DIS 4 : 1

TUBERCULOSIS AND BCG VACCINATION

TUBERCULOSIS is widely prevalent in India, and is one of the foremost health problems. There are nearly ten million persons suffering from this disease. Many of us have some knowledge about this disease, its causation, its course, its prevention and treatment. But generally, a large segment of the people do not know much about this disease, not even the elementary facts.

Here are a few questions and answers which give considerable facts about the disease-its nature, mode of spread, preventive measures and treatment facilities.

Who can catch tuberculosis?

Any one can catch tuberculosis. The disease is no respector of persons. Young or old, rich or poor, man or woman, can catch tuberculosis. Tuberculosis is a highly infectious disease.

Is a person born with tuberculosis?

Tuberculosis is not hereditary. No one has T.B. at birth-even the children of parents suffering from tuberculosis are free from it at birth. They may catch the infection and develop the disease after contact with persons suffering from the disease.

What causes tuberculosis?

Tuberculosis is caused by a tiny germ which can be seen only under a microscope. It is found mainly in the sputum of the patients. When a tuberculosis patient coughs, sneezes or spits, lakhs of these germs are released into the air. Breathing in of the air contaminated by these germs, especially in ill-ventilated rooms, may cause tuberculosis.

How can one suspect T.B.

In its early stages, tuberculosis may not reveal any signs and symptoms. One can have T.B. even without being aware of it. However, you can suspect TB. If you have cough that persists for days, constant feeling of tiredness, gradual loss of weight and appetite, constant pin in the chest, and occasional coughing up of blood-stained sputum. Of these, cough persisting for more than two weeks is the most predominant symptom.

What to do in case of tuberculosis?

If you have these simptoms, consult a competent doctor or report immediately to the nearest primary health centre or dispensary. If you are faraway from such a medical institution or a doctor, please inform the multi-purpose health worker or the health assistant of your area about your symptoms when they visit your village. Request them to take your sputum for examination.

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Cn tuberculosis be cured?

Yes, tuberculosis can be cured, if detected early and treatment started quickly. Proper examination including X-ray and laboratory tests by a competent doctor can detect tuberculosis early. The presence of T.B. germs in the sputum of the patient is the surest sign of the disease.

Tuberculosis can be effectively treated, if one takes advice of a competent doctor and follows his instructions. The medicines prescribed by the doctor should be taken continuously and regularly till the doctor advises to stop it.

Where are facilities for diagnosis?

Facilities for detection of tuberculosis are available in the nearest medical and health institutions, be it a T.B. clinic, primary health centre, a hospital or a dispensary. In each district, a District T.B. Centre has been established which organizes T.B. case-finding and treatment in all the ~~District~~ medical and health institutions in the district. Such primary health centres, etc., will refer you to the District T.B. Centre for X-ray and other investigations, if considered necessary. All services are provided free of charge.

Where is tuberculosis treated?

Treatment also can be carried out by the nearest T.B. clinic, primary health centre, hospital or dispensary in the home o of the patient. All medicines for treatment are supplied free of charge for the full period of treatment.

What are important facts for treatment?

1. The prescribed medicines must be taken continuously and regularly till the doctor advises you to stop. The medicines should not be stopped if the patient is relieved of symptoms after taking medicines for a short time. This is very important.

2. Admission to a T.B. hospital or a sanatorium is not necessary except for certain serious or problem cases. In such cases, the doctor himself will advise and arrange hospitalization.

3. Ordinary balanced diet is good enough for the patient. Good food, bed rest, etc., are not that important.

4. Except for a short period of rest to be decided by the treating medical officer, the patient can continue with his normal occupation. There is no need for any dislocation of family life or work schedule.

5. Infectious patients will be advised on how to avoid spread of the disease to others in the family or neighbourhood. But the most important thing is to take the prescribed medicines regularly. This will make the infectious patient non-infectious in a few weeks.

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Can you prevent tuberculosis and how?

Yes, you can prevent tuberculosis by taking necessary precautions. Avoid living in ill-ventilated rooms with those suffering from tuberculosis.

Persuade all persons having symptoms of cough, pain in chest, fever, spitting of blood, etc., to go to the nearest health or medical institution for a check up.

Another factor necessary to avoid the disease is to keep the resistance of your body at a high level. Careful living, balanced diet, hygienic environment, proper exercise and rest ensure this resistance.

The natural resistance can be further increased by preventive vaccination with BCG. Infants and children particularly need this preventive vaccination.

What about spitting?

Spitting here and there is a very bad habit. When you cough or sneeze, use a handkerchief or a clean cloth to cover your face.

A tuberculosis patient should spit in a particular spitoon or container. The best way to dispose of the sputum is to burn it or empty it into a water closet. The cloth or handkerchief used while coughing should be burnt or boiled in water for 15 to 20 minutes before using it again.

What is BCG vaccination?

It is preventive inoculation. It helps the vaccinated person in being protected against tuberculosis.

How to protect children from tuberculosis?

B.C.G. Vaccination protects them.

Who needs BCG Vaccination?

All young persons, espedially infants and children, need BCG vaccination.

All others who are in contact with tuberculosis patients like nurses, attendants, etc., may also require this vaccination, irrespective of their age.

BCG can protect an infant or a child only if given before being infected by a tuberculosis patient. Therefore, the vaccination should be given as early in life as possible, preferably within the first year of life.

How is BCG vaccination given?

BCG vaccination is given in the superficial layer of the skin over the upper arm (Shoulder) of the child. The vaccination is practically painless.

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What happens after vaccination?

No change is seen for some days at the place where vaccination is given. But in three or four weeks' time (and in some cases, even within a week) a small but pinless swelling may develop at the site of vaccination. In some cases, this may increase slightly in size and may become soft, and discharge a drop of pus. This is a sign which shows that the vaccination has taken. It does not require any treatment, and it heals on its own accord in a short time.

Where can you get BCG vaccination?

You can get your infants vaccinated by the multipurpose health workers and auxiliary nurse-midwives (ANMs) of your locality in rural areas. BCG vaccination can also be had at tuberculosis clinics, paediatric hospitals, maternity centres and well-baby clinics in any town or city.

R E M E M B E R

* Tuberculosis is a highly catching disease and is caused by a germ called tubercle bacillus.
* Tuberculosis is not hereditary.
* Mostly a patient suffering from the disease spreads tuberculosis.
* Tuberculosis is preventable and curable.
* Persistent cough is an important symptom of tuberculosis.
* T.B. clinics, general hospitals, primary health centres, dispensaries, etc., provide facilities for free diagnosis and treatment.
* Modern anti-tuberculosis drugs are very effective.
* Treatment should be continued for the minimum period prescribed by the doctor.
* BCG vaccination protects against tuberculosis.
* All infants and children should be vaccinated with BCG as soon after birth as possible.

Source: Swasth Hind - September 1978

REVISED N.T.P FOR TRIBAL AREAS

INTRODUCTION

Schedule tribes constitute 8.08% (1991 census) of total population of the country. They are amongst the weakest sections of the society. For their socio-economic development a broad strategy was evolved and the concept of Integrated Tribal Development Projects (ITDP) and Tribal Sub-Plan (TSP) was adopted during the 5th Five Year Plan. A district is said to be a Tribal District if more than 50% of the population in the District on a uniform and contiguous basis is Tribal. Such districts are covered under the ITDP scheme. Depending upon the population of the district it may have one or more ITDPs. Similarly, if the population of the districts is small then one ITDP may cover even two district. Districts which are partly Tribal are covered by the Tribal Sub-Plan. During the 6th Plan Modified Area Development Approach (MADA) was included to cover smaller areas of tribal concentrations having 10,000 population, 50% or more of whom were tribals. During 7th Plan the T.S.P. strategy was extended to all the tribals in the country, including dispersed tribals. Most of the tribal habitations are concentrated in the hills, forest lands far flung areas and villages.

In conformity with the General Health Services and special attention being paid to these areas in the various National Health Programme, it was decided to accord special priority to the Tribal population under the Revised N.T.P. The Tribal areas need this special emphasis because of the following.

i) Their poor socio-economic status.
ii) Poor educational background.
iii) Living in hilly and far flung areas
iv) Scattered population.
v) Poor health facilities, already existing.
vi) Poor utilization of these health facilities by the population.

Norms created in Tribal Areas in Relation to Health

The Ministry has relaxed norms in respect of Establishment of Institutions in tribal areas to remove the imbalances and provide better health care. These are as under.

i) One PHC for every 20,000 population as against 30,000 in other areas.

ii) One Sub centre for every 3,000 population as against 5,000 in other areas.

If a particular hamlet/village is 5 kms. or more from the nearest health delivery point, a separate Sub-centre may be set up for each.

iii) Out of every 4 PHCs one is to be upgraded to a CHC with 30 beds and 4 specialities, Medicine, Surgery, Gynae, Pediatrics.

iv) Village Health Guide for a population of 1000. If population more than 1500 then 2 guides, one of whom should belong to SC/ST.

DEMOGRAPHIC PROFILE

In the Five States where the Pilot Project is being started under the Revised N.T.P. the various districts covered under the Integrated Tribal Development Projects (ITDPS) and Tribal Sub-Plan (TSP) is as under.

ITDPS

	Bihar	Gujrat	Himachal Pradesh
1.	Ranchi	Dangs	→ Kinnaur
2.	Lohardaga		→ Lahaul-Spiti
3.	Gulma		
4.	Dumka		
5.	Sahabganj		
6.	Singhbhum		

These districts in the three states are totally Tribal Districts as per the definition.

The following districts which are covered under the TSP are only partly tribal.

TSP

Bihar	Gujrat	Kerala	H.P.	W.Bengal
Palamau	Banaskantha	Trivandrum	→ Chamba	Bankura
Dhalbhum	Bhahruch	Quilon		Birbhum
Bhagalpur	Panchmahals	Idukky		Burdwan
Dhanbad	Sabarkantha	Ernakulam		→ Darjeeling
Giridih	Surat	Malapuram		Hoogly
Hazaribagh	Vododara	Kozhikode		Jalpaiguri
Katihar	Valsad	Wynad		Malda
Monghyr		Cannanore		Midnapur
Rohtas		Palghat		Murshidabad
Santhal Parganas				Purulia
West Champaran				24 Parganas
Deogarh				W.Dinojpur

State wise statements of ITDPs, MADAs and Cluster Areas.

State	ITDP	MADA	Cluster Areas
Bihar	14	41	7
Gujrat	9	20	4
Himachal Pradesh	5	2	-
Kerala	5	-	-
West Bengal	12	-	-

Population of Schedule Tribes and their percentages

1991 Census

States	Total (fig.'000)	S.T.	S.T. as % of total	% Decade variation (1981 - 1991)
Bihar	86,374	6,616	7.66	13.87
Gujrat	41,309	6,161	14.92	27.08
Himachal Pradesh	5,170	218	4.22	10.69
Kerala	29,098	320	1.10	22.75
West Bengal	68,077	3,808	5.60	24.04

Existing General Health Services in Tribal Areas

It has been noticed that the level of achievement in setting up of PHC/Sub centres in TSP areas is logging considerably behind the level achieved for the general population, in same states.

For the 5 states under review the figures are as follows.

States	PHC			SUB CENTRES		
	Required per norm	In position	%	Required per norm	In position	%
Bihar	489	208	42.54	3522	1824	51.79
Gujrat	294	183	62.24	2005	1632	81.40
H.P	10	15	150	65	97	149.23
Kerala	55	58	105.45	369	174	47.15
W.Bengal	107	91	85.05	712	417	58.57

Himachal Pradesh has exceeded the requirement in terms of establishing PHC and Sub Centres. This is probably due to the fact that the hilly terrain and poor mobility in their areas has led to an increase in requirement of health facilities over and above that of the norms laid down for T.S.P. areas.

THE PRESENT STATE OF N.T.P. IN TRIBAL AREAS

In the five States under review there are three states namely Bihar, Gujrat and Himachal Pradesh which have Tribal Districts and are covered by the ITDPs. The NTP is operational in only some of these Districts in its full component and having the District Tuberculosis Centres (DTCs). These are as under :-

State	No.of Tribal Dist.	District having DTCs
Bihar	6	3
Gujrat	1	1
Himachal	2	1

The District of Gulma, Sahabganj and Singhbhum in Bihar and Lahaul-Spiti in Himachal Pradesh are not having any DTC.

