakh population	No. of cases detected	Shortfall and its percentage in brackets
Palakkad	29	1.79	3915	1506	2409 (62)
Ernakulam	32.6	1.62	3532	2168	1364 (39)
Kannur	25	1.50	3375	1753	1622 (48)
Malappuram	35	1.28	4725	1720	3005 (64)
Pathanamthitta	11.8	2.04	1600	726	874 (55)

Shortfall in detection of sputum positive cases ranged between 30 and 52 per cent during 1999-2001

Out of 135 TB cases per one lakh population, it was estimated that 50 cases would be new sputum positive[#]. It was, however, noticed that during 1999-2001 actual detection of sputum positive cases was 24 to 35 per one lakh population in the test-checked districts. Shortfall ranged between 30 and 52 per cent in test-checked districts.

Apart from the low percentage of patients detailed for sputum smear examination, the Central TB Division, New Delhi attributed the shortfall in detection of TB patients to non-functioning of Microscopy centres, non-participation of Medical College/ESI/Private hospitals and NGOs in the

* Kannur, Kollam, Palakkad, Pathanamthitta and Thiruvananthapuram.

[#] Pulmonary TB patients undergoing treatment for the first time.

implementation of the programme. The STO stated (May 2001) that Medical College Hospitals and ESI Hospitals could not be covered due to lack of funds for imparting training to their staff. This was not tenable as huge balances remained unspent with the DTCSs every year.

3.2A.11 Treatment

a) *Inadequate treatment under RNTCP*

i) RNTCP was introduced in view of the poor cure rate under NTCP. As per the guidelines, the self-administered regimen under NTCP was to be restricted to the exceptional cases of TB patients who refused or were unable to take DOT or who could not comply with short course of chemotherapy due to drug toxicity.

Children suffering from TB had no access to DOT under RNTCP

In none of the districts test-checked, paediatric TB cases were treated under RNTCP on the plea of non-supply of medicines in kits for children. However, guidelines provided for the packing of medicines into kits for children according to the prescribed dosage with reference to their body weight. This showed that children suffering from tuberculosis had no access to DOT under RNTCP, which could have ensured higher cure rate.

In Malappuram District a large number of patients continued to be treated under NTCP even after introduction of RNTCP (October 1998). As a result, the number of cases treated under NTCP instead of going down, increased from 544 during 1999-2000 to 1312 during 2000-01 unlike in other test-checked districts where the number decreased significantly after introduction of RNTCP. Since higher percentage of cure rate was ensured under RNTCP, the continuance of treatment of large number of patients under NTCP after the introduction of RNTCP was not justified.

ii) Under RNTCP, the medicines were to be administered by the DOT** provider. Peripheral health worker acting as DOT provider was to transfer information recorded in treatment cards to the original Master card kept at the PHC/CHC at least once a month to facilitate monitoring the progress of treatment with regard to regular medication and timely conduct of bacteriological examination. This was not done by the DOT providers of Microscopy centres at Pattambi (Palakkad), Koppam (Palakkad), Angamali (Ernakulam) and TB unit, Aluva (Ernakulam) during the period from April to September 2000. In TB unit, Ottappalam (Palakkad) and TB unit, Aluva (Ernakulam) in 29 out of 90 TB cases and 40 out of 77 cases respectively registered between April 2000 and September 2000, follow-up details of timely administration of medicines and sputum tests were wanting. This could have adverse effects on the programme as defaults in administration of the medicines could result in the patient becoming a Multi Drug Resistant TB (MDRTB) patient.

** Directly Observed Treatment.

b) Wrong classification of patients

i) As per the guidelines, number of smear negative/extra pulmonary cases coming under Category[#] I regimen would not exceed 20 per cent. During April to June 2000, such cases were found 45 per cent in Palakkad district due to treating Category III patients under Category I. By such incorrect classification, the patients were administered additional medicine (Ethambutol) not required for Category III patients. The District TB Officer stated (May 2001) that direction had been issued to improve the position.

ii) As per the guidelines, retreatment of smear positive cases would be about 50 per cent of new sputum positive cases in the initial years of implementation. During April to December 2000, retreatment sputum positive cases were found to be 12 per cent (63 cases) and 14 per cent (73 cases) in Palakkad and Ernakulam districts respectively. The lower percentage was indicative of recording of inaccurate case history regarding earlier treatment under NTCP which might have led to wrong classification of patients.

c) Lack of monitoring

As per guidelines, extra pulmonary cases should account normally for about 10 per cent of the total pulmonary cases. Higher percentage of extra pulmonary cases indicate under-diagnosis of pulmonary cases and/or over-diagnosis of extra pulmonary cases. Both the situations needed technical monitoring. During various periods in 2000-01 the percentage of extra-pulmonary cases in five test-checked districts was between 20 to 37.

However, no technical monitoring was done by District TB Officer/State TB Officer to ensure adequacy of testing facilities, competency of Laboratory technicians and correctness of classification of patients so as to find out the reasons for higher percentage of extra pulmonary cases.

3.2A.12 Multi Drug Resistant (MDR) cases

No facility for management of MDR TB patients in the State

Patients who remained smear positive even after completing the retreatment regimen were suspected of having drug resistant TB and were to be referred to a referral centre for Multi Drug Resistant (MDR) TB. There was neither any such facility in the State nor any provision for the management of MDR TB patients under RNTCP. During 1996-2000, there were 93 suspected cases in four districts* of which 12 cases in Thiruvananthapuram were sent for testing and 5 cases were confirmed. Though such cases were referred to Medical College Hospitals, no follow-up action appeared to have been taken. The reasons for development of MDRTB in the above cases had not been analysed.

[#] Category I: New patients with sputum positive result, New patients with sputum negative result (if seriously ill), Extra pulmonary TB patients (if seriously ill)
Category II: Sputum positive
-Relapse cases (very rarely sputum negative/Extra pulmonary cases also)
-Failure cases
-Treatment after default
Category III: New patients with sputum negative result (not seriously ill)
Extra-pulmonary TB patients (not seriously ill)

* Ernakulam: 2, Palakkad: 2, Pathanamthitta: 77, Thiruvananthapuram: 12.