**Introduction**

The District Tuberculosis Programme (DTP) was formulated by the National Tuberculosis Institute (NTI) in 1962. It was meant to be the basis of a community-wide programme to deal with the challenge of a large, predominantly rural, tuberculosis problem in this country. The urgency to deal with the problem and the limited available resources, in the shape of funds, trained personnel, and equipment, made it necessary that the proposed National Tuberculosis Control Programme (NTP) should be simple, easy to apply, and widely acceptable. Although the DTP was conceived as a “minimal” programme primarily for a poor country, in actual practice, over the past few years, it has proved more sturdy, dynamic, and valuable than was expected earlier. Flexibility is one of its great assets. Increasingly, DTP has not to depend upon “economic stringency” for its justification and “minimum that could be attempted” for its practice. On the other hand, its feasibility, sociological content, and appeal to reason are making it accepted for National Tuberculosis Control Programmes in many other countries. This conceptual account of the DTP is meant for those who wish to know more about it.

**Historical**

Prior to the National Tuberculosis Survey\(^1\) (1955-58) which found pulmonary tuberculosis in India almost as prevalent in rural areas as in cities, the common belief was that tuberculosis was a problem of the thickly populated cities and slums. To control it, conventional measures like establishment of TB Hospitals, Sanatoria, and TB Clinics, had been in vogue in this country\(^2\) since 1906. As late as 1945, the Health Survey and Development Committee (Bhore Committee), set up to plan inter alia a comprehensive scheme for tuberculosis control, only recommended implementation of the long accepted conventional measures in the shape of a regular programme\(^3\). Perhaps, incomplete appreciation of the overall size of the problem in the community and the far greater relevance of communitywide measures to control the disease were responsible for the concentration of attention on individual patients and their suffering and the revolution that wide application of anti-tuberculosis drugs would usher could not be foreseen till then. In spite of increasing use of chemotherapy, the traditional approach towards tuberculosis control continued till 1958 when the inappropriateness and inadequacy of those measures for the sparsely populated and difficult-to-reach villages provided the main compulsion to find an alternative methodology.

The rural areas at present contain 82% of our population\(^4\). The fresh approach to organise a rural tuberculosis control service had to make use of only the known tools of diagnosis, treatment, and prevention. The new requirements that had to be met, in the light of the new findings, were: the programme must cover the entire community; be well within the available resources in men, money, and materials; and promise sizeable benefit to the community in the foreseeable future\(^5\). A separate programme for rural areas or different standards of diagnosis or treatment for villagers would neither have been practicable nor generally accepted. Practicability and acceptability were to be as important as economic feasibility. The DTP recommendations that eventually emerged\(^6\) took the programme out of the hands of the “specialist” by integrating it with the General Health Services and orienting it towards the “symptomatics” in the community already seeking relief for their suffering from general hospitals and dispensaries.

The emergence of the DTP in 1962 helped to give a new content and meaning to the efforts at tuberculosis control that had been going on till then. No control measure in vogue was completely dropped out of the NTP. The realignment of emphasis under the DTP, however, diverted attention from Tuberculosis Sanatoria and Rehabilitation Colonies to the primary need of providing adequate diagnosis, domiciliary treatment, and prevention services for the entire population.

**The District**

A community-wide tuberculosis control programme must cater to the entire population. The basic demographic, economic, administrative, and political unit in this country is the DISTRICT. There are 330 districts\(^7\) each having a small urban and a large rural population. In order to make the district the pivot for disease control, an average district is
described from the point of view of programme logistics.

An average district is divided into 10 roughly equal administrative areas, called “Taluks”. In one of the taluks is located the largest town of the district which serves as the “District Headquarters”. Other taluks also have at least one town each, called “Taluk Towns”. Each district has around 1,800 villages which are grouped into 20 “Blocks” each provided with a Primary Health Centre (PHC) for the purpose of rural community development and extension of services. In the National Tuberculosis Survey, wherein all 5 years old and above constituting about 82% of the population were sampled for examination, 1.8% had chest X-ray shadows suggestive of active pulmonary tuberculosis and 0.4%, or nearly one fourth of those with X-ray shadows, had tubercle bacilli in sputum. These prevalence rates have been reconfirmed and constitute best available estimates for application to an average district. In the entire population morbidity loads could not be less than those recorded for the 5 years old and above. A widely accepted definition of a “case” of tuberculosis is: “one suffering from bacteriologically confirmed disease”. Accordingly, one would expect, on an average, about 200 cases in the Headquarters town; 65 cases in each of the Taluk towns, and 2.3 cases in each of the 1,800 villages, totalling to around 5,000 bacteriologically confirmed cases in each district in the country.

