

PERFORMANCE OF NATIONAL TUBERCULOSIS PROGRAMME in ANDHRA PRADESH and BIHAR

- *A perspective comparison*

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Introduction

National Tuberculosis Institute (NTI) is monitoring the National Tuberculosis programme (NTP) since 1978. Monitoring is a continuous watch on certain key indicators of the programme calculated from periodic reports received from the districts for taking necessary corrective actions. Thus monitoring is an ongoing action oriented activity wherein corrective actions are taken wherever deficiencies are observed.

Reports received at NTI are analysed on the basis of the key indicators of the programme and the results of the analysis are communicated to the concerned states for taking necessary corrective actions.

Objective :

The comparative performance regarding reporting efficiency, casefinding and treatment activity of two states viz., Andhra Pradesh and Bihar for the years 1999 - 2001 is compared and discussed.

Methodology :

Data is collected from District Tuberculosis Programme (DTP) Quarterly reports (DTP/9), Revised Short course Chemotherapy (RSCC) and Revised Standard Regimen (RSR) quarterly reports and the reports of non - DOTS (Directly Observed Treatment Short Course) patients under Revised National Tuberculosis Control Programme (RNTCP) in respect of the states of Andhra Pradesh and Bihar. The key parameters discussed include the reporting efficiency of the District Tuberculosis Centres (DTCs), efficiency of case finding, smear positive to smear negative case ratio of the concerned districts and also the annual case detection rate of the states. The individual parameters are also compared with the

existing national level averages and also the expected norms.

ANDHRA PRADESH

Baseline data of the state :-

Actual population ('000) in 2001	:	75,728
Number of districts	:	24
Number of SCC & SR Districts	:	17
Number of Additional DTC	:	1
Number of RNTCP districts	:	6

Reporting Efficiency:

The reporting efficiency of the DTCs in Andhra Pradesh is consistently over 90% during 1999-2001. The national reporting efficiency also has witnessed a growth from 84% in 99 to 92% in 2001. Since complete and correct reporting is a prerequisite for effective monitoring of the programme, states are expected to achieve 100% reporting from the DTCs. The RNTCP districts have gradually risen from 2 districts in 1999 to 6 districts namely, Ananthpur, Chittoor, Hyderabad, Medak, Rangareddy and Vijaynagaram in 2001 covering 25% of the state's population. The number of reports received in different formats during the four quarters of 2001 is given in the (Table 1) below.

Table 1 : Summary of the types of Reports received during 2001

Quarter	DTP/9	Revised	RNTCP	Reported with Error	Total
1 st quarter 2001	12	9	1	0	22
2 nd quarter 2001	19	2	1	1	23
3 rd quarter 2001	18	4	1	0	23
4 th quarter 2001	15	5	0	1	21
Total	64	20	3	2	89

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Districts	Quarter
Chittoor & Cuddapah	I
Krishna	II
East Godavari	III
Rangareddy, Srikakulam & Warangal	IV

It is observed from the above table that nearly 72% of the DTCs continue to report in the DTP/9 format and only 22 % of them in the advocated revised format. Reporting in the DTP/9 format has to be discontinued and DTCs have been instructed to send the reports in the revised format.

The following DTCs have not furnished the report in 2001 as mentioned against the quarter

Efficiency of Case finding :

Andhra Pradesh has shown a overall (DTC & PHIs) consistency of 8.74% sputum positivity rate in both 1999 & 2000 and has increased to 10.2% in 2001 as analysed from the DTP/9 reports. At the DTC level, the sputum positivity rate is 16.8% in 1999 & 2000 and 19% in 2001 while the expected norm is 18-20% for DTCs. At the PHI level, the positivity rate was consistent at 5% from 1999-2001, which is much below the expected rate of 8-10% for PHIs.

The composition of new cases for Andhra Pradesh can be summarised in the table below (Table.2) and fig.1 given below:

Year	Sputum positive B cases	Sputum negative but X-ray positive X cases	Extra Pulmonary cases E Cases	Total cases
1999	24897	48263	3104	76264
2000	26146	51372	3710	81228
2001	24356	45222	3586	73164