These fives states have some Districts which are Partly Tribal and are covered by the TSPs. In these Districts the distribution of DTCs is as under:-

State	Districts covered by TSP	Districts having DTC
Bihar	13	10
Gujrat	7	6
Himachal	1	1
Kerala	9	7
W.Bengal	12	12

The following Districts in the States do not have a DTC,

Bihar : Dhalbhum, Santhal, Parganas.
Gujrat : Valsad.
Kerala : Idukky,Wynad.

In all those districts mentioned above which do not have a District T.B. Centre, the tuberculosis services are provided to the patients through additional T.B. Clinics/Chest Clinics, under the N.T.P.. In addition to these there are some Voluntary Health Organisations which run T.B. Clinics in these areas.

Special Problems pertaining to T.B. and its management in Tribal areas

Unlike other infectious diseases which have a short disease process, tuberculosis as a disease presents certain specific problems which become accentuated in background of a tribal area. The major problems are:

i) Diagnosis : Specific diagnosis of the disease microscopic examination which needs to be repeated 3 times. This involves setting up of microscopic centres in the far flung, hilly, tribal areas and also involves the patient visiting these centres frequently.

ii) Treatment : Treatment for tuberculosis is a prolonged one 6-8 months at the minimum under Short Course Chemotherapy. Further, this treatment has to be supervised for the first two months with intensive phase. The patients need to come atleast 3 times per week in this intensive phase and then subsequently in the follow up phase also.

Both these essential components of tuberculosis management require that the patient should visit the health centres frequently. In the hilly and for flung areas where population is very scanty and scattered, it would require some special measures for diagnosis and drug delivery. Hence the Operational Aspects of the Revised NTP need to be revised for these Tribal Areas. The following norms have been suggested for the Tribal population.

	General Population	Tribal Population
Treatment Organiser	1 per 5 lakh population	1 per 70,000 population
Microscopist	1 per 1 lakh population	1 per 30,000 population

iii) Supervision : Because of the difficult terrain and inaccessibility of various areas in the Tribal population supervision becomes a difficult task. To strengthen the supervisory component of the Revised NTP in these areas special measures need to be taken. And alternative strategy for ensuring mobility in these areas has to be developed. Some of the suggestions would be to provide Fixed T.A. or Incentive to the Supervisory Staff.

It has been observed that there is lack of manpower in the tribal areas. Even the sanctioned posts are lying vacant at various levels due to non-availability of staff in these tribal areas. To tide over this problem it is proposed that the local tribal people may be involved, after some training, for diagnoses (microscopists), for treatment follow up (treatment organizer) and supervision.

N.G.O.s

Voluntary Organisations have an important role to play in Tribal development. This fact was recognised by the Govt. of India and a Centrally Sponsored Scheme of Grant-in-aid to the Voluntary Organisations for the welfare of the Schedule Tribes was formulated. The Voluntary Organisations are expected to formulate schemes taking into consideration the developmental needs of the area and the target group concerned. Some of these N.G.Os working in the Tribal Areas are, R.K.Mission, Bhartiya Aadim Jati Sevak Sangh , Akhil Bhartiya Aadivasi Vikas Parishad and Servants of India Society etc. Most of the older organisations have a 100% government assistance while some of the newer ones are required to meet 10-20% of their cost from their own resources.

In West Bengal there are some Voluntary Organisation run T.B.Clinics in the 24 Parganas District. There are Naihate T.B.Association, Southern Health Improvement Samiti, Anti-TB Association of Budge-Budge, Santi T.B. Control Society and Comprehensive Health Project. In this District these T.B.Clinics provide the services to the T.B.patients in addition to the D.T.C. operating under the N.T.P.

The primary role of N.G.Os in context of the Revised N.T.P. would be:

i) Health Education: The NGOs can play a vital role in educating the Tribals for their effective participation in implementation of the programme. This would create confidence amongst the Tribals and also promote better understanding between the Tribals and the Government and NGOs.

ii) Drug Delivery & Supervision : During the initial Intensive phase of Short Course Chemotherapy the patient is expected to visit the Health Functionary thrice a week for 8 weeks for the supervised phase of chemotherpy. Subsequently in the Continuation also the patient would be expected to come atleast once a month for his drugs. The NGOs can play an important role in this drug delivery and supervision.

The planning of the Revised NTP for involving NGOs in Tribal areas would have the following components:

i) Identifying the NGOs to be included.
ii) Determining the nature of their participation i.e. IEC activities and Drug Delivery and Supervision.
iii) Training of these voluntary workers in various aspects for implementing the Revised NTP.
iv) Financial assistance.
v) Accountability

I.E.C. ACTIVITIES

In Tribal areas the I.E.C. components has a special significance because of the prevailing ignorance and socio-cultural backwardness. The messages conveyed through the I.E.C. should be very simple and in the local dialect and the methods used should be in harmony with the prevailing cultural background. Stress has to be given for utilising Folk Media for conveying these messages. Further, the village/community head who exercises great influence on the local population should be actively involved in the IEC activities. The exact methodology and content of IEC for acceptance by the Tribal population, with the aim of achieving our objectives, requires special Research Acitivities to be undertaken in these areas. The IEC strategy would be different for the Tribal areas as compared to the general population.

BUDGET

Budgetary Allocation for T.B. Control and its utilization

In the Seventh Plan (1985-90) out of Rs.605 million allocated for T.B Control, 55.5 million was for the TSP (9.17%). However out of this TSP expenditure was only 43.43 million i.e. 6.97% of total allocation figures for 90-91 and 91-92 are as under:

	Total approved (Rs. in million)	Total flow for T.S.P.	% of total approved
90-91	150	15.38	10.25
91-92	152.5	16.21	10.63

For the 5 states under review the statewise break-up is as follows.

	90 - 91			91 - 92		
	Total outlay (Rs.in million)	Flow for TSP	%	Total out lay (millions)	Flow for TSP	%
Bihar	10	1.3	13	9.7	1.2	12.37
Gujrat	9.5	1.75	18.42	10.8	1.9	17.59
H.P	3.8	0.2	5.26	3.8	0.2	5.26
Kerala	3.6	0.04	1.11	3.8	0.06	1.58
W.Bengal	9.8	0.3	3.06	9.3	0.25	2.69

FINAL POPULATION TABLE 2
TOTAL POPULATION AND SCHEDULED TRIBE POPULATION IN DISTRICTS BY RESIDENCE - 1991.

Sl.	State/Dist.	Total Population	Scheduled Tribes	% of S.T. to Total.Population
00	BIHAR	86374465	66616914	7.7%
01	PATNA	3618211	560094	0.15%
02	NALANDA	1997995	336	0.02%
03	BHOJPUR	2880447	7282	0.25%
04	ROHTAS	2900685	47076	1.62%
05	AURANGABAD	1539988	504	0.03%
06	JEHANABAD	1174900	238	0.02%
07	GAYA	2664803	1468	0.05%
08	NAWADA	1359694	1246	0.09%
19	SARAN	2572980	3231	0.13%
10	SIWAN	2170971	12650	0.58%
11	GOPALGANJ	1704310	19167	1.12%
12	PASHCHIM CHAMPARAN	2333666	31104	1.33%
13	PURBA CHAMPARAN	3043061	1278	0.04%
14	SITAMARHI	2391495	394	0.02%
15	MUZAFFARPUR	2953903	1156	0.04%
16	VAISHALI	2146065	1408	0.07%
17	BEGUSARAI	1814773	902	0.05%
18	SAMASTIPUR	2716929	542	0.02%
19	DARBHANGA	2510959	259	0.01%
20	MADHUBANI	2832024	597	0.02%
21	SAHARSA	2475254	7359	0.3%
22	MADHEPURA	1177706	8321	0.71%
23	PURNIA	1878885	82145	4.37%
24	KATIHAR	1825380	101792	5.57%
25	KHAGARIA	987227	35	0.01%
26	MUNGER	3060027	70660	2.31%
27	BHAGALPUR	3202471	110735	3.46%
28	GODDA	861182	216047	25.08%
29	SAHIBGANJ	1201088	507321	38.99%
30	DUMKA	1495709	621484	41.55%
31	DEOGHAR	933113	119085	12.76%
32	DHANBAD	2674651	225282	8.42%
33	GIRIDIH	2225480	271924	12.22%
34	HAZARIBAG	2843544	250586	8.81%
35	PALAMU	2451191	443266	18.08%
36	LOHARDAGA	288886	162964	56.4%
37	GUMLA	1153976	816988	70.8%
38	RANCHI	2214048	964422	43.56%
39	PURBI SINGHBHUM	1613088	466572	28.92%
40	PARSHCHIMI SINGHBHUM	1787955	798069	54.70%
41	ARARIA	1611638	20819	1.29%
42	KISHANGANJ	984107	34830	3.54%

FINAL POPULATION TABLE 2
TOTAL POPULATION AND SCHEDULED TRIBE POPULATION IN DISTRICTS BY RESIDENCE - 1991.

Sl.	State/Dist.	Total Population	Scheduled Tribes	% of S.T. to Total Population
00	GUJRAT	41309582	6161775	14.92%
01	JAMNAGAR	1563558	7154	0.46%
02	RAJKOT	2514122	4695	0.19%
03	SURENDARNAGAR	1208872	9481	0.78%
04	BHAVNAGAR	2292026	3346	0.15%
05	AMRELI	1252589	2032	0.16%
06	JUNAGADH	2394859	11055	0.46%
07	KACHCHH	1262507	87723	6.95%
08	BANASKANTHA	2162578	149406	6.91%
09	SABARKANTHA	1761086	324199	18.41%
10	MEHSANA	2937810	10907	0.37%
11	GANDHINAGAR	408992	5602	1.37%
12	AHMADABAD	4801812	42574	0.89%
13	KHEDA	3440897	41023	1.19%
14	PANCHMAHAL	2956456	1395050	47.19%
15	VADODARA	3089610	821697	26.60%
16	BHARUCH	1546145	703956	45.53%
17	SURAT	3397900	1225080	36.05%
18	VALSAD	2173672	1181404	54.35%
19	DANGS	144091	135386	93.96%

FINAL POPULATION TABLE 2
TOTAL POPULATION AND SCHEDULED TRIBE POPULATION IN DISTRICTS BY RESIDENCE - 1991.

Sl.	State/Dist.	Total Population	Scheduled Tribes	% of S.T. to Total Population
00	HIMACHAL PRADESH	5170877	216349	4.19%
01	CHAMBA	393286	111509	28.35%
02	KANGRA	1174072	1628	0.14%
03	HAMIRPUR	369128	223	0.60%
04	UNA	378269	53	0.12%
05	BILASPUR	295387	7983	2.71%
06	MANDI	776372	9417	1.21%
07	KULLU	302432	10914	3.61%
08	LAHUL & SPITTI	31294	24088	76.97%
09	SIMLA	617404	8369	1.36%
10	SOLAN	382268	2449	0.64%
11	SIRMAUR	379695	6113	1.61%
12	KINNAUR	71270	39609	55.58%

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TOTAL POPULATION AND SCHEDULED TRIBE POPULATION IN DISTRICTS BY RESIDENCE - 1991.

Sl.	State/Dist.	Total Population	Scheduled Tribes	% of S.T. to Total.Population
00	KERALA	29098518	320967	1.11%
01	KASARGOD	1071508	29283	2.74%
02	KANNUR	2251727	18243	0.82%
03	WYANAD	672128	114969	17.11%
04	KOZHIKOD	2619941	5407	0.21%
05	MALAPURAM	3096330	10555	0.35%
06	PALAKAD	2382235	35465	1.49%
07	THRISSUR	2737311	4051	0.15%
08	ERNAKULAM	2817236	4941	0.18%
09	IDUKKI	1078066	50269	4.67%
10	KOTTAYAM	1828271	17996	0.11%
11	ALAPPUZHA	2001217	2801	0.14%
12	PATHANAMTHITTA	1188332	6922	0.58%
13	KOLLAM	2407566	3884	0.16%
14	THIRUVANANTHA-PURAM	2946650	16181	0.55%

FINAL POPULATION TABLE 2
TOTAL POPULATION AND SCHEDULED TRIBE POPULATION IN DISTRICTS BY RESIDENCE - 1991.