The number of “suspects”, namely those with suggestive shadows in chest skiagrams but not confirmed bacteriologically, would be three to four times the estimated number of real cases. The rate at which new cases (disease incidence) are added every year to the “pool” of cases (disease prevalence) is not definitely known at present. Roughly, the incidence rate may equal 20% of the prevalence or the number who leave the “pool” every year due to death and spontaneous cure resulting in a state of near balance in prevalence over a span of few years. Whatever be the prevalence or the incidence rates, it is clear that cases of tuberculosis are widely distributed and have all to be dealt with, for the purpose of control.

**District Health Service**

An average Indian district already possesses a net-work of health institutions. These are of various types, sizes, and importance; mainly belonging to general health but include some specialised institutions as well. The “Health Service” pattern is: one 200-bed Government Headquarters Hospital; several 50-bed Government Taluk Hospitals; one Primary Health Centre (PHC) with attached four to six beds in each Block; and a varying number of Local Fund Dispensaries (Panchayat Union Dispensaries or Rural Dispensaries); Maternity and Child Welfare Centres; Private Hospitals;

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### AVERAGE INDIAN DISTRICT

*(Based on 1961 Census)*

<table>
<thead>
<tr>
<th></th>
<th>Number in district</th>
<th>Population</th>
<th>% of District population</th>
<th>Social importance</th>
<th>Number of TB Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total area</strong></td>
<td>...</td>
<td>10,000 Sq. Kilometers</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Total population</strong></td>
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<td>1.5 million</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Birth rate</strong></td>
<td>...</td>
<td>41 per thousand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Death rate</strong></td>
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<tr>
<td><strong>Growth rate</strong></td>
<td>...</td>
<td>23 per thousand</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Urban

- **Headquarters Town**: 1, 60,000, 4 (Economic, Cultural Health & Administrative Centre for entire district Trade, Health and Social Centre for Taluk (population 0.15 million))
- **Taluk (Tehsil) Town**: 10, 20,000x10, 14 (65x10) 650

#### Rural

- **Village**: 1,800, 700x1800, 82 (Peripheralmost unit Of rural population)

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and health institutions belonging to agencies such as Railways, Employees State Insurance, etc. The administrative set up in respect of these various types of institutions is different, but approximately 50 health institutions, each under the charge of qualified Medical Officer, are available in every district. Fairly clear-cut lines of command, supervision, supplies and flow back of statistics also exist in respect of these health institutions in each districts. But, many institutions are staffed and equipped only to the level that hardly meets the most pressing health needs of their patients. In other words, a good but skeletal District Health Service exists. The facilities provided by the service are expected to improve as more resources become available and some of the organisational problems are resolved.

Facilities available for Tuberculosis control

For tuberculosis, the usual provision is: one District TB Clinic (usually at the District Headquarters) and 20 to 100 TB beds usually under the charge of a Medical Officer who possesses either a Diploma or sufficient experience in tuberculosis. Most District TB Clinics have facilities for direct microscopy; many are also equipped with x-ray/fluoroscopy machines with necessary technicians for diagnostic activity. A TB Health Visitor or two may also be there, in addition to the (drug) Dispenser and other skeletal ancillary staff. The annual budget of an average TB Clinic seldom exceeds Rs. 20,000 of which only about Rs. 5,000 are earmarked for drugs; hardly sufficient to treat 50 to 100 cases for one year. Very few patients, therefore, get anti-tuberculosis drugs free for domiciliary treatment or get admission into the TB beds. Those who must purchase own drugs, may not be in a position to do so and drop off from treatment - sooner than later. Patients attending the Clinic from surrounding rural area also seldom continue their treatment because they can neither stay long enough in the city to complete their treatment nor can they make frequent trips to the city, if admission into TB beds is denied. Record-keeping in vogue in TB Clinics also does not facilitate a regular check upon those who tend to fall off from treatment, nor can the small clinic staff be expected physically to cope with “defaulters” to meet the stringent requirement of organising chemotherapy of tuberculosis on the accepted lines. Under such conditions an average District TB Clinic hardly diagnoses 300 new TB patients (both cases and suspects) each year and the number completing treatment successfully hardly deserves mention. The effective area of influence of a conventional TB Clinic is restricted to the city and the few surrounding villages. Stress is more upon diagnosis than treatment. The overall inadequacy of the existing facilities is, therefore, obvious.

Apart from the TB Clinics and beds, is the preventive mass BCG Vaccination campaign which has been operating in this country since 1951. Total vaccinations achieved each year at present by the mass campaign teams fall short of even the total annual births. A district once covered can be revisited by a BCG team only after many years. Therefore, it is difficult to believe that much headway could be made to bring tuberculosis under control, even if the available limited resources were invested mainly on increasing the above described facilities, without first introducing some radical changes in the methodology of the programme.