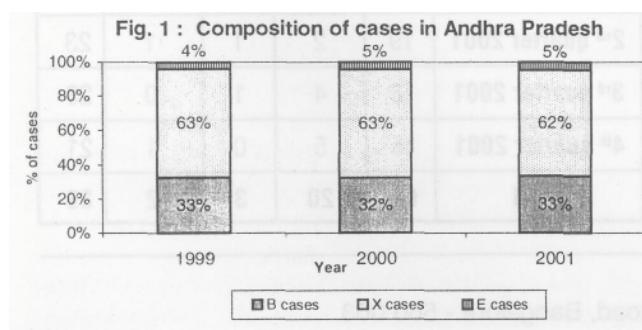


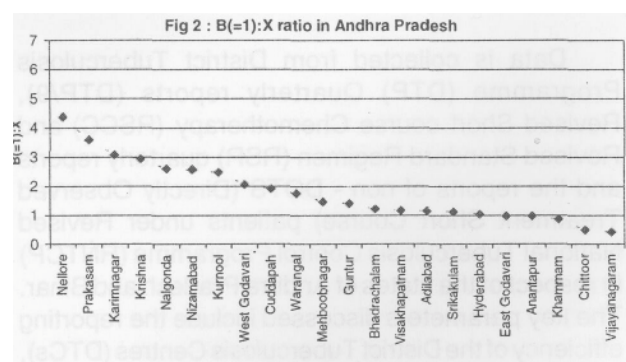
Table 2 : Composition of cases

From fig. 1, it is clear that there is a consistency of about 32% of sputum positive cases contributing to the total cases. The contribution of the sputum negative but X-ray positive cases is around 63% & that of the Extra Pulmonary cases is around 5% for the years 1999 - 2001. A close proximity is found with the all India figures of 30% sputum positive cases & 61% of Sputum negative contributing to the total cases diagnosed. However, a noticeable dip of 5% in the diagnosis of Extra pulmonary cases is seen in Andhra Pradesh while the 'All India' figure indicate 9% contribution of Extra pulmonary cases to the total cases.

Smear Positive to Smear Negative Ratio:

The smear positive to smear negative ratio has become an important yardstick to eliminate over-diagnosis of cases based on X-ray findings. If unchecked, such wrong diagnosis may not only aggravate the MDR-TB (Multi Drug Resistance) problem but also defeat the principal aim of detection & treatment of sputum positive cases by unnecessary wastage of scarce resources due to over reading of X-rays. Commendable work has been done in this direction at National level wherein a significant fall is monitored in the B:X ratio from 1:3.5 in 1992 to about 1:2 in 2001. The Ratio of B:X for Andhra Pradesh has been around 1:1.9 from 1999 to 2001.

The performance of the districts of Andhra Pradesh in terms of B:X ratio during 4th quarter 2001 is well elicited in the graph below :



The consolidated performance of the districts of Andhra Pradesh is projected below:

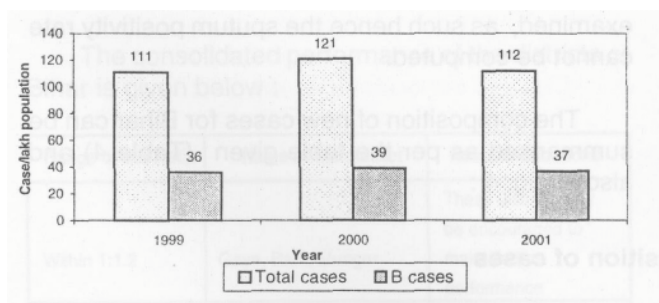
The districts wherein the ratio is beyond 1:1.2 must look into the reason for such over diagnosis of sputum negative cases.

Range of the Ratio	Name of the district	Recommendations
Within 1:1.2	Vijayanagaram, Chittoor, Khammam, Anathapur, Guntur, Hyderabad, Srikakulam, Adilabad & Bhadrachalam	These districts may be encouraged to maintain this performance
Between 1:1.21 to 1:2.0	East Godavari, Vishakapatnam, Medak, Mehboobnagar, Warrangal & RangaReddy	Ratio can be improved by strengthening Sputum microscopy in the DTC and in the PHIs.
Beyond 1:2.01	West Godavari, Kurnool, Nizamabad, Nalgonda, Krishna, Karimnagar, Prakasam, Nellore & Cuddapah	This is not an acceptable ratio. The DTOs should be appraised of the situation and may be advised to identify the reason for this over diagnosis and remedial action.

Annualised Case Detection Rate:

The sputum positive cases per lakh population in Andhra Pradesh for 2001 is 37 as compared to 38 cases nationally. The total cases detected per lakh population is 112 in Andhra Pradesh wherein the same parameter stood at 129 cases for 2001 at the national level (Fig 3).