Sl.	State/Dist.	Total Population	Scheduled Tribes	% of S.T. to Total.Population
00	W.BENGAL	68077965	3808760	5.60%
01	KOCHBIHAR	2171145	13275	0.62%
02	JALPAIGURI	2800543	589225	21.04%
03	DARJILING	1299919	179153	13.79%
04	WEST DINAJPUR	3127653	307487	9.84%
05	MALDAH	2637032	171326	6.50%
06	MURSHIDABAD	4740149	61513	1.30%
07	NADIA	3852097	90525	2.36%
08	NORTH 24 PARGANAS	7281881	169831	2.34%
09	SOUTH 24 PARGANAS	5715030	70499	1.24%
10	CALCUTTA	4399819	8593	0.20%
11	HAORA	3729644	10090	0.27%
12	HUGLI	4355230	176401	4.05%
13	MADINIPUR	8331912	869636	8.28%
14	BANKURA	2805065	289906	10.34%
15	PURULIYA	2224577	427766	19.23%
16	BARDDHAMAN	6050605	376033	6.21%
17	BIRBHUM	2555664	177501	6.95%

T. B. Div./December 93

technical guide for tuberculosis control

Directorate General of Health Services
Nirman Bhavan, New Delhi
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Page

INTRODUCTION

The aim of the fight against tuberculosis is

- for individual patients: to cure disease, to preserve and quickly restore work-capacity, to allow them to be within the family, and the community, and, in this way, to maintain their socio-economic status.

- for a community: to reduce the risk of tuberculosis infection through case finding and their appropriate management and cure.

The fight against tuberculosis is best conducted within the setting of a National Tuberculosis Programme (NTP) integrated with the general health services.

The first priority of NTP is the treatment, appropriate management and cure of tuberculosis patients, especially sputum positive cases detected through direct microscopy. Smear-negative patients should also be given chemotherapy if active tuberculosis is diagnosed.

Control measures applied by any agency (voluntary or other) shall conform with the NTP and should be implemented in close collaboration with the national, state or district health authorities responsible for the NTP.

Close cooperation of Government authorities and all other health care providers at all levels is essential for successful implementation of the NTP. Participation of village panchayat and community health workers (CHWs), religious groups, political leaders, other community representatives and voluntary agencies is essential to achieve success in tuberculosis control. It is important that the community is made aware of the nature and extent of the problem of tuberculosis and its prevention and cure. It must be stressed adequately that the disease is nearly 100% curable, and therefore there is no reason for panic within the community and tuberculosis shall not be connected with a stigma. Community participation will ensure achieving high coverage with BCG vaccination, encourage people developing symptoms of tuberculosis to seek medical advice for early case detection and help enhancing cure rate by improving patient's compliance with chemotherapy.

Case-finding through sputum smear microscopy and treatment of tuberculosis can be carried out at the general health facilities and be performed by paramedical workers, if they are properly trained and regularly supervised. Case-finding and cure of infectious cases of tuberculosis are the key to effective control of the disease. Case-finding followed by proper treatment reduce suffering, disability and death from tuberculosis.

1. WHAT IS TUBERCULOSIS?

1.1. Cause of the disease

1.1.1. Infectious agents

Mycobacterium tuberculosis primarily from humans and M.bovis primarily from cattle are the aetiological agents in India. Other mycobacteria occasionally produce disease clinically indistinguishable from tuberculosis but identifiable only through culture.

1.1.2 Disease progression

Transmission is mainly through air via inhalation of droplet infection. Initial infection usually goes unnoticed. Tuberculin sensitivity appears within a few weeks, lesions commonly heal having no residual changes except occasional pulmonary or tracheobronchial lymph node calcifications (primary complex). Approximately, 95% of those initially infected enter this latent phase from which there is life-long risk of reactivation. In approximately 5%, the initial infection may progress directly to pulmonary tuberculosis or by lympho-haematogenous dissemination of bacilli, to pulmonary, miliary, meningeal or other-extra pulmonary involvement. Serious outcome of the initial infection is more frequent in infants, adolescents and young adults.

Extra pulmonary tuberculosis is much less common than pulmonary. It may affect any organ or tissue and includes TB meningitis, miliary TB, involvement of lymphnode, pleura, bones, joints, intestines, pericardium, kidney, skin, etc.

Progressive pulmonary tuberculosis arises from exogenous reinfection or endogenous reactivation of latent focus remaining from the initial infection and if untreated, leads to death within 2-3 years in over half the patients.

1.2 Occurrence

The disease occurs worldwide, with a higher incidence in developing countries. In India estimated prevalence of sputum positive patients is 0.4% (3.5 million cases). Under the NTP, approximately 1.5 million total cases are detected and put on 40% treatment every year. An estimated 0.5 million deaths from TB occur every year. For infected infants, the life-time risk of developing disease is around 10%. For persons infected with HIV, the annual risk has been estimated to be around 7% and the life time risk of developing Tuberculosis is around 60%. In developed countries, the mortality and morbidity from TB has been declining over the last few decades but in the 1980s morbidity has increased in areas or population groups with high prevalence of HIV.

Prevalence of infection detected by tuberculin testing increases with age and in India it is more than 40% in adults.

In most of the advanced countries, human tuberculosis due to mycobacterium bovis is rare. To prevent it, milk from animals should be boiled or pasteurised before consumption. In India, raw milk is not consumed usually and is invariably boiled or pasteurised before consumption. As such bovine Tuberculosis is practically non-existent in man.

1.3 Transmission - Route of infection - Forms of tuberculosis

Tuberculosis is most commonly transmitted by inhalation of infected droplet nuclei. These droplet nuclei are discharged in air when the tuberculosis patient coughs or sneezes. If the bacillus succeeds in infecting a person, the infection results in active disease in only about 10% of individuals who have acquired primary infection.

Infection occurs almost exclusively through the respiratory system. Tuberculosis spreads from the primary lung lesion to other parts of the body via blood stream, lymphatic and bronchial systems or by direct extension, and in this way it may affect any organ.

- Pulmonary tuberculosis: Tuberculosis affects the lungs in more than 80% of cases. Pulmonary tuberculosis in adults is often sputum smear-positive and therefore highly infectious.

  Cases which are only sputum culture-positive but smear negative, are 7 to 10 times less infectious than those which are smear positive. The outcome of smear-negative cases, when not treated, is more favourable than that of smear-positive cases.

- Extra-pulmonary tuberculosis can affect any part of the body, such as lymph nodes, bones and joints, the genito-urinary tract, the nervous system (meningitis), intestines etc. Diagnosis is often difficult and it should be made by a physician. Patients with extra-pulmonary tuberculosis (without concomitant pulmonary tuberculosis) hardly ever spread the disease to other persons.

- Tuberculosis in children: Sputum usually cannot be obtained from children and, in any case, it is often negative even on culture. Diagnosis of tuberculosis in children rests largely on clinical history, contact history, X-ray examination and tuberculin testing. The decision whether or not to treat the child should be made by a physician.

Generally, any tuberculin-positive child under 5 years of age, who has not been vaccinated with BCG but has signs or symptoms suggesting tuberculosis, should be regarded as having active tuberculosis and should be given a full course of treatment.

1.4. When should tuberculosis be suspected?

The most common symptoms of pulmonary tuberculosis are persistent cough, (usually with sputum, sometimes bloodstained), fever and chest pain for 3 weeks or more.

For extra-pulmonary tuberculosis, symptoms depend on the organs involved, for example:

- swelling, occasionally with pus drainage when lymph nodes are affected;
- pain and swelling when joints are involved;
- headache, fever, stiffness of the neck and mental confusion when there is tuberculous meningitis.

1.5 Health education

The general public should be taught the importance of early attendance at a health facility when they have chest symptoms, especially productive cough, persisting for 3 weeks or more. Patients with these symptoms should undergo a sputum examination at the nearest health facility.

It should be emphasized that Tuberculosis is 100% curable with adequate treatment and also that if the treatment is not taken as per the advise of the physician it would lead to spread of the disease amongst members of his household. Efforts should be made to make people aware of the nature of tuberculosis and facilities available.

Persons infected with HIV often present with tuberculosis and, therefore, educational message should be adequately directed towards them and high risk groups for HIV infection.

1.6 A "case" of Tuberculosis

A case of Pulmonary TB is a patient who is sputum positive for AFB or is considered by a physcician to be suffering from the disease on the basis of clinical and radiological evidence. All cases of tuberculosis should be registered in the registry and all necessary details are to be recorded. Reporting and analysis will be done separately for sputum positive cases and for sputum negative cases.

1.7 Classification of tuberculosis cases

Tuberculosis cases are classified as either pulmonary or extra-pulmonary. Cases of pulmonary tuberculosis are further subdivided into smear-positive and smear-negative.

1.7.1 Pulmonary tuberculosis

i) Smear-positive patient: a patient with at least two sputum specimens positive for acid fast bacilli (AFB) by microscopy, OR: a patient with one sputum specimen positive for AFB and radiographic abnormalities consistent with active pulmonary tuberculosis;

ii) Smear-negative patient: a patient with three sputum specimens negative for AFB by microscopy and radiographic abnormalities consistent with active pulmonary tuberculosis (i.e., a changing chest radiograph) and decision by a physician to treat with a full curative course of anti-tuberculous chemotherapy; in case of paediatric tuberculosis the decision of the physician to treat with full course of chemotherapy.

1.7.2 Extra-pulmonary tuberculosis: a patient with history and/or clinical evidence consistent with active tuberculosisand decision by a physician to treat with a full curative course of anti-tuberculosis chemotherapy.

Patients who have taken anti-tuberculosis drugs for 1 month or more at any time in the past have an increased chance of having drug resistant tuberculosis. Therefore, it is essential that all patients - especiallty smear-positive patients - be carefully questioned about previous antituberculosis treatment before current treatment is started. Cases are, therefore, further defined by treatment history as:

a. New case: a patient who has never taken anti-tuberculosis drugs before for more than one month.

b. Relapse: a patient declared cured in the past, (by a physician) who again is smear-positive.

c. Smear-positve failure case: a patient on SCC who remains or becomes sputum smear-positive 4 months or more after the start of chemotherapy OR a patient who interrupted the treatment for more than two months and is subsequently found to be smear positive OR a patient who was smear negative before initiating treatment but has become sputum positive at two months smear examination.

d. Defaulter: a patient who after negativisation, interrupted the treatment for 2 months or more.

e. Chronic case: a patient who remains AFB smear-positive after completing a retreatment regimen OR a patient who remains AFB smear-positive for 2 or more years.

Although smear-negative pulmonary cases and extra-pulmonary cases may also be failure, relapse, or chronic cases, this should be infrequent. When there is proven evidence of active tuberculosis, these cases should be treated as smear-positive cases with the retreatment regimen.

2. DIAGNOSIS OF TUBERCULOSIS

2.1 Case-finding methods:

- Examination of patients with relevant symptoms (productive cough for more than three weeks with or without haemoptysis, fever, chest pain, weight loss or night sweats), who present themselves on their own initiative at health facilities;

- Promotion of awareness in the community, the medical profession and all medical staff concerning the respiratory symptoms, notably persistant productive cough;

- Examination of household contacts (especially children and young adults) of the smear positive tuberculosis patients; and

- Bacteriological examination of sputum of a patient who, for any reason, has had a radiological examination of the chest showing an abnormality consistent with active tuberculosis.

2.2 Diagnosis

2.2.1 Bacteriological examination of sputum is, as a rule, the only way in which the diagnosis of pulmonary tuberculosis can be confirmed.

Whenever tuberculosis is suspected, at least three specimens of sputum should be collected and examined by microscopy. If possible, they should be obtained within 2 days.

- First interview with the patient. A spot specimen is collected; this is a specimen obtained on the spot after coughing and clearing the back of the throat, under supervision of a staff member. The patient is then given a sputum container for collection of an early morning specimen and to come on the next working day along with the sputum sample.

- Second interview with the patient. The early morning collection specimen brought by the patient is taken and a further spot specimen is collected.