Basis of DTP

Some important methodological considerations and conceptual approaches which went into the formulation of the DTP are discussed hereunder:

1) In many developing countries, the resources that can be allotted for health programmes have to be limited because the schemes to relieve hunger and to provide clothes and shelter to the population have to be given priority. For organising a specialised tuberculosis control programme, however, one must have the required number of anti-tuberculosis centres with suitable trained staff; absence of which often leads to non-utilisation even of the meagre allotted funds. It is common to ascribe all ills to paucity of funds but the capacity to utilise funds proves, very often, a far greater handicap in practice. Poor performance can both be a cause as well as results of lack of money. To avoid that, a specialised control programme tries to compete with an expanding General Health Service for its share of the resources and trained personnel or is forced to run own separate special training courses, thereby diverting the meagre funds from actual programme implementation to training, etc. An unhealthy competition could, however, be avoided by sharing the available resources with the General Health Service and exploiting them more deeply and rationally to the advantage of both. Apart from that, the inherent danger of disproportionate investment of available resources on a special tuberculosis control programme damaging society, instead of helping it, by starving it of its other health and social needs has to be guarded...
against. Therefore, control of tuberculosis, appropriately, must form a part of the overall effort to improve the health of a people, instead of functioning as an isolated effort to control one disease.

(2) The practical problems connected with case-finding and treatment of tuberculosis in the vast rural areas needed a new approach since one TB Clinic and a few TB beds in a district proved not only completely inadequate but largely out of reach of the majority of tuberculous patients. The solution of this difficulty, to most of us, would seem to lie in the choice between a mobile case-finding cum treatment unit or dependence upon the area General Health Service. For case-finding, putting up of separate TB Clinics at Taluk or PHC levels would obviously be impracticable and economically unthinkable. A mobile mass case finding (and treatment) unit functioning as the peripatetic arm of the District TB Clinic, was tried under conditions of Operations Research in Tumkur District\(^2\). Examination of specially selected groups of population was adopted in order to increase the case-yield and bring down the operational costs. No special advantage was seen in the mobile unit approach because the yield of cases in the mass examination was no better than amongst those who already were reporting to PHCs for examination because of their chest symptoms. Operational reasons- leading to disappointing outputs and coverages- were apparently responsible for the “failure” of the mobile unit. Also, the cost of case-finding amongst “symptomatics” was far less compared to that of mass case-finding. For the purpose of treatment, it is helpful to know that domiciliary chemotherapy is as effective as institutional chemotherapy in spite of greater bed rest, good food, and nursing available in TB institutions. In fact, domiciliary treatment is better as it is more acceptable to patients because their home life is not disrupted\(^3\). There is no apparent justification to plan for more TB beds at the district or sub-district levels. What is actually required is to find an agency which could bring domiciliary chemotherapy within reach of each rural patient; for which purpose the mobile unit approach could not prove useful in actual practice in spite of theoretical plausibility. Dependence upon the area General Health Service, both for case-finding and treatment, turned out to be the only practical possibility for the rural areas.

(3) A proper appreciation of “symptomatics” attending the health centres on their own for relief of their suffering led to a study of the overall awareness of symptoms amongst TB patients discovered in an epidemiological survey in a rural area. It revealed that 95% of the bacteriologically confirmed cases were aware of one or more symptoms suggestive of pulmonary tuberculosis and as many as 52% had visited practitioners of modern medicine in search of treatment\(^13\). This surprisingly high degree of “awareness” and “action taking” amongst a population traditionally regarded as ignorant and insensitive to their health needs provided the break-through required for the new approach. By exploiting this “felt-need” in the population, most of the 52% literally “knocking at the doors” of health institutions could be diagnosed without much effort and brought under proper treatment. At present the general health institutions in the districts are neither equipped to make correct diagnosis nor to offer proper treatment. Most of the “action taking” TB cases, therefore, are being missed till they reach an advanced stage of the disease when they are referred very late to the District TB Clinic for the needful. Even when such mofussil patients are finally diagnosed at the District Clinic, they drop out of treatment for reasons already given. Therefore, integration of tuberculosis control activities with General Health Services, fuller exploitation of the “felt need”, introduction of simple and standard diagnosis and treatment techniques for General Practitioners, etc., emerge as the basic principles of the DTP.