Fig 3 : Annualised Case Detection Rate per lakh Population in Andhra Pradesh



Treatment Activity:

The conversion rate at the end of 2 months for the 5 districts reported in revised format for the 4th quarter 2001 is 57% while the expected rate of conversion is 90%. The average rate of conversion out of the total 20 revised reports analysed for the year 2001 is 50%. However it is observed that the districts of Andhra Pradesh especially Nellore and West Godavari have been reporting on sputum conversion and treatment outcome with errors, thus emphasising the need for training on reporting in the revised format. The overall conversion rate for Andhra

Pradesh in 1999 was 73% (2 reports analysed viz Nizamabad, Guntur) and was 59% in 2000 (11 reports analysed). The conversion rate is considered as an important parameter to reduce the rate of infection from sputum positive TB patients to the community at large. The Cure rate for new smear positive patients put on RA was 40% in 1999 and 37% for 2000-2001, whereas the expected cure rate is 85%. Effective action has to be taken at the DTC to achieve a higher cure rate by prompt defaulter retrieval actions.

Staff and Equipment:

The districts report about staff and equipment in Section E of DTP/9 format on half yearly basis and those reporting in the revised format on a quarterly basis. Hence 11 reports of DTP/9 and 8 Revised SCC reports from 4th quarter 2001 are analysed. Only 42% of the DTCs have fully trained team in NTP. 84% of the DTCs have microscopes and X-Ray in good working condition but 53% of the DTCs do not have jeep or two wheelers. The supervision of PHIs by the DTO is 17% as per the DTP/9 reports received. Effective supervision of the PHIs by DTC key personnel with prompt corrective actions is a basic prerequisite for the programme to run efficiently. The poor supervision can also be partially attributed to the non availability of vehicle in the DTCs, as 53% of them do not possess vehicle.

BIHAR

Bihar has undergone a political change in 2001 wherein the state of Jharkand was carved out from the formerly existing 65 districts of Bihar. Currently Bihar has 46 districts and Jharkand on the other hand has 18 districts.

Baseline data of the state :-

Estimated population ('000) in 2001	82879
Number of districts	46
Number of Functioning DTCs	38
Number of S'CC & SR Districts	25
Number of Additional DTC	11
Number of RNTCP districts	2

Reporting Efficiency:

The reporting efficiency of the districts in Bihar is 63 % in 1999 & 71% in 2000 & 2001 while the reporting efficiency for the nation is 79% in 1999 and 92 % in 2001. The RNTCP districts have increased from one district in 1999 to 2 districts namely, Patna and Vaishali in 2001 covering 9% of the states

population. In the table (Table 3) given below is the number of reports received in different formats during 2001.

Table 3 : Summary of the types of Reports received during 2001

Quarter	DTP/9	Revised	RNTCP	Reported with Error	Total
1 st quarter 2001	22	3	2	1	28
2 nd quarter 2001	20	3	3	1	27
3 rd quarter 2001	17	7	3	0	27
4 th quarter 2001	6	11	3	0	20
Total	65	24	11	2	102

From the above table it can be noted that 64% of the DTCs continue to report in the DTP/9 format and only 23% of them in the advocated revised format. Reporting in the DTP/9 format is discontinued and DTC have been instructed to send the reports in the revised format.

The following DTCs (C Table) have not furnished the report mentioned against the quarters in 2001.

It has been observed that 37% of the DTCs are consistently not sending their reports. Ensuring correct, complete and timely reporting from the DTCs is a prerequisite to monitor the programme of the state. Hence the programme administrators of the state need to ensure timely reporting from the defaulting districts.

Districts	Quarter
Bhojpur, Gaya, Muzaffarpur, Pashchim champaran, Buxar, Darbhanga, Bhgotha, Madhora, Nagachla, Rosra	I
Bhojpur, Gaya, Muzaffarpur, Buxar, Bhgotha, Dhaka, Madhora, Nagachla, Nawada, Rosra	II
Bhojpur, Khagaria, Muzaffarpur, Rohtas, Siwan, Pashchim champaran, Buxar, Bhgotha, Gaya, Madhora, Nagachla, Rosra	III
Bhojpur, Gaya, Katihar, Khagaria, Muzaffarpur, Rohtas, Siwan, Saharsa, Bhgotha, Dhaka, Jehanbad, Madhepura, Madora, Nagachla, Nawada, Rosra	IV

Efficiency of Case finding :

Bihar has shown a consistency of 14% sputum positivity rate in both DTC & PHI in 1999 & 2000 and has increased to 18% in 2001. At the DTC level the sputum positivity rate was 13% in 1999 & 2000 and 18% in 2001 while the expected norm is 18-20% for DTC. At the PHI level the positivity rate was around 11% in 1999-2000 as against the expected norm of 8-10%. The reports for 2001 do not correctly indicate PHI's case finding activity about new sputum examined, as such hence the sputum positivity rate cannot be computed.