All specimens should be examined in the nearest microscopy laboratory, as a rule, by the Ziehl-Neelsen method (See Laboratory manual).

If the first spot specimen is positive by microscopy and the patient does not return for the second inteview, an immediate search must be made to find the patient to prevent dissemination of infection in the community and deterioration of the patient's condition and a second and third samples of sputum must be collected and examined.

A course of symptomatic treatment of antibiotics (if indicated) suitable for non-tuberculous infection (but not streptomycin nor rifampicin) may be given, while awaiting the laboratory smear reports on the specimens. If the patient fails to respond to this treatment and remains ill, even though the smear is negative, the patient should be referred for further investigation (clinical and radiological). The extra-pulmonary cases with productive cough should also be examined by sputum smear to exclude pulmonary tuberculosis.

The treatment for tuberculosis will be started as soon as two positive laboratory reports on smear examination are received. Treatment for Tuberculosis in patients with a single positive laboratory report should be determined by a Medical Officer. Treatment will usually not be started in the absence of a positive laboratory report unless it is prescribed by a Physician on the basis of the clinical examination, chest x-ray film suggesting tuberculosis and at least 3 negative smear results.

For Smear-Negative patients treatment should NEVER be started without having done the smear examination THREE times.

On each supervision visit to the health centre, the health worker in charge of tuberculosis control will check the documents, of all patients diagnosed as suffering from tuberculosis since the last visit, including those with either a single or no positive laboratory report.

2.2.2. X-Ray diagnosis of tuberculosis is unreliable, because other chest diseases can look like tuberculosis on an X-ray, and pulmonary tuberculosis may show many forms of radiographic abnormality. It must be stressed that the determination of clinical activity of tuberculosis by X-ray is totally unreliable. Moreover, the cost of X-Ray examination is relatively high in relation to case finding by smear microscopy. Consequently, the diagnosis of tuberculosis in adults must, as a rule, be confirmed by smear examination.

In spite of this, X-ray examination can undoubtedly be very helpful in clinical work when investigating tuberculosis among patients with symptoms suggestive of tuberculosis, children or young adult contacts of infectious cases, and in patients, suffering from miliary or extra-pulmonary tuberculosis. Clinical

diagnosis of tuberculosis based on X-ray examination alone should always be made by a competent physician.

2.2.3. The tuberculin test has a limited value in clinical work, especially in high prevalence countries. A "positive" tuberculin test (10 mm or more induration) is infrequently followed by a disease and a "negative" tuberculin test does not necessarily exclude active tuberculosis (albeit only in a minority of cases). Moreover, a "positive" tuberculin test may be due to infection with mycobacteria other than M.tuberuclosis. However, the tuberculin test is important in clinical work with children where a positive test is more likely to reflect recent infection with tuberculosis and a much higher risk of developing disease.

2.2.4 Depending on the organ involved diagnosis of extra-pulmonary tuberculosis can usually only be made by a physician.

2.2.5 Diagnosis in children is made by a physician on the basis of clinical symptoms, a positive Mantoux tuberculin skin test (in non-BCG-vaccinated children), a chest x-ray and a history of a contact with a tuberculosis case.

2.3 Complications of tuberculosis

a. Pulmonary tuberculosis

- Haemoptysis (coughing up of blood). In all severe cases the patients should be advised rest, sedatives and anti-tussives and be referred to the nearest hospital;

- spontaneous pneumothorax (collapse of the lung through damage caused by tuberculosis). The patient must be referred to the nearest hospital for further management;

- pleural effusion. If the amount of fluid is not too great, the clinical condition will improve with chemo-therapy alone. If there is too much fluid in the thorax, aspiration may be necessary for relief of symptoms and the patient should be referred to hospital;

- cardio-pulmonary insufficiency (heart and lung disease resulting in cor pulmonale). A medical officer should be consulted concerning therapy;

- bronchiectasis, fibrosis of the lungs. These are consequences of extensive tuberculosis disease and only symptomatic therapy is possible.

b. Extra-pulmonary tuberculosis

Complications depend on the organs involved. A medical officer must be consulted.

3. TUBERCULOSIS LABORATORY SERVICES

3.1 Aims of the bacteriological service

The aims of the bacteriological service are, first, the diagnosis of cases and, second, the monitoring of their treatment.

The tuberculosis laboratory service consists of a network of laboratories throughout the country which carry out, as part of their work, microscopic examination of sputum smears stained by the Ziehl-Neelsen method, and also includes Reference Laboratories for tuberculosis.

A practical description of all procedures related to sputum examination by direct microscopy is given in Laboratory Manual.

The Reference Laboratory of Tuberculosis should be capable of training and supervising the staff of the network of microscopy centres. It should provide quality control services for smear microscopy. Some reference laboratories should have facilities for culture and sensitivity tests.

Efficient peripheral laboratories play a crucial role in the success of case-finding programme based on the detection of smear-positive cases. Microscopy centres for examination of sputum for detecting tubercle bacilli are usually located in hospitals and health centres.

3.2 Smear Examination

3.2.1. Sputum positive cases

The sputum smear examination is done three times for diagnosis.

During the follow-up, 2 smears have to be tested every time as under:

a) at the end of the intensive phase (2 months for new cases and 3 months for retreatment cases), at the end of 4 months (5 months for retreatment cases) and at the end of treatment.

b) If the smear is positive at the end of the intensive phase, it should be tested again at 3 months in new cases or at 4 months in retreatment cases.

The smear-positive slides should not be reused for tuberculosis microscopy.

3.2.2 Sputum negative cases

During the follow up 2 smears must be tested at the end of 2 months.

3.3 Culture

Direct smear examination has the highest priority. Culture of sputum from symptomatic suspects with abnormalities compatible with tuberculosis on a chest X-ray, but smear-negative, may result in more frequent and earlier diagnosis. Culture of tubercle bacilli is advisable in such cases. Culture and sensitivity is valuable for epidemiological surveillance, treatment and planning for resistant/failure cases.

3.4 Quality control

Quality control of every form of tuberculosis bacteriology, including direct smears, cultures and sensitivity tests, is very important. This is the task of the reference laboratories at all levels. It must be stressed that the priority is to establish a quality network of microscopy centres prior to setting up the culture and sensitivity test service. The quality control of sputum smear microscopy is ensured by;

- the microscopists at every centre should keep all the slides for two months.
- the supervisor lab.technician during his visits will review a sample of atleast 10% of the slides which have been reported as smear positive by the microscopists and 2.5% of the slides which have been reported as smear negative.

3.5 Supervision

The Medical Officer in charge and other staff supervising the laboratory services should be appropriately trained so that they have adequate knowledge of the techniques of smear examination.

4. GENERAL ASPECTS OF CHEMOTHERAPY

The objectives of chemotherapy are:

(a) to achieve a cure rate of at least 85% of all newly detected smear-positive cases;

(b) to achieve at least 90% treatment completion rate of retreatment cases and sputum negative acutely ill tuberculosis cases registered for treatment with short course chemotherapy.

The main requirements for adequate chemotherapy are:

- an appropriate combination of antituberculosis drugs,
- taken regularly by the patient.
- for a sufficient period of time.

Drugs should be available to every tuberculosis case registered. The treatment includes an initial supervised intensive phase of two to three months followed by 4 to 5 months of self-administered continuation phase.

4.1 Drug resistance

There are three types of resistance of tubercle bacilli to antituberculosis drugs, namely natural, acquired and primary:

- a Naturally drug-resistant strain is a wild strain (mutant) resistant to a particular drug without ever having been in contact with it. **Mutants resistant to two drugs are rare;**
- Acquired or Secondary resistance : It is due to incorrect chemotherapy in respect of its dosage, duration, regularity or regimen.
- Primary drug resistance: If a patient with acquired resistance to one or more antituberculosis drugs infects a healthy individual, the tubercle bacilli in the infected person are resistant to the same drug(s) as those of the source of infection, even though the new patient has never taken the drugs in the past.

Resistance is commonly due to inadequate chemotherapy. It is therefore, essential that chemotherapy in new smear-positve patients starts with four drugs and continues, after the initial phase of 2 months with 2 or 3 drugs.

Sputum-positive patients who have previously taken antituberculosis drugs are more prone to develop drug resistance as compared to the general population. Therefore, such patients must be administered a retreatment regimen.

Before treatment is started, it is essential that all patients should be closely and carefully questioned as to whether or not they have previously taken antituberculosis drugs so that they are appropriately registered for proper treatment regime.

4.2 Regularity of chemotherapy

With few exceptions, the regimens under 5.2. will cure newly diagnosed cases of tuberculosis, provided that:

- they are administered for the required period of 6 months,

- they are taken regularly,

- the patient on entry is not in a critical condition, and

- the bacilli are not resistant to both isoniazid and rifampicin.

Regular supervision is required to ensure that the patient actually takes all the drugs prescribed. Family members, respected individuals in the community, e.g. village elders, teachers or other Panchayat leaders, can be of great help to health workers in their task of ensuring compliance.

4.3 Duration of chemotherapy

The duration of chemotherapy is 6 months for the new cases, 8 months for retreatment cases and 12 months for conventional therapy. It is only of minor benefit to prolong chemotherapy for more than this recommended period, provided the patient has taken the regimen without interruption. Chemotherapy should be stopped or temporarily interrupted only if severe drug intolerance or toxicity occurs.

Patient will stop drugs ONLY on advise of treating physician and not before. The patient should be told that if he follows the proper advice he will be CURED of the disease.

4.4 Procedures during treatment

Where injections are given, strict sterilization must be ensured.

Sputum microscopy is much more informative than radiology in following the progress of chemotherapy. The Erythrocyte Sedimentation Rate (ESR) is unreliable and has no role in evaluating the progress or results of treatment.

Sputum from smear positive patients treated with the short course chemotherapy should be examined at 2 months (3 months for retreatment cases), at 4 months (5 months for retreatment cases) and at the end of treatment.

If the sputum is negative at months 4 and 6 in patients enrolled on short-course chemotherapy, the patient should be discharged from treatment as cured at the end of the sixth month. If the sputum is positive at the fourth month the patient should be declared as a failure case and referred for retreatment afresh.

4.5 Follow-up

No follow-up is required for a patient who has completed and declared cured. He should be advised to report only if the symptoms suggestive of tuberculosis recur.

4.6. Defaulter action

Defaulter action is taken to bring the patient back on treatment by visiting the patient's home. This should be done by health staff or community health worker on the following day after the patient did not come for treatment in the initial phase or within a week in the continuation phase. It is important to take defaulter action immediately after determining that the patient has defaulted.

4.6.1. Motivation

The health worker should discuss problems with the patient and find ways of preventing the patient from defaulting, convince the patient that cure depends on regular drug taking and convey the same message to relatives so that they can take an interest in ensuring regular drug taking by the patient. The health worker should discuss with the patient, where he would prefer to take his treatment.

4.7 In-patient versus out-patient treatment

Hospitalization in itself has little or no effect on the outcome of treatment: a patient who really takes the drugs will do equally well whether treated in or out of hospital.

In-patient treatment is indicated (often only for a few weeks) for the severely ill, for those with complications of tuberculosis (e.g. haemoptysis, spontaneous pneumothorax) or for those with other serious accompanying diseases requiring hospitalization. Hospitalization is also recommended to ensure that the initial intensive phase of chemotherapy (2 to 3 months) is received without defaulting by patients who live far away from the nearest health centre. It is emphasized that if health staff think that any smear-positive patient cannot manage to receive ambulatory directly observed chemotherapy during the first 2 months, such a patient should be admitted to hospital, even though the policy prefers ambulatory therapy.

4.8 Tuberculosis treatment during pregnancy and breastfeeding

Active tuberculosis in women who are pregnant or in mothers who have small children presents a special problem. Pregnant women with active tuberculosis should start or continue their antituberculosis treatment. (Streptomycin should not be given during pregnancy because it crosses the placenta and may cause damage to the fetus).

Breast feeding of infants should continue irrespective of the tuberculosis status of the mother. If the mother is sputum positive for AFB the child should be given chemoprophylaxis for as long as the mother remains infectious and then vaccinated with BCG if the child is still tuberculin negative.