(4) The sputum positive case: his early diagnosis and effective treatment receive priority in the DTP. For one thing, the sputum positive case constitutes the real public health risk to the community and should be dealt with first. For another, no definite proof is yet available that all or most of the X-ray suspects are really suffering from tuberculosis. Some studies in this country have shown that only above 8 to 15% of these suspects break down into sputum positive status over a period of 1-2 years. This may not be surprising because in tropical and sub-tropical climates X-ray shadows caused by non-specific infections could be considerable. In any case, a tuberculosis control programme need not dwelt equally upon “suspects”, as long as the group of real cases cannot be effectively taken care of technically and organisationally as the first priority. A programme has to place the immediately required objectives in front of the potentially good but distant objectives.

(5) There is some evidence to suggest that “felt-need” and “action taking” in a community-seeking fulfilment in the “relief of suffering” - are dynamic processes which are likely to
Sputum microscopy is both simple and reliable. It is a practical diagnostic tool. Upon the sputum positive cases, the only aspect of the DTP is information. It is possible to discuss only a few highlights of the DTP. Collection of more clinical and technical information is recorded and reported. Many of the clinical data are omitted on purpose, in the belief that the major field of endeavour, especially in developing countries, now lies in the optimal use of available "resources" and the overall sickness (including tuberculosis) would fall sharply through requisite environmental changes and ability to provide more abundant services. In other words, a socially oriented health programme can become the "trigger" for a benevolent spiral of socio-economic forces which has the potential to wipe out sickness as such.

(6) The "recording" and "reporting" in DTP has essentially to be programme oriented in order to (i) provide the necessary health intelligence, (ii) enable some sort of an operational assessment being made at each stage of the programme so that the methodology is applied more correctly and (iii) provide necessary "feedback" information to the programme headquarters to further improve the programme. Only the very essential and minimum technical information is recorded and reported. Many of the clinical data are omitted on purpose, in the belief that the major field of endeavour, especially in developing countries, now lies in the optimal use of available "resources" and the existing services and facilities to apply the available knowledge and methods, which are quite adequate, than continue to dwell upon collection of more clinical and technical informations.

**Case-finding, treatment and prevention under DTP**  
It is possible to discuss only a few highlights of the case-finding, treatment, and prevention aspects of the DTP. To enable case-finding being carried out by all the general health institutions, concentrating upon the sputum positive cases, the only practical diagnostic tool is the microscope. Sputum microscopy is both simple and reliable. It has been practically demonstrated that all categories of paramedical personnel usually employed by health institutions can be trained in sputum microscopy by brief in-service training. Reasonably good standards in microscopy can be maintained after such a training with only minimal supervision afterwards. It has also been shown in the Bangalore area that “smear positive” cases constitute 82% of all infectious cases who are reporting to health centres with symptoms. The “smear positive” cases in “action taking” community could, therefore, be discovered by providing merely microscopy facilities at all the health centres. And, some of the 18% infections cases who will otherwise escape detection of the date and time they report to health centres because only culture examination of sputum would have found them would be picked up subsequently though "referral X-ray service" which is explained later. In any case, the knowledge that cases who are positive on culture examination only are less infectious compared to smear positive cases helps in setting the programme priorities properly.

On the basis of the already mentioned “awareness study” it can be estimated that out of the stipulated 5,000 infectious cases in the entire district, nearly 2,500 infectious cases are reporting at various health institutions in the district and about 2,000 of them could be discovered forthwith as smear positive cases by the network of sputum microscopy centres, if medical officers of those centres could offer sputum examination to all those who complain of cough and other chest symptoms of more than a few week’s duration. In actual practice this would not mean more than 3 sputum examinations daily at each health centre. Ideally, all the 5,000 cases must be found with in a short time, but operational and organisation limitations may not permit a more ambitious programme to begin with. It has been practically demonstrated that most DTPs in fact do discover about 1,000 new sputum positive cases every a soon as many of the health institutions in the district start participating in the programme, notwithstanding the very much restricted selection for microscopy which health institution medical officers often make on the excuse of “overwork”. Already, it has been mentioned that annual incidence of infectious tuberculosis in a district is likely to be 1,000 cases. Therefore any gain in annual case-finding, over and above 1,000 cases, is likely to pay dividends towards. TB control as it would lead to quicker draining of the “pool” of infectious cases leading to a
recessing desire of infection in the community. More than 1,000 new cases per annum are bound to be detected in any district if all the health centres in each district participate in the programme and the selection of cases for microscopy is more efficient or there is a jump in the level of action taking in the community or both. These developments can reasonably be anticipated in any DTP with the passage of time when the programme is understood better by all concerned and more and more people are benefitted.