The composition of new cases for Bihar can be summarised as per the table given (Table 4) and also in fig. 4 :

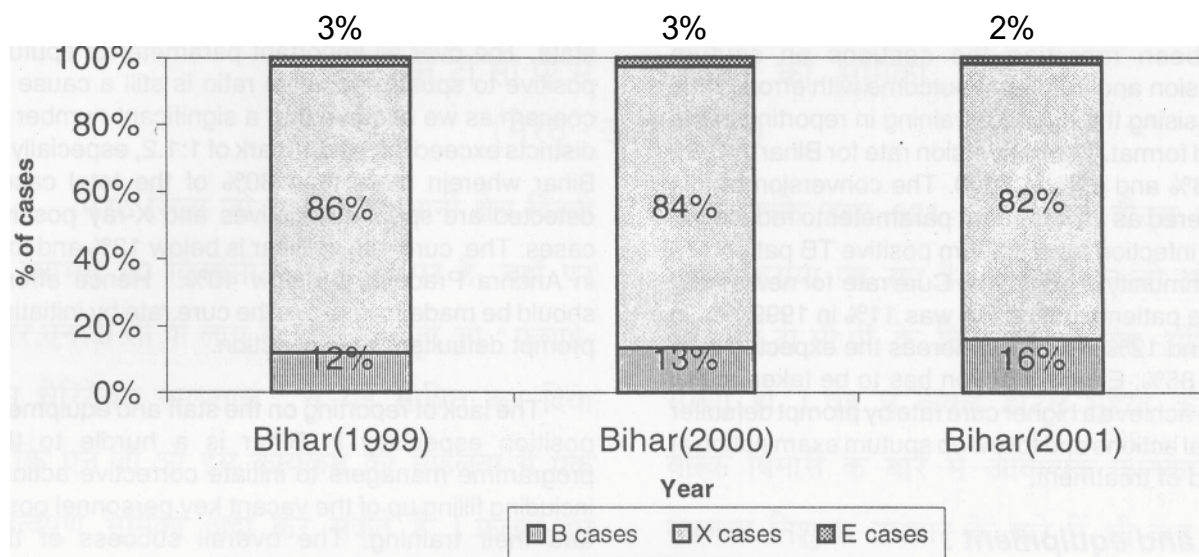
Table 4: Composition of cases

Year	Sputum positive B cases	Sputum negative but X-ray positive X cases	Extra Pulmonary cases E Cases	Total cases
1999	4089	29372	864	34325
2000	4933	31090	1020	37043
2001	4243	21573	634	26450

Of the total TB Cases diagnosed in Bihar less than 15% are sputum positive, more than 80% of them are X-Ray cases and 3% are Extra-pulmonary cases while the all India figures are 30% sputum

positive cases, 61% X-ray positives and 9% Extra pulmonary cases. Hence an 80% contribution of Xray positives to the total cases in Bihar seems to indicate over diagnosis based on Xray.

Fig 4 : Composition of cases in Bihar



Smear Positive to Smear Negative Ratio :

The average Smear positive to Smear Negative ratio in Bihar is 1:7.2 in 1999, 1:6.3 in 2000 and 1:5.1 in 2001 which is abnormally high as against the expected ratio of 1:1.2. This is due to over diagnosis of X-Ray cases. The average All India ratio of B:X for 2001 is 1:2.0. Hence necessary training needs to be given to educate the Medical Officers about the ill effects of over dependence on X-ray as a screening tool for diagnosing Tuberculosis.

The consolidated performance of the districts of Bihar is given below :