4.9 Tuberculous meningitis

Tuberculous meningitis is a fatal disease if left untreated. The diagnosis can be made specifically when lumbar puncture is done, the cerebrospinal fluid (CSF) is under increased pressure, clear and contains clot forms like a cobweb if left standing. Classically the CSF shows a lymphocytosis with high protein and low sugar levels. The diagnosis is confirmed by

The treatment regimen described as short as possible. The regimen depends on whether the patient is severely ill or not. Severely ill patients should be given extended intensive phase treatment for six to seven months. Pyrazinamide is not useful in tuberculous meningitis because it does not penetrate the CSF. Steroids should be given to reduce the inflammation which may be life saving. Decision to stop steroids should be made gradually after 6-8 weeks of treatment.

5. DRUGS AND REGIMENS

Do not start tuberculosis treatment until a firm diagnosis has been made. Three sputum smear examination should have been done before starting chemotherapy.

Priority treatment is given to pulmonary smear-positive cases, then to smear-negative and extrapulmonary cases. Three types of treatment regimen are recommended in this guide:

New cases

1. 6 month supervised short-course chemotherapy (SCC) for new cases of smear-positive pulmonary tuberculosis and clinically severely ill smear-negative tuberculosis cases.

2. 12 month self administered regimen for treatment of other smear-negative and extrapulmonary cases. Smear-positive pulmonary tuberculosis cases who refuse to take supervised SCC or cannot comply with SCC due to drug toxicity will also receive a 12 month regimen.

Retreatment cases

3. 8 month short-course chemotherapy for retreatment of smear-positive relapses and failure cases.

5.1 Drugs and their dosage

The most important drugs used in the treatment of tuberculosis are isoniazid (H), rifampicin (R), pyrazinamide (Z), Streptomycin (S), ethambutol (E) and thiacetazone (T). Thiacetazone is also available in a combination preparation with isoniazid.

The use of rifampicin or of streptomycin, for diseases other than mycobacterial diseases, should be limited to very carefully considered indications.

The drugs are provided in blister packs for the 6 and 8 month regimens. Three different blister packs are available for adult patients: one day pack for the intensive phase with isoniazid, rifampicin, pyrazinamide and ethambutol. Weekly pack for the continuation phase with isoniazid and rifampicin for new cases and with isoniazid, rifampicin and ethambutol for retreatment cases.

For adults drugs will be given in the recommended number of pills/tablets irrespective of body weight. For children the drugs will be given in loose tablets according to the body weight. The recommended dosages per kilo body weight for children are illustrated in the following table for daily and intermittent therapy (WHO recommendation);

Drug	Daily therapy	Intermittent therapy
Isoniazid	5 mg/kg	15 mg/kg
Rifampicin	10 mg/kg	10 mg/kg
Pyrazinamide	30 mg/kg	50 mg/kg
Streptomycin	15 mg/kg	15 mg/kg
Ethambutol	15 mg/kg	30 mg/kg

5.2 Short-course chemotherapy for newly diagnosed cases

Category I: New cases of AFB-smear positive pulmonary tuberculosis and other newly diagnosed sputum negative seriously ill patients with severe forms of tuberculosis

(e.g. meningitis, disseminated tuberculosis, tuberculous pericarditis, peritonitis, bilateral or extensive pleurisy, spinal disease with neurological complications, smear-negative pulmonary tuberculosis with extensive parenchyma involvement, intestinal, genito-urinary tuberculosis, etc.).

Priority: Highest for smear-positive pulmonary tuberculosis; treatment is vital for patients with the other forms of disease because of the associated morbidity and mortality.

Recommended regimen

- Initial intensive phase: 2 $(HRZE)_3$, i.e., isoniazid, rifampicin, pyrazinamide and ethambutol in a blister pack, adminstered three times a week for 2 months. The medication has to be taken by the patient under observation of health staff.

  When the patient has completed the initial intensive phase of 2 months and the sputum is AFB smear-negative, the continuation phase will start. If sputum is smear-positive at 2 months, the initial intensive phase of 4 drugs daily is continued for another month; then the continuation phase is started, regardless of sputum test results.

The content of a blister pack is following:

Isoniazid 300 mg	Rifampicin 450 mg	Pyrazinamide 500 mg	Ethambutol 400 mg
2 tab.	1 cap.	3 tab.	3 tab.

- Continuation phase: 4 $(HR)_3$, i.e., isoniazid and rifampicin three times a week for four months. For patients with tuberculous meningitis, disseminated or spinal disease with neurological complications isoniazid and rifampicin should be given daily for 6 to 7 months (i.e., a total of 8 to 9 months therapy).

The weekly blister pack contains the following drugs administered three times per week with vitamins in the remaining week days, for self administration:

Isoniazid 300 mg	Rifampicin 450 mg
2 tab.	1 cap.

Two weekly blister packs are given at a time to the patient for self administration. On the next collection the patient should return the empty blisters.

5.3 Short Course Chemotherapy for previously treated cases

Category II These are patients who have received anti tubercular treatment for more than one month in the past and are at an increased risk of developing multi drug resistant disease. These include smear positive relapses and failure cases.

Priority: Highest. If reliable laboratory facilities are available, a pretreatment sputum may be obtained for culture and/susceptibility testing to isoniazid, rifampicin, ethambutol, pyrazinamide and streptomycin.

These patients should receive fully supervised treatment atleast for the first three months. Those whose sputum remains positive at three months should continue to receive supervised therapy until sputum conversion is documented or until they are classified as a chronic case.

Recommended regimen

- Initial intensive phase: 2 $(HRZES)_3/1(HRZE)_3$, i.e. rifampicin combined with isoniazid, pyrazinamide and ethambutol, supplemented with streptomycin for the first 2 months, followed by the same drugs without streptomycin for 1 month given three times a week.

  The initial intensive phase should be given for 3 months. The tablets are given in the same type of blister pack as for the new smear positive cases in category I. If the sputum is AFB smear-negative at 3 months, the continuation phase is started. If sputum is smear-positive at 3 months, the 4 oral drugs are continued for another month. If the patient is still smear-positive at the end of the fourth month and culture facility is available , then after stoppage of the drugs for three days, the sputum should be sent for culture and sensitivity. The patient should then start the continuation phase.

- Continuation phase: $5(HRE)_3$ i.e. 5 months of isoniazid, rifampicin and ethambutol three times a week. If the patient remains smear-positive after the completion of continuation phase he/she is no longer eligible for the retreatment regimen.

The drugs are given in weekly blister packs. Two weekly packs are given at a time. The blister pack contains vitamins on the days when antituberculosis drugs are not given.

The three times weekly dosage of the blister pack is illustrated in the following table:

Isoniazid 300 mg	Rifampicin 450 mg	Ethambutol 400 mg
2 tab.	1 cap.	3 tab.

Treatment after default : If the patient is smear positive while returning to treatment then he is put on a retreatment regimen given above. If he is smear negative for AFB then he should complete the course of treatment he was on prior to default.

Chronic cases: These have to be reviewed by the Specialist in detail before deciding on the regimen. They will have very poor response to therapy.

5.4 Twelve-month regimen for newly diagnosed cases of tuberculosis who are not selected for SCC or refuse SCC or SCC has to be changed due to any other reason eg. drug reaction etc.

Isoniazid and thiacetazone are given self adminstered daily for 12 months. Thiacetazone should be replaced with ethambutol in case of intolerance. Streptomycin should be added in the initial intensive phase for two months in case of pulmonary sputum positive cases who do not take SCC for any reason

The dosage for adults is one combined tablet of isoniazid 300 mg and thiacetazone 150 mg daily. The dose for ethambutol is 800 mg per day. The dose for injection Streptomycin is 0.75 gm. per day (0.5 gm for over 50 years).

Daily doses for children is illustrated in the following table:

Pretreatment weight	Number of tablets		
	Isoniazid 100 mg	Ethambutol 400 mg	Thiacetazone 50 mg*
Up to 10 kg	0.5 tab.	-	0.5 tab.
11 to 20 kg	1 ,,	-	1 ,,
21 to 30 kg	2 ,,	1 tab.	2 ,,
30 kg and over	3 ,,	1.5 ,,	3 ,,

* Thiacetazone is always combined with isoniazid.

5.5 Contacts of smear-positive index cases

Any person who has productive cough and who is in contact with a smear-positive index case should have three sputum examinations as soon as possible for diagnosis and if negative, he should be followed up three months later.

Children who cannot produce sputum should be examined with other recommended investigations like chest x-ray and tuberculin testing.

Children under five years: An unvaccinated contact with a positive Mantoux test (10 mm or more) is to be treated as a case if he is symptomatic. If no signs or symptoms are there then he should report if they appear.

Infants: If mother is smear positive and child not vaccinated then give INH chemoprophylaxis for 3 months. After 3 months do a Mantoux test. If this is negative stop INH and give BCG, if this positive then continue for 6 months.

6. SIDE EFFECTS OF ANTITUBERCULOSIS DRUGS

Side-effects of antituberculosis drugs are of two types:

- Major side-effects are those giving rise to serious health hazards;
- Minor side-effects cause only relatively little discomfort; they often respond to symptomatic or simple treatment but occasionally persist for the duration of drug treatment.

6.1 Isoniazid

Hepatitis, major side-effect, develops in about 0.5% of cases. If jaundice is observed, stop treatment, transfer the patient to a hospital for further management.

Minor side-effects include: Peripheral neuropathy, Pellagra like syndrome and skin rash.

6.2 Rifampicin

One of the major side-effects of rifampicin is hepatitis, although this is rare. Alcoholism, pre-existing liver disease or the simultaneous administration of other hepatotoxic agents seem to increase the risk. The development of jaundice requires discontinuation of the drug.

The other minor side effects include:

- flu syndrome (fever with chills, malaise, bone pains) seen more with intermittent therapy.
- skin rash
- gastritis

The Respiratory Syndrome with shortness of breath and collapse and the Hemolytic Syndrome with renal failure are very rare. Immediate stoppage of drugs and hospitalization is required.

6.3 Pyrazinamide

Hepatitis, joint pains and sometimes gout.

6.4 Isoniazid/thiacetazone

Hepatitis, a major side-effect, occurs, as with isoniazid alone.

Cutaneous reactions in patients treated with this medication (due to thiacetazone) may be more serious than with other drugs. Exfoliative dermatitis or Stevens-Johnson syndrome may occur and can be fatal. Stevens-Johnson syndrome is a special type of hypersensitivity reaction characterised by a generalised bullous eruption, sometimes haemorrhagic, involving skin and mucous membranes. When this occurs, medication should be stopped immediately **and thiacetazone should never be given again.** Immediate cortico-steroid treatment is indicated; the patient must be sent without delay for admission to hospital and emergency treatment. Cutaneous reaction of thiacetazone occurs more frequently and is more severe in HIV-positive patients.

GIT upsets (nausea, vomiting, diarrhoea). Symptoms usually subside if the daily does is divided and given half in the morning and half in the evening for a week or so. Sometimes antacids are recommended.

6.5 Ethambutol

Ethambutol may produce impairment of vision - a decrease in visual acuity, blurring and red-green colour blindness. However, ocular toxicity seems to be clearly dose-dependent and occurs rarely if 15 or 25 mg/kg body weight are given daily or 30 mg/kg body weight three times weekly.

Every patient receiving ethambutol should be warned that, if visual symptoms occur, an ocular examination should be undertaken. Impaired vision usually returns to normal within a few weeks when the drug is stopped. Because of the risk of undetected

ocular toxicity ethambutol should not be given to children less than 6 years of age.

6.6 Streptomycin

The main toxic side-effect of streptomycin is vestibular damage. The risk increases with the dose and age. The dose is reduced to 0.5 gms for patients over 50 years of age. Damage to the vestibular system usually occurs in the first 2 months and is manifested by ringing in the ears, giddiness and ataxia. The risk is particularly high in patients with impaired excretory function of the kidneys. Stop the drug if the side effect appears. Streptomycin should not be used in pregnancy.

Hypersensitivity reactions occasionally occur, like a sudden onset of fever often accompanied by headache, vomiting and an irritative erythematous rash. Stop treatment (both streptomycin and Thiacetazone) and admit the patient to hospital.