The disposal of symptomatics found “sputum negative” at health centres requires further discussion. Only one out of every 15 to 25 sputum smear examined (depending upon the quality of selection amongst chest symptomatics) is expected to be smear positive. If all the smear negative patients were to be x-rayed, two or three “suspects” could then be found (including those “cases” who would be culture positive”) from every 15-25 smear negatives examined and the rest would obviously be suffering from bronchitis or other non-specific disease conditions. It is not practical to expect medical officers to all their smear negative symptomatics to a distant centre for x-ray examination without first exercising their clinical judgement in favour of some obviously non-specific disease. Every if everyone is referred, only about 20% may actually report to a distant centre for x-ray examination. It could be different if x-ray units were available nearer at hand. Distance, lack of money to travel, travel difficulties or just insufficient motivation may explain the notice “cool” response of patients to x-ray referral. The DTP envisages, therefore, that Medical Officers shall exercise their clinical judgement before referring their patients to the District TB Centre for x-ray examination: at least till the entire question of x-ray referral is fully examined from the points of view of actual suffering in patients, the extent and quality of selection amongst chest symptomatics (depending upon the availability of drugs, the choice of drug regimens, ease of drug administration, freedom from toxic manifestations and other side effects, and the availability of treatment organisation, etc., assume great importance. Distance between Treatment Centres and patients’ homes has proved to be of crucial importance for ensuring regularity in the prolonged treatment of tuberculosis. In one study the proportion of patients making 9 out of the prescribed 12 monthly, collections in one year was 52% when the Treatment Centre was near at hand compared to 7% when patients had to cover a long distance to collect their medicine. Not only it is necessary that Treatment Centres should be conveniently situated for patients, but these should also be opened daily for defaulter; unlike peripatetic centres which open only on certain days of the week or month. Apart from that, the available knowledge about treatment regularity makes the taking of “defaulter actions”, obligatory, namely “postal reminders” to patients who do not report on the “due date” to collect their drugs. It can be taken that if a patient makes the effort to collect his drugs he would most likely consume them.

As long as the risk of infection in the community is high, a comprehensive tuberculosis control programme must include preventive BCG vaccination. The National Mass BCG Campaign was started in 1951 to vaccinate at first the estimated 170 million susceptible persons present in the community and then to concentrate upon the children who are being added constantly to the population. But, to successfully ever incoming new borns the agency to vaccinate must be equal to the job and be available at most places all the time; which
the current mass campaign cannot yet contemplate seriously for a variety of reasons. The most obvious situation at present is that the total yearly vaccinations in all age groups fall considerably short of even the annual increase in population.

Besides a considerable increase in the number of BCG vaccinators participating in the campaign, far reaching methodological improvements are called for if successful competition with the ever incoming population of new borns and other susceptible persons is to be the aim. As a first step in that direction, DTP envisages integration of one mass campaign BCG team with each District Tuberculosis Control Centre to carry on BCG work in each district more systematically. The increase in the number of BCG teams (six vaccinators plus other staff) to the total number of districts in the country would at least ensure concurrent vaccination coverage in each district, instead of some part of each State as now. The next step must be integration of BCG vaccination with the routine function of the area General Health Service, and similar. Mobile teams are really not suitable for new born vaccination. In the event of other health centres taking up BCG vaccination regularly the BCG team could concentrate upon groups which could be reached by them more conveniently and effectively. Because of some serious drawbacks of the “liquid” BCG vaccine, the health services as a whole can come into the picture only when the freeze dried vaccine can be supplied liberally and the Operational aspects of its use have been investigated fully.

Methodological improvements that have been suggested by the NTI in the traditional mass BCG campaign are several. It was shown that house-to-house registration in the rural population is a good way to ensure vaccination coverage of the order of 80° or better. The main drawback of house-to-house campaign is its slow pace; the consequent sharp fall in daily outputs could put any campaign out of gear. To obviate this, direct BCG vaccination without performing the initial tuberculin test was introduced after ensuring that no serious adverse effect results. This step not only doubles the speed of work, but cuts down costs proportionately, and improves coverages by saving losses due to absentocism and refusal at the time of the second prick. For towns and cities, where vaccination as such and house-to-house registration particularly are less acceptable to the people, new born and infant vaccination in Maternity Hospitals and Child Welfare centres, School Vaccination Programmes and special coverage of slums have been advocated. For direct vaccination, the age group below 20 years has been adopted, because in rural areas the infection prevalence till about 0-19 years is only about 16.85%. In cities, where the infection rate rises more steeply direct vaccination could be restricted to 0-14 age group, if considered absolutely necessary. Calculating on the average number of 150-175 registrations (all age groups, on house-to-house basis) per technician per working day, of whom 80 would be in the age group 0-19 years and he would be expected to vaccinate directly at least 70 of them, a six technicians team working for 250-300 working days in a year would cover the district completely in 5 to 7 years. During that period another 150,000 or so new borns would have been added to the population needing to be vaccinated in addition to those persons who could not be vaccinated during the earlier round. This “backlog” could be “mopped up” in another 2 or 3 years provided the agency to vaccinate the new borns takes over effectively during this period.