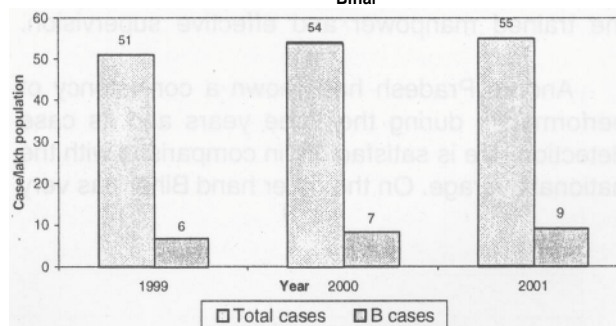
Range of the Ratio	Name of the district	Recommendations
Within 1:1.2	Gaya, Barn, Munger	These districts may be encouraged to maintain this performance
Between 1:1.21 to 1:2.0	Darbhanga, Nalanda Samastipur, Katihar	Ratio can be improved by strengthening Sputum microscopy in the DTC and in the PHIs.
Beyond 1:2.01	Bhagalpur, Purba Champaran, Saharsa, Sitamarhi, Darbhanga, Jehanabad, Madhepura, Gopalganj, Rohtas, Purnia, Madhubani, Aurangabad, Saran, Begusarai, Pashchim champaran, Nawada, Gaya, Khagaria	This is not an acceptable ratio. The DTOs may be appraised of the situation and may be advised to identify the reason for this over diagnosis and remedial action.

However the districts wherein the ratio is beyond 1:1.2 must look into the reason for such over diagnosis in sputum negative cases.

Annualised Case Detection Rate :

The annualised sputum positive cases per lakh population for 2001 in Bihar is 9 as compared to 38 cases at national level which shows very poor case detection. The annualised total cases detected per lakh population for 2001 in Bihar is 55 wherein the same parameter stood at 129 cases for 2001 at the national level. The case detection rates in Bihar is the least in the nation and much needs to be achieved in this area especially, Bihar being one of the most populated states of India.

Fig 5 : Annualised Case Detection rate per lakh population in Bihar



Treatment Activity:

The conversion rate at the end of 2 months for the 6 reports of revised format analysed for the 4th quarter 2001 is 86% while the expected rate of conversion is 90%. The average rate of conversion

out of the total 24 revised reports analysed for the year 2001 is 90%. However it is observed that the districts of Bihar especially Purnia and Madhubani have been reporting the sections on sputum conversion and treatment outcome with errors, thus emphasising the need for training in reporting in the revised format. The conversion rate for Bihar in 1999 was 88% and 81% in 2000. The conversion rate is considered as an important parameter to reduce the rate of infection from sputum positive TB patients to the community at large. The Cure rate for new smear positive patients put on RA was 11% in 1999; 9% in 2000 and 12% in 2001, whereas the expected cure rate is 85%. Effective action has to be taken at the DTC to achieve a higher cure rate by prompt defaulter retrieval actions and follow up sputum examination at the end of treatment.

Staff and equipment:

The report on staff and equipment has not been reported by most of the districts. Out of 19 reports (11 revised reports, 8 DTP/9 reports) received during 4th quarter 2001, only 7 DTCs have reported details about staff and equipment. None of the reported DTCs have all the trained key personnel in place. The DTGs of Bihar have to report the status of Staff and Equipment correctly to enable needful actions.

Discussion :

The NTP can be effectively monitored & improved only through correct & timely reporting from districts . Few districts have switched over to reporting in revised format from the conventional DTP/9 format. The reporting efficiency needs to be improved especially in Bihar which is trailing behind the national average. This can be done by increasing the trained manpower and effective supervision.

Andhra Pradesh has shown a consistency of performance during the three years and its case detection rate is satisfactory in comparison with the national average. On the other hand Bihar has very

low case detection rate of 55/lakh of all cases and 9/ lakh of sputum positive cases which needs immediate attention of Programme Managers of the state. The over all important parameter of sputum positive to sputum negative ratio is still a cause of concern as we observe that a significant number of districts exceed the benchmark of 1:1.2, especially in Bihar wherein more than 80% of the total cases detected are sputum negatives and X-ray positive cases. The cure rate in Bihar is below 12% and that in Andhra Pradesh is below 40%. Hence efforts should be made to improve the cure rate by initiating prompt defaulter retrieval action.

The lack of reporting on the staff and equipment position especially in Bihar is a hurdle to the programme managers to initiate corrective actions including filling up of the vacant key personnel posts and their training. The overall success of the programme in the State depends on the corrective actions initiated to overcome flaws noticed at the periphery. This responsibility lies with the DTOs to constantly supervise the PHIs and execute the needful corrective actions.

Conclusion : The performance of the states may be improved by:

1. Training to all the key personnel and filling up of the vacant post.
2. Follow national guidelines on case finding, treatment categorization, case holding and treatment activity
3. Effective supervision of the PHIs by DTC key personnel with prompt corrective actions.
4. Ensuring correct, complete and timely reporting from the DTCs

References :

1. National Tuberculosis Institute, Bangalore : Report on performance of National Tuberculosis Programme of the year 1999 & 2000 ; 2001 (Jan-Sept).