Sterilization of syringes and needles for streptomycin injections

It is mandatory to avoid any transmission of blood-borne diseases (especially HIV injection) by streptomycin injections. Recommended procedures for sterilization of needles and syringes must be strictly enforced. The Medical Officers and tuberculosis supervisors need to know proper sterilization practices to be able to supervise safe use of injections. Disposable syringe and needles should be used, if available.

To ensure that transmission of blood borne diseases is minimal the Streptomycin injection would be given only by qualified personnel.

Sterilization Rules

1. A health worker must use 1 sterile syringe and 1 sterile needle for every patient for one injection.
2. The instruments should be thoroughly cleaned before sterilizing them.
3. When using a **steam sterilizer**, remember:
   - Heat instruments in the steam from the boiling water for 15 minutes.
   - Do not cover instruments within the steam steriliz-er with water.
   - Do not use it on an open wood fire. (It might not produce enough heat).
   - In high altitudes sterilize the instruments for a longer period of time.

4. When using a **boiling pan**, remember:

- Cover instruments with water.
- Boil instruments for 20 minutes.
- Keep cover on the pan at all times.
- Do not add instruments after boiling starts.
- Use instruments within 24 hours.

5. Sterile syringes and sterile needles should be kept in a sterile covered container.

6. Use sterile forceps to take sterile instruments out of the sterile-covered container.

7. When holding a sterile syringe, touch only the safe parts of the syringe i.e. outside of the barrel or the top of the plunger.

8. Wash your hands when you come in contact with body fluids or infected material.

7. PREVENTION OF TUBERCULOSIS

7.1 BCG vaccination

BCG is an attenuated strain of bovine tubercle bacilli. It is given by intra-dermal injection to non-infected children to protect them from developing tuberculosis, especially severe forms of the disease e.g. tuberculous meningitis and miliary tuberculosis.

BCG vaccination is given to infants as early in life as possible. It is included in the Expanded Programme on Immunization (EPI) The NTP follows the recommendations of the EPI on the vaccination. The dosage of the vaccine is 0.1 ml.

Complications of vaccination are uncommon, but include:

- subcutaneous abscess at the site of injection.
- ulceration at the site of injection.
- swelling with or without ulceration of regional lymph nodes.
- systemic complications (very rare).

Treatment of the complications:

- subcutaneous abscess and ulceration at the site of injection may only require pain relief with simple analgesics and cleaning of the ulcer. A large abscess can be aspirated with a syringe and a needle.

- Swelling of lymph nodes adjacent to the vaccination site usually requires no treatment.

8. HIV AND TUBERCULOSIS

8.1 HIV and AIDS

Infection with human immunodeficiency virus (HIV) leads to a profound destruction of cellular immunity. As a consequence, those infected become ill from severe, and often deadly, diseases to which persons without HIV infection would usually not be susceptible. When HIV infection leads to such so-called "opportunistic" diseases, the affected person is said to have the acquired immunodeficiency syndrome (AIDS). The interval between infection with HIV and the onset on AIDS may be several years.

8.2 Interaction between tuberculosis and HIV infection

Containment of tuberculous infection in an individual is dependent on the integrity of cellular immunity. It is not surprising that HIV infection has emerged as the strongest yet identified risk factor to allow latent, remotely acquired tuberculous infection to progress to overt clinical tuberculosis. It is therefore common to find that tuberculosis patients are 4 to 6 times more likely to be HIV-seropositive than the general population. The life time risk of developing tuberculosis in HIV-TB infected individual is around 60% instead of 5-10% in persons not infected with HIV. Accordingly, in a number of countries with pattern II transmission of HIV infection, tuberculosis has increased annually from about the mid-1980s onwards.

Although HIV-associated cases may have more frequently sputum smear-negative pulmonary or extrapulmonary tuberculosis, a considerable proportion of HIV-associated tuberculosis cases are sputum smear-positive, highly infectious cases. HIV infection thus may increase tuberculosis morbidity in affected countries in three ways over and above the existing situation:

1. by reactivation of pre-existing tuberculous infection in persons who become infected with HIV.

2. by new infection with tubercle bacilli and direct progression to tuberculosis in persons infected with HIV. (This is likely to be less important than 1.)

3. additional cases in the general population whose infection and disease originates from HIV-positive tuberculous patients in groups 1 and 2.

8.3 Diagnosis of HIV-associated tuberculosis

Because HIV-associated tuberculosis may be in forms other than sputum smear-positive, the diagnosis might be more difficult. In addition to the bacteriological examination (which is still the most important method of diagnosis) the use of x-rays and high index of clinical suspicion attains a greater than usual importance for diagnosis.

8.4 Management of HIV-infected tuberculous patients

Current information suggests that response to chemotherapy is generally good. However, adverse reactions to antituberculosis drugs appear to be more common in tuberculous patients with HIV infection. In particular, thiacetazone intolerance, including fatal toxic reactions to the drug is more common and the drug should not be used in TB patients with HIV infection. Instead ethambutol is to be used. In HIV-positive patients who are pulmonary smear negative or extra-pulmonary cases, short-course chemotherapy should be strongly considered and may be prescribed at the discretion of the medical officer in charge, instead of the 12 month treatment regimen. The prognosis of HIV-infected tuberculosis patients is good in respect to tuberculosis, but may be poor in respect to other HIV-related diseases, and therefore the case fatality rate may be expected to increase.

8.5 Prevention of HIV transmission in health care settings

Tuberculosis patients in many countries have become the group with the highest prevalence of HIV infection, high standards of safety for health care workers[1] and strict adherence to sterilization procedures[2] must therefore be maintained. Where needles and syringes are used in the treatment of tuberculosis (streptomycin injections) it is imperative that every health care worker be trained to strictly adhere to the principle: 1 sterile needle and 1 sterile syringe for only 1 patient for only 1 injection, wherever possible disposable syringes & needles should be provided.

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1 World Health Organisation/International Council of Nurses. Guidelines for nursing management of people infected with human immunodeficiency virus (HIV). WHO AIDS series 3. World Health Organization, Geneva 1988.

2. World Health Organisation. Guidelines on sterilization and disinfection methods effective against immunodeficiency virus (HIV). WHO AIDS series 2. World Health Organisation, Geneva, 1989.

T.B. Div./December,93

TECHNICAL GUIDE

FOR

TUBERCULOSIS CONTROL

Directorate General of Health Services
Nirman Bhavan, New Delhi
1993

CONTENTS

Flash Cards on TB

Target Group - General Public

1. **A group of village youth**

A group of youth are sitting under a tree and talking about various things.

A: Did you hear about Raju getting Tuberculosis?

B: Really? Poor Raju. How did he get this dreaded disease at such a young age?

C: He smokes a lot and drinks too. That must have caused TB.

D: He doesn't go to the temple. The Gods must have cursed him.

E: Doesn't he eat lots of potatoes?

F: People with TB always die. There is no treatment.

2. **Masterji approaching the group**

The group is confused. Each person has a different impression about this common disease. They see the school teacher walking that way.

C: Why don't we ask masterji? He should be knowing more about the disease.

Others: Yes, Yes. Let us do that.

3. **A patient coughing, A healthy man inhaling**

Masterji is happy to tell the group about TB.

M: It is nice that you want to learn about a common disease. TB is a communicable disease caused by a germ. It is spread by coughing and sneezing. When a person with TB coughs, sneezes or spits, the germs are released into the air. These germs on entering the body of a healthy person can cause the disease in him.

4. **Coughing with mouth covered**

E: That means I can get TB too. What can I do to avoid getting TB?

M: As I mentioned, TB spreads when an infected person coughs or sneezes. If the person covers his mouth with a cloth while coughing, the germs won't be released into the air.

E: I will tell Raju to cover his mouth while coughing or sneezing.

5. **Spitting into a container with lid, Disposing into a hole**

C: What about spitting? You mentioned that it could also spread by spitting.

M: Good that you remembered. A person with TB should not spit indiscriminately. He can spit in a container with some ash or sand at the bottom. The container should have a lid. The sputum can be disposed daily by digging a hole amd emptying the contents of the container into the hole and covering the hole again.

6. **Bacilli seen through a microscope**

D: Isn't it due to curse of God then?

C: He smokes a lot. Doesn't smoking cause TB?

M: TB has nothing to do with curse of God or evil spirit. Smoking does not cause TB as such, but may cause other dangerous disease like cancer. TB is caused by germs that can be seen through very powerful lenses called microscope.

7. **TB is curable**

F: Do you know that Raju has TB? He is going to die, isn't he?

M: TB is completely curable. One need not die of TB today. If Raju takes medicines for the required period, he would be cured. Inspite of TB being curable, every minute one person dies of TB in India. This can be avoided if TB is detected early and the person takes the required treatment.

8. **Symptoms of TB**

D: How can we know if someone has TB ?

M: A person with TB usually has the following complaints :

i) Cough for more than one month,
ii) Low grade fever at night,
iii) Chest pain,
iv) Coughing out blood,
v) Loss of appetite and weight.

If you find someone with any of the above mentioned complaints, he should be suspected to have TB.

9. **Patient being examined by a Doctor**

A: What do we do then ?

M: The diagnosis of TB can be made by a doctor. He will examine the person, have his sputum examined to see if the TB germs are present and may take X-ray if necessary. So it is necessary that any person suspected of having TB should see a doctor.

10. **Take medicines regularly**

B: Will Raju have to be admitted in the hospital ?

M: It is not necessary. Raju can take the medicines at home. He will have to take it as long as the doctor advises. It is usually upto 6-12 months, depending on the drugs given and the response of the germs to the drugs. It is very important to complete the whole course or it will lead to a stronger germ that will not be easily treatable. So all of you should ensure that Raju takes the treatment for the complete duration.

All: Yes we will ask Raju to take medicines regularly.

11. **Community bearing part of the expense**

C: But the medicines are usually costly, aren't they ?

M: Medicines are slightly expensive. Most of the drugs should be available at the health centre. If they are not available, it would be a good idea if all of you could help Raju in this regard.

Others: Yes, we can collect some money and help Raju to buy medicines. After all, his taking medicines is important for us too. otherwise he will spread it to us.

12. **Separate plate and glass for the patient**

D: Does a TB patient have to take any special foods ? Or are any food products to be avoided ?

M: There is no restriction on food intake. If possible, Raju should take vegetables, fruits and milk. If it is not available or affordable, he can take whatever is being prepared at home. It will be good if he kept a separate plate and glass for himself.

13. **Collage of previous cards**

A: This means we can help Raju and others with TB.

B: Yes, we can ask anyone suspected of having TB to attend a health centre.

C: We can encourage him to take medicines for the whole duration.

D: We can even collect some money to buy medicines if they are not available at the health centre.

E: We can ask the affected person to cover his mouth while coughing and sneezing. We can also tell him how to spit in a container.

F: In this way we can help the patient and prevent ourselves from getting the disease.

14. **Masterji leaving the group**

All: Thank you Masterji for telling us so much about TB.

M: It is really nice that you learnt about a common disease and what you can do to control it. TB can be controlled if everyone contributes his bit. Namaste, I must leave now.

All: Namaste Masterji and thank you.

*****

Please give your comments and suggestions on the script.

Dr.Anil P

pr:28061994/

DHS 4 : 3

Slide on Tuberculosis

Target Group - Health Workers

1. **A Health worker making house visits**

This is the story of Saroja bai, a health worker in a village of India. She is on her routine visit to houses in her village. She is entering the house of Ram Prasad.

2. **Saroja bai, with the family**

Ram Prasad lives in a small house with his parents, wife Radha devi and his children Suresh and Sudha. "Ramu kaka, you have become weak and thin" Saroja bai tells Ram "Don't you eat well now-a-days?"

"Behanji, I do feel tired and have lost interest in work" replies Ram.

"He has lost interest in food too" chips in Radha devi, his wife. "He doesn't eat his favourite dishes anymore".

3. **A man coughing**

Saroja bai starts thinking - what could be wrong with Ramu kaka?

"Do you have any other complaints?" she asks.

"I do cough a lot. I have been coughing out sputum for almost 2 months now. I have tried a number of medicines but it just doesn't go. Must be due to the dust. My chest also pains while coughing".

"Do you cough out blood?" Saroja bai queries.

"No, No. There is no blood. Once there was a small streak of red in the sputum about 2 weeks back. After that there has been nothing of that kind".