**DTP in Outline**

Diagram I is the schematic representation of the DTP making full use of all the health institutions available in a district.

**(A) District Tuberculosis Control Centre (DTC)**

As will be seen, the DTC represents the pivot around which the integrated DTP revolves. For this purpose, the erstwhile district TB Clinic becomes, the DTC and takes up all the special responsibilities in respect of the programme on behalf of the district health authority. It now undertakes planning, implementation, coordination, and supervision of the DTP in the entire district besides offering the usual diagnosis and treatment service to the population under its direct case, health centre. It also “district TB complex”, and offers “referral” x-ray examination to the sputum smear negative symptomatics referred by other health centres. One BCG vaccination team also works under its direction. It would be obvious, that there is no place for more than one DTC in a district and the already existing additional TB Clinics become just “sub-centres” under the one DTC. New TB Clinics have not to be established in any district under the DTP unless there is no centre at all to become the DTC.

Each DTC must have provision for (1) adequate accommodation, (ii) necessary equipment for diagnostic work, (iii) transports for supervision and BCG work, (iv) and adequate
ORGANISATIONAL SCHEME OF THE NTP

CENTRAL GOVERNMENT

TUBERCULOSIS ADVISER

NATIONAL TUBERCULOSIS INSTITUTE

REGIONAL HEALTH ORGANISATION

STATE GOVERNMENT

STATE TB OFFICER

STATE TB CONTROL CENTRE

TB SANATORIA & HOSPITALS

REHABILITATION CENTRES

MASS BCG CAMPAIGN

DISTRICT HEALTH ORGANISATION

DISTRICT TB OFFICER

TALUK HOSPITALS

PRIMARY HEALTH CENTRES

OTHER HEALTH CENTRES

SUB CENTRES

EXISTING MUTUAL CONNECTIONS.

ANTICIPATED FUTURE CONNECTIONS.
staff for the clinic as well as programme promotion functions. At this stage a culture laboratory is not visualised at the DTC as culture requires a high degree of skill and adds only about 18% "cases" to those who can be discovered by routine careful microscopy among symptomatics reporting at health centres. Supervisory staff for DTP have to be specially trained in the requisite managerial skills and supervision techniques and are often called "key" staff; in each District there are; one Medical Officer (District Tuberculosis Officer), a Treatment Organiser, a Laboratory Technician, an X-ray Technician, and a BCG Team Leader and a Statistical Assistant. Service staff for the routine case-finding and treatment activities are trained as usual. About Rs. 65,000 per annum may suffice for staff salaries, the usual contingencies including supply of cards and forms, and repair and maintenance of equipments and vehicles, etc. About one lakh of rupees would be needed for the expected 10 to 20 thousand exposures of x-ray miniature films and the commonly available antituberculosis drugs for treating about 3,000 patients per year.

(B) Peripheral Centre

Other health institutions, except DTC, which participate in the DTP are called “Peripheral Centres”. These are further categorised into “Microscopy Centres” and “Referring Centres” depending upon whether they possess own microscope or depend upon a neighbouring centre for microscopy. Both categories are fullfledged “Treatment Centres”, since treatment under the DTP is decentralised to the farthest periphery.

No “specialised” staff need be posted at peripheral centres for anti-tuberculosis work. The Medical Officer incharge, the Microscopist, the Dispenser, the sanitary Inspector, and the Auxiliary Nurse Midwives, etc, share the different responsibilities as frequently convenient. Normally, the Medical Officer selects such persons from amongst his out-patients attendance as should be sputum examination. He also treatment and does the initial motivation for those who are diagnosed as “cases”. The Microscopist examines the sputa: the Dispenser distributes the drugs and the ancillary staff take defaulters actions on a routine basis under the guidance of the Medical Officer. Suitable in-service training is provided to the health centre staff by the DTO and his supervisory “key staff” team to discharge those duties. The DTO and his team also ensure that peripheral centres maintain good standards of diagnosis and treatment; keep proper records; stock sufficient drugs; and report regularly and correctly to the DTC.

Programme procedures and Methods

The National Tuberculosis Institute (NTI) has prepared a set of seven manuals which provide detailed guidance on all the practical steps of the DTP. Those manual should be consulted for all information not contained in this paper.