Saroja bai does some quick thinking. A clearer picture is emerging. "Let me ask one more question", she tells herself.

"Do you have fever, especially in the evenings?" she asks.

"Yes, his body is warm at night. He does not have high fever though", Radha devi added.

4. **4 Pictures- Coughing, Chest pain, Losing weight & Fever**

Saroja bai thinks over what she has heard. Ram Prasad has been having cough for more than a month with one episode of red colour in sputum (probably blood), chest pain, fever more at night, loss of appetite. He is also losing weight. All these indicate towards Tuberculosis. But she can not

be sure without getting him examined by a doctor.

"Ramu kaka, I feel that you should see a doctor. Once he finds out your disease, you will have to take medicines as per his advice".

"I am all right. I don't need to see a doctor. If there is any medicine you can give me, let me have it".
"You don't understand the seriousness of the situation. Kaki, why don't you tell him to be a bit more serious and take care of himself?".

5. **Saroja explaining to the shocked couple**

Radha: "Why, what is wrong with him? I hope it is not anything dreadful. Please tell us what is he suffering from?"

Saroja: "The disease has to be confirmed by the doctor. But I feel that it could be Tuberculosis".

Ram & Radha: "Oh no, not TB. O God what did we do to get this curse. Our lives are ruined now".

Saroja: "Please try to understand, TB is not due to any curse. It is a communicable disease caused by a germ. And TB is completely curable if medicines are taken as advised for the specified duration. What is important is that treatment should start early to prevent its spread to other members of your family and community".

Ram & Radha: "We shall go with you to the doctor tomorrow"

6) **Doctor examining the patient**

All three of them visit the doctor who examines Ram. He asks Ram to get his sputum examined and come back the next day.

7) **Doctor explaining to the patient**

Doctor: "Ram, you are suffering from TB. You don't have to worry. TB is curable if you take the medicines I give you. You will feel better after about 2 months of medication, but you shouldn't stop taking medicines then. You should have it for the complete duration of treatment".
Then to Saroja devi he says "You can tell them more about TB and clear their apprehensions".

8) **Microscopic view of the Tubercle bacilli**

Ram and Radha: "Tell us more about TB".

Saroja: "As I mentioned earlier, TB is not a curse of God or due to fate. It is caused by germs in sputum (shown in the

picture) and spreads by spitting and coughing. TB kills about one Indian every minute. But you don't have to be frightened. Anti TB drugs if taken regularly for the prescribed period completely cures the disease. If you stop the treatment in between, TB comes back later in a more dangerous form (drug resistant bacteria)".

9) **Some Anti TB drugs**

Ram: "What are the drugs I will have to take and for how long?"

Saroja: "There are various courses of treatment available. Some are for six months, some for nine months and some for more than a year. The exact duration of treatment and drugs to be taken will be decided by the doctor. But whatever the time specified, you will have to take medicines for the whole duration and not leave it in between. The medicines usually given include INH, Thiacetazone, Pyrazinamide, Rifampicin, Streptomycin, Ethambutol etc.

10) **Coughing with mouth covered**

Ram: "Can I go to work while on treatment?"

Saroja: "Yes, but you will have to take care not to spread the disease around. You should cover your mouth while coughing or sneezing. This will prevent the germs from spreading to other people".

11) **Spitting into a container with a lid**

Radha: "What about the family? Can the children be affected too?"

Saroja: "Yes, care has to be taken to see that your children don't get the disease. It would be nice if Kaka could sleep in a separate room or away from children for the initial 2-3 months. He should cought into a container and cover it with a lid. The sputum collected should be discarded everyday."

12) **Patient taking Medicines**

Ram: "Where will I get the drugs from? I understand that the medicines for TB are very expensive.

Saroja: "Yes, medicines for TB are a bit expensive. But you will have to take them. Medicines are usually available at Govt. hospitals. Even if they are not available, you should try and take the medicines. Radha, you should ensure that he takes the medicines regularly".

13) **Patient looking better**

Ram Prasad started taking medicines. After 2 months, he was feeling much better. He didn't cough out sputum, his fever

had come down, he no longer felt tired and was eating well again.

14) **Saroja encouraging the patient**

Saroja visited Ramprasad regularly and encourages him to continue taking medicines. Ram didn't want to take all the medicines since he was feeling better.

Saroja: "Remember what the doctor had warned. You should take the medicines for the whole duration or the dangerous kind of TB will affect you later".

Radha also encouraged Ram to take the medicines. Ram agreed and took the medicines regularly for the whole duration.

15) **A happy and contended Saroja**

Ram has been declared cured of TB today. Saroja is very happy. She knows that she has played a very significant role in diagnosing the disease early and encouraging Ram to complete the treatment.

*****

Please give your comments and suggestions.

Dr. Anil P

TUBERCULOSIS IN CHILDREN -- SOME ISSUES

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NATIONAL CONSULTATION ON TUBERCULOSIS
ORGANISED BY VHAI

Tuberculosis remains a major health problem in the world, to date causing 1-2 million deaths annually. Epidemiological data further indicates that it is more prevalent in the younger population. Childhood tuberculosis contributes significantly to the morbidity and the mortality of this age group. The prevalence of active disease in the overall population is 15 - 25 per 1,000 population with about 25% of them being open or infectious cases. Prevalence of primary infection in child population is also very high. Nearly 3.4 million children in the country have tuberculosis while 94 million are at risk of infection. In India, 40% of the children by the age of 6 years and 80% by the age of 16 have gathered tubercular infection. The annual rate of infection is about 3% (Table 1).

Table 1

Age Group	ARI
0 - 4 years	2.8%
5 - 9 years	4.4%
10 - 14 years	5.8%

(Tripathy et al 1986)

Childhood tuberculosis is commonly a result of contact with a tubercular case. A contact study carried out in British Columbia and Saskatchewan (Canada) in late 1960s and early 1970s (Table 2) showed significant risk of developing active disease even in casual contacts, risk being highest with a sputum positive case contact.

Table 2

	Bacteriological status of source		
	Sputum +	Culture +	C - S -
Intimate contacts			
No of contacts	549	143	72
% active Ds	38	15	10
Casual contacts			
No of contacts	308	52	24
% active Ds	23	17	--

A child in close contact with a tubercular adult is at a greater risk if he also has measles or whooping cough (preventable communicable diseases also occurring with high incidence in the country). Further there is enough evidence to show that children having primary infection are likely to go into progressive severe disease. Even BCG vaccinated children can develop tubercular disease following infection. Unfortunately there is a narrow difference between infection and disease in very young children who incidentally are also at a higher risk to develop severe disseminated form of the disease. About 10 - 15 % of the children infected with tubercular bacilli develop disease and a similar percentage of those with disease are infectious. Nearly 4 - 10% of the deaths in children are related to tuberculosis.

Diagnosis of Childhood Tuberculosis

There is no gold standard for the diagnosis of tuberculosis in children in the absence of significant sputum or gastric aspirate positivity. This problem is further compounded by the master mimicker nature of the disease, which can involve any part of the

body. Diagnosis of tuberculosis in children is primarily based on

- Clinical history and Examination,
- Family or contact history,
- Immunization status,
- Radiological findings,
- PPD test,
- Sputum / GA for AFB,
- FNAC / Biopsy

Tuberculosis even though being a common disease yet poses a problem for definitive diagnosis. More often than not the diagnosis is based on indirect evidence. Symptomatology of the disease is often vague general illhealth and failure to thrive. The diagnosis may be further confounded by other childhood problems of repeated chest infections, back to back viral infections, cough variant asthma, etc. all presenting as chronic cough. Similarly physiological hyperplasia of the lymphnodes may be misdiagnosed as tubercular on the basis of concomitant PPD positivity. Diagnosis of primary pulmonary complex is also difficult and often soft fluffy shadows in a little under penetrated expiratory film are wrongly labeled as PPC. Tuberculin positivity though actually a mere index of infection, is frequently used as an evidence of disease in the presence of other features. Tuberculin test, however, can be negative in a significant proportion of proven tubercular cases (Table 3) due to a variety of factors like severe malnutrition, measles, immunosuppression or milliary tuberculosis.

Table 3

Tuberculin Positivity in Proven Cases of Tuberculosis

		Types	% Positivity
Ramchandran et. al.	(1971)	All	60
Choudhury et. al.	(1971)	All	46
Udani et. al.	(1971)	All	73
Udani et. al.	(1974)	Miliary	38
Bhave et. al.	(1977)	TBM	39
Agarwal et. al.	(1979)	All	51

BCG vaccination and its relationship to PPD positivity has been another area of confusion. Mean size of induration in vaccinated children between 3 mo to 3 years of age in vaccinated children is between 5.1 - 8.9 mm compared to 3.5 - 6.5 mm in non vaccinated group. About 25% of children have reaction between 10 - 16 mm just 3 months after vaccination. A positive tuberculin test should not be ascribed to BCG because the skin reaction conversion in vaccinated children is < 100 %, the mean reaction is < 10 mm and the tuberculin sensitivity tends to wane with time.

There has been a tendency on the part of the clinicians to treat children with strongly positive PPD reaction. Tuberculin reaction is merely an index of infection, the degree of its positivity and local ulceration are no indication of an active disease. Some of the studies have however suggested that stronger reactions may be associated with higher risk of developing disease later on (Groth Peterson 1959, Heath 1959). The relationship between tuberculin reaction and the size of infective inoculum is not well estab-

lished and at present there is little evidence to suggest treatment of such strongly positive individuals.

There is a distinct group of tuberculin positive individuals who need to be given chemoprophylaxis as they are at a higher risk of developing the disease e.g. any child on immunosuppressive drugs or severely malnourished child below 3 years, a recent converter, child with measles or whooping cough, child below 2 years of age in contact with a sputum positive individual irrespective of his nutritional status.

In the absence of any consensus or definitive method of conclusively diagnosing tuberculosis in most children certain scoring systems (Table 4) have been devised for diagnosing tuberculosis. However these scores heavily weigh towards AFB or granuloma isolation which is frequently not possible due either to the nature of the disease or due to operational difficulties. These can at best be used as a research tool.

Table 4

Scoring System for the Diagnosis of Tuberculosis

	Stegen et al	Nair et al	Seth V
AFB seen	+3	+5	+5
Tubercle	+3	+5	+5
PPD positive	+3	+3	+3
Suggestive Xray	+2	+3	+3
Compatible Signs	+1	+3	+3
Sput + in family	+2	+2	+2
Age < 2 years	+1	+1	+1
Nonspecific S/s	--	+1	+1
Nonspecific Xray	+1	+1	+1
BCG in last 2 yrs	-1	--	--

Score >= 7 TB Certain, Score 5-6 Probable TB

Treatment of Childhood Tuberculosis

Short course chemotherapy in children has as yet not been fully evaluated. The existing data though encouraging has shown certain shortcomings like partial clearance of pulmonary lesion radiologically or need for extended therapy in children with lymphnode TB (Varudkar 1985).

The controversy regarding correct dose of INH (5mg/kg vs 10mg/kg) is still continuing. The newer studies have shown the lower dose to be as efficacious with advantage of lesser side effects particularly the cumulative hepatotoxicty of the various combinations presently in use. There is an increasing load of multidrug resistance cases in children and the need for developing treatment modalities for such cases atleast in the tertiary centres.

The parental attitudes towards the disease and its treatment are the major limiting factors in completion of therapy. The rarity of the horrifying symptoms such as hemoptysis delays the utilisation of proper health facilities.

National Tuberculosis Program and Childhood Tuberculosis

Under the revised strategy of National Tuberculosis Program there is a focussed emphasis on the management of the sputum positive cases so as to decrease the pool of infectious cases as a strategy to decrease the tubercular transmission. This strategy, though very sound, doles out a poor deal to children as most of them can not produce sputum. The short term therapy as planned under the program for the tubercular lymphadenopathy may not be sufficient in the light of existing experience.

The various areas requiring special effort and operational strategies as they emerge today for the control of childhood tuberculosis are:

i) Study of prevalence and risk of infection in the country, particularly the baseline estimates in the areas of planned intensification,

ii) Estimates of ARI and prevalence in the under privileged and vulnerable sections like urban slums,

iii) Increased emphasis on tuberculosis in the medical curriculum,

iv) Training and inservice orientation programmes,

v) Evaluation of short course chemotherapy and multi drug formulations,

vi) Treatment modalities for drug resistance cases,

vii) IEC to understand parental attitudes and knowledge and also to identify the barriers to treatment.