(A) Case-finding

Patients reporting at peripheral centres for relief of their symptoms are offered sputum examination, if there is cough or fever of few weeks’ duration, haemoptysis, or chest pain. Sputum is examined immediately and if positive for acid fast bacilli the patient is motivated and put on treatment forthwith. At the DTC, the routine attendance is offered an X-ray of the chest first, and a sputum is examined only when a relevant shadow is seen in the skiagram in order to reduce the load of sputum examinations. But, sputum smear negative persons attending from the peripheral centres for referral X-ray examinations are offered a repeat sputum examination as well as chest skiagram at the DTC. All sputum positive cases and X-ray suspects are duly registered at the DTC in the District TB case-index and allotted a separate number. There is adequate provision for avoiding duplicate registration of cases already on the case-index.

If the result of sputum examination at a peripheral centre is negative, the medical officer may (i) repeat sputum examination: or (ii) give non-specific treatment and keep patient under observation for sometime: or (iii) give him a referral slip to attend the DTC (or nearest Taluk Centre equipped with X-ray) for an X-ray examination.

The result of X-ray examination at the DTC is intimated direct to the referring peripheral centre. If an X-ray shadow suggestive of pulmonary tuberculosis is seen, a TB case-index number is allotted simultaneously by the DTC and intimated to the peripheral centre so that the patient could be put on treatment straightaway when he contacts the medical officer again.

(B) Treatment

Treatment is given at all the peripheral centres. It is usually initiated where the patient reports first for his diagnosis. But, there is an effective “transfer” system which enables any
patient to receive, treatment from any peripheral centre convenient to him, no matter where he was diagnosed initially, without any danger of duplication of his registration as a “case”. The carefully thought out provision for starting treatment of the sputum positive cases on the same day they report for diagnosis is meant to minimise “initial default”. Treatment is domiciliary and mainly on the basis of self-administered drugs. Drugs are issued once a month to the patient or his representative, when he calls for the collection at the arranged treatment centre on the “due date”. Bacteriologically confirmed cases are put on a double drug regimen. Suspects, at present, are eligible for being treated with isoniazid only under the programme. Regimens containing streptomycin by injection have generally failed to keep rural patients regular beyond the first 2 or 3 months of treatment. When a patient fails to collect his drugs, a letter is written to him (first action) and in the event of no response for 7 days, a home visit is paid (second action) by one of the health centre’s field staff. Experience has shown that response to defaulter actions beyond the first two mentioned above are not commensurate with the effort inputs34.

(C) BCG Vaccination

The integrated BCG Team covers the district population systematically under the guidance and supervision of the DTO. After a house-to-house census in each village, those below 20 years are vaccinated directly. At the DTC, one of the regular staff is trained for BCG vaccination and the technicians of the regular BCG team are not “wasted”.

(D) Recording and Reporting

A registration sheet, containing the names and addresses of all those patients whose sputa were examined during that week, is despatched every Saturday to the DTC by each Microscopy centre. The purpose is to enable the DTC to register all sputum positive “cases” in the “TB Case-index” and allot them separate case numbers. No record need be kept of those names at the peripheral centre, except for a chart showing the total number of sputa examined and the number found positive each week. “Treatment cards” and a “balance work” of treatment cards (containing an of all the treatment cards available at the peripheral centre) are the only other records required to be maintained at peripheral centres. A report on their treatment activity is sent by each peripheral centre to the DTC. The DTC in the reports regularly to the programme Headquarters. On the basis of those periodic reports, progress reports for each State and the entire country are prepared and the necessary corrective actions are taken.

(E) Supervision

While the peripheral centres have to function under the administrative control of their respective authorities, such as the District Medical and the District Health Officers, the DTO and his key staff have permission to exercise technical supervision regularly over the programme on behalf of the District Health authorities. The work of DTO and his team is supervised periodically from the State Government and Central Government levels. Supervision includes guidance on solving the day-to-day difficulties, keeping the supplies moving, ensuring proper work standards, correct recording and reporting, and similar.

Place of DTP in NTP

It has been said that the DTP represents the “grass roots” of the NTP, in as much as it provides the functional basis for dealing with the problem of tuberculosis in 82% of our population living in rural areas. The other components 61 the NTP are: (a) the Special Mass BCG Vaccination Campaign, (b) large city programmes which take into consideration certain special urban conditions, (c) surgical treatment and the treatment of “drug failures” in specialised institutions such as Sanatoria and TB Hospitals, and (d) rehabilitation of the selected physically handicapped TB cases, on the one hand, and (e) overall planning, implementation, and coordination of all the anti-TB activities, (f) the basic training and orientation of the large number of personnel required for the NTP and (g) continuous programme assessment and the research (operational) required to improve the programme, on the other. Most of these other NTP components are not discussed here for obvious reasons. It must be stated however that, comparatively speaking, institutional treatment and rehabilitation represent activities which render only a marginal benefit (to the programme) at a proportionately very heavy cost. For humanitarian reasons, these activities must find a place in the programme but for the purpose of expansion of facilities and future investment of resources these should receive either a low or no priority.