LE FIGARO
premier quotidien national français
A XX MARDI 6 JUIN 1995 (N° 15 799) - ÉDITION DE 5 HEURES - PRIX : 6,00 FRANCS

MÉDECINE Le constat de catastrophe de l'OMS

La tuberculose dopée par l'épidémie de sida

Les souches de bacille résistantes aux médicaments les plus courants se multiplient et l'explosion de la maladie est favorisée par la multiplication des cas d'infection par le HIV. L'infection progresse actuellement au rythme d'un nouveau cas par seconde.

GENÈVE :
Laurent MOSSU

« Le problème de la tuberculose n'est plus maîtrisé. » Selon le Dr Paul Nunn, chef de la recherche au programme mondial de lutte contre cette maladie à l'Organisation mondiale de la santé (OMS), la situation va s'aggravant. Renforcée par l'épidémie de sida, la tuberculose représente, à ses yeux, une menace toujours plus forte, notamment en raison des négligences dont on a fait preuve dans le passé.

L'OMS, qui s'efforce depuis plus de deux ans d'alerter et de mobiliser les gouvernements, avait rassemblé la semaine dernière à son siège de Genève des experts des deux infections, les appelant à définir une nouvelle stratégie de recherche. Il importe, selon l'institution, de déterminer les principales activités de recherche et les mesures susceptibles d'améliorer la lutte antituberculose dans les zones où l'infection à HIV est majeure ou en progression.

La tuberculose fera 30 millions de victimes au cours de la prochaine décennie. (Photo Vogel/Reuter.)

Dans l'air ambiant

L'urgence n'est plus discutable. La tuberculose est devenue la principale cause de décès chez les séropositifs. Et, pour l'OMS, la menace d'une tuberculose incurable se précise. Alors que des programmes inefficaces de lutte favorisent la propagation de souches de bacille pharmacorésistantes, le moment n'est pas loin, craint l'OMS, où, faute de réactions, on se trouvera à nouveau sans traitement, à part l'isolement des malades dans des sanatoriums.

La tuberculose fera 30 millions de victimes au cours de la prochaine décennie. Elle frappera 90 millions de personnes, et des centaines de millions d'autres rejoindront le 1,9 milliard d'individus infectés. Pour l'OMS, les perspectives sont claires. Faute d'une campagne mondiale de grande envergure que le monde a jusqu'ici hésité à entreprendre, les chiffres augmenteront au siècle prochain ; et, si les malades contagieux ne sont pas guéris, l'infection continuera de progresser au rythme d'un cas par seconde.

Les chercheurs estiment désormais que 50 à 100 millions de personnes pourraient être infectées par une forme de tuberculose résistante à un ou plusieurs des médicaments courants. Une étude menée en 1991 dans la ville de New York a révélé qu'un tiers au moins des malades étaient touchés par une forme pharmacorésistante. Et 5 % d'entre eux l'avait développée à l'encontre de six voire sept médicaments.

D'ici le tournant du siècle, un tiers environ des décès des séropositifs au virus du sida seront dus à la tuberculose. Certaines statistiques font d'ores et déjà état de pourcentages supérieurs. Ainsi, à Abidjan, on estime à 32 % la proportion des cas de sida morts par tuberculose. C'est désormais en Asie que le HIV se propage avec la plus grande rapidité. Dans cette région du monde, l'infection par le bacille tuberculeux est encore plus répandue qu'en Afrique.

Diagnostic plus difficile

Le germe de la tuberculose est transmis dans l'air ambiant par une personne qui tousse ou même à la faveur d'une simple conversation. Il est manifeste que les HIV-positifs risquent davantage d'être infectés par l'inhalation. Et l'OMS a pu établir que le risque de tuberculose évolutive est 30 fois plus élevé chez les sujets infectés par la tuberculose et le HIV que chez les sujets touchés par le seul bacille tuberculeux.

Il y aura à l'avenir, dit l'OMS, davantage de porteurs et de propagateurs du germe de la tuberculose dans les populations auparavant non contaminées. Il suffit pour s'en convaincre de constater que le nombre accru de cas de contamination par le virus du sida entraîne une augmentation des tuberculoses infectieuses. Cette situation est d'autant plus alarmante que la présence du HIV rend le diagnostic de la tuberculose beaucoup plus difficile à établir. Et l'expérience montre, de plus, que les séropositifs font souvent un test négatif pour la tuberculose, alors qu'ils sont bel et bien atteints par la maladie.

Pour le Dr Nunn, les activités actuelles de recherches sont bien souvent très éloignées des priorités actuelles. *« On alloue des fonds à des projets qui n'auront aucune efficacité ou utilité pratique. On privilégie des travaux qui ne le méritent pas en sacrifiant ceux qui devraient être soutenus. »* Ainsi, dit-il, les bailleurs de fonds ont-ils contribué à financer des activités de recherches biomédicales étroitement ciblées. Elles n'auront guère d'utilité pratique dans la lutte contre la co-épidemie de sida-tuberculose.

Le groupe d'experts a, dans ses conclusions, tracé la route à suivre. Il prône la reconnaissance de cinq actions prioritaires : **1)** améliorer le diagnostic et le traitement de la tuberculose chez les sujets infectés par le HIV ; **2)** évaluer le rôle et la nécessité d'un traitement antituberculeux chez les populations vulnérables ; **3)** coordonner et intégrer les activités de recherche menées par les services chargés de la tuberculose et ceux du HIV au niveau du district dans les zones à forte prévalence de sida, notamment en mettant l'accent sur le rôle du secteur privé ; **4)** explorer les obstacles empêchant les tuberculeux de demander des soins ou de continuer à se faire soigner dans les zones à forte prévalence de HIV ; **5)** entreprendre une étude critique des dépenses actuelles de lutte antituberculeuse dans les communautés durement touchées par le sida.

Ces orientations devraient nous aider à éviter une catastrophe plus grande encore, note le Dr Arata Kochi, responsable du programme tuberculose de l'OMS. Tous les participants ont par ailleurs longuement souligné que les pays en développement n'étaient pas les seuls concernés par cette évolution catastrophique.

« Avec le développement des transports modernes et de l'immigration et la progression de l'épidémie d'infection à HIV, la tuberculose a retrouvé une tête de pont importante dans le monde industrialisé. »

L. M.

The New York Times

SUNDAY, JUNE 4, 1995

AIDS and Tuberculosis Epidemics Rise in Deadly Combination

By WARREN LEARY

WASHINGTON, June 3 — Tuberculosis has become the leading cause of death worldwide among people infected with the virus that causes AIDS, the World Health Organization says.

International health officials met last week in Geneva to determine how to cope with the growing threat of the deadly combination of AIDS and tuberculosis. They said that the dual epidemics are not only causing more deaths, but that they also are undermining efforts to control each of the diseases.

As the incidence of infection with H.I.V., the virus that causes AIDS, rises in Asia and other parts of the world where tuberculosis is common, the highly contagious lung disease will take an even greater toll on people whose protective immune systems have been weakened by H.I.V., the officials said Friday. By the end of the decade, they said, about one-third of all deaths among H.I.V.-infected people will result from tuberculosis.

"Because of past neglect in diagnosing and treating tuberculosis, the disease is out of control in many parts of the world," Dr. Paul Nunn, chief of research for the W.H.O. Global Tuberculosis Program, said in a telephone interview. "Now the H.I.V. epidemic has made tuberculosis an even greater menace, including reversing many of the gains we had made against tuberculosis over the years."

The presence of H.I.V. infection also makes diagnosing tuberculosis harder, he said. H.I.V.-infected people often falsely register negative for tuberculosis with common tests that require an immune response, resulting in delayed treatment and increased chances of passing the lung disease on to others.

Participants at the W.H.O. meeting called for more cooperation between H.I.V. and tuberculosis research programs as well as more studies on how to improve the diagnosis and treatment of tuberculosis in H.I.V.-infected people.

Tuberculosis is a bacterial disease transmitted through the air. Those infected with the tubercle bacillus, which produces symptoms that include fever and violent coughing, can spread the germ to others through sneezing, coughing or even talking. The disease, in active or latent form, infects hundreds of millions worldwide and kills three million people a year, health officials say.

An estimated 16 million people worldwide are infected with H.I.V., including about 10 to 12 million people in Africa and up to 1 million in the United States, Dr. Nunn said. Those infected with the virus become increasingly susceptible to diseases like tuberculosis that prey on weakened immune systems.

The diseases that exact the greatest toll among H.I.V.-infected people vary from country to country, experts said. Tuberculosis is the major killer in Africa, where it is responsible for the deaths of about 40 percent of those infected with H.I.V. In the United States, where tuberculosis also is on the rise among those who are H.I.V.-positive, the major killers are pneumonia and kaposi's sarcoma, a cancer.

The United States Centers for Disease Control and Prevention released a report last week that said there were 24,361 new cases of tuberculosis in the United States in 1994, down 3.7 percent from 1993. This was the second year of a decline following an eight-year surge from 1985 to 1992, when new tuberculosis cases rose 20 percent.

The increase has been blamed on cutbacks in control programs, increased immigration from countries where tuberculosis is prevalent, the emergence of drug-resistant strains of the tuberculosis bacteria and the rise of AIDS.

TB germs are transmitted through the air, spreading from person-to-person through coughing, sneezing or even talking. As the disease progresses it is characterized by fever, weight loss and violent coughing which effectively disperses the bacteria to infect surrounding individuals. People who are HIV-positive are probably more likely to be infected with TB than people who are HIV-negative when inhaling TB germs. And people who are co-infected with TB and HIV are 30 times more likely to become sick with TB than people infected only with TB. Because increased HIV cases result in increased cases of infectious TB, larger numbers of people will carry--and spread--this germ to previously healthy populations. Additionally, the presence of HIV also makes diagnosis of TB much more difficult. People who are HIV-positive often falsely test negative for TB, even though they are ill with the disease.

"As a result of past neglect, TB has already spiralled out of control," said Dr Paul Nunn, Chief of Research for the WHO Global TB Programme. "But today, fuelled by the HIV epidemic, TB represents an even larger menace. That is why it is vital that today's narrow TB research agenda be broadened to reflect the complications caused by HIV/TB infection."

Nunn believes that around the world much current research does not come close to reflecting today's priorities. "Money is being wasted on projects that will be neither practical nor effective," he said. "There is widespread misallocation as well as underfunding. For example, donors have continued to fund narrowly-defined biomedical research that will simply be too costly to be practical in battling the HIV/TB co-epidemic."

To address this situation, the Global TB Programme is seeking a new partnership with leading scientists and academics from the TB and AIDS communities to help communicate these priorities to leading agencies.

"It is vital that TB and HIV programmes work together in research efforts. This interaction would greatly benefit everyone involved," said Dr Hans Moerkerk of the Netherlands' Ministry of Welfare and Chairperson for the WHO research meeting.

The group agreed upon a set of the most pressing research needs surrounding the HIV/TB co-epidemic. These are to: 1) improve diagnosis and treatment of TB in HIV-infected individuals, 2) assess the role of and need for preventive TB therapy for vulnerable populations, 3) research coordination and integration of TB services with HIV services at the district level in areas of high HIV prevalence, including emphasis on the role of the private sector, 4) explore the barriers which impede TB patients from seeking and continuing care in high HIV prevalence areas, and 5) conduct a critical study of current expenditures for TB control in communities badly effected by HIV.

"These research priorities will hopefully help us avoid an even worse TB catastrophe in the future," said Dr Kochi. "We already know that directly observed treatment, short-course (DOTS) cures TB," he continued. "DOTS is inexpensive, and it works. But the numerous barriers to proper treatment of HIV-positive people must be addressed."

Consensus existed in the group that there is still limited time to take action. With correct research priorities, progress can be made towards lessening the devastating impact of the HIV/TB co-epidemic, especially in Asia where the problem is multiplying.

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TB HAS BECOME WORLD'S LEADING KILLER OF HIV-POSITIVE PEOPLE

Medical Community Ill-Prepared to Cope