Diagram II shows the scheme of the NTP which is directed and coordinated from the Central Government level while the actual implementation and control of the programme

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The overall Programme Policies and Priorities are at first decided at the national level through mutual consultation amongst the State and the Central Governments, the Planning Commission, the leading tuberculosis experts of the country, and international health organisations like the World Health Organisation and the United Nations Children’s emergency fund. After requisite broad national policies have been laid down, the detailed planning of the programme, the procurement of supplies—especially imports from abroad the issue of periodic circular informations on the national treatment policy, the optimal drug regimens, instructions for BCG vaccination, etc., are then taken up by the Office of the Tuberculosis Adviser to the Government of India. The State rests with the State health authorities in each State.
Tuberculosis Officers (STO) or Assistant Directors of Health Services (TB) implement the Centrally circulated recommendations in their respective States and coordinate all the anti-tuberculosis activities under various heads and from different types of institutions. The Central Government provides full assistance to each State programme according to the pattern decided before hand. For closer liaison with the States, it is now proposed to set up Regional Health Organisations to be connected more intimately with a group of three or four States. Special mention must be made of the role which State Tuberculosis centres (TB Demonstration and Training Centres) and the NTI are expected to perform in their respective State and the Central spheres. These institutions are to provide their respective programme chiefs, the technical “know-how” and field guidance, undertake training and the programme assessment, and render any other support that is required of them to push the programme further.

**DTP in Perspective**

A good programme always strives to achieve its objective by offering its services on a continuous basis to all those who need them, in tune with similar other programmes, till that time the effort is no longer needed.

The start of the DTP in any district would primarily depend upon the availability of competent administrative and financial sanctions, and of the essential facilities like buildings, equipments, and trained staff. In spite of the great pains that have been taken to ensure that the organisational set up of the DTP does not entail large scale investment of funds and other resources or involve competition with the General Health Service for the trained staff, a large number of difficulties and “bottle-necks”, mainly operational and organisational in nature, are likely to make the initial phase of the programme somewhat slow and prolonged. Further progress, therefore, would largely depend upon the initiative and the ingenuity of the DIO and his team an I the cooperation that could be enlisted from participating General Health Service staff, private medical practitioners, the profession, as well as other district officials, Voluntary Associations and the general public. To this extent the success of the DTP is dependent upon so many outside organisations and factors. A strong and well organised DTC, however, is likely to influence powerfully the speed of expansion of the DTP to the periphery. At the average speed of adding two new health institutions to the programme every month, the entire district can be “implemented” on a sound basis in about 2 years, provided the DTC is functionally strong.

After the first 2 years, required to cover the district geographically, shall come the period when the programme must sink in depth. Its various components Should flow become increasingly more efficient functionally to be able to win the confidence of the public. It is not possible to suggest how long this phase may last, as the overall efficiency of the General Health Service would now become the determining factor. One component of an integrated health service cannot be far more efficient than the other. Even if the DTP were made to succeed by some special effort, the overall result may be lopsided development, because the special attention given to tuberculosis control may mean neglect of other aspects which is likely to retard the overall health interest of the community. In fact, it may be wise for DTP organisers to view the disappointments and the frustrations sure to be met with from the start in this lights. Therefore, while they strive to push the DTP they should simultaneously endeavour to strengthen the General Health Service which is the fountain-head of the tuberculosis control programme as of all other health activities.

From the programme dynamics already given, it should be clear that the dividends expected from the NTP in terms of cases found and treated and the susceptibles protected cannot be inconsiderable even during the early phases of the “programme spread” and “programme seepage”. As the programme becomes stabilised and efficient, “awareness” and “action taking” amongst the population would improve to the extent that a “self-generating” process would set in which would not require special efforts. The selection of patients for microscopy would cover almost all the eligibles; diagnosis by referral would be more rewarding; treatment regularity and its completion would be far better and BCG vaccination will compete systematically and successfully with each addition of “new borns” cohort. A sizeable and constant decrease in the pool of infectors would lower the risk of infection, and simultaneous increase in the number of BCG vaccinated persons in the community would lower the incidence of fresh disease. Since the DTP is fully integrated with the General Health Service and is “felt-need” oriented, a marked decrease in the number of sufferers from tuberculosis would automatically divert attention to the next most important health

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hazard without running the risk of continued and disproportionate expenditure of resources on a disease which would have lost its old importance as a health hazard.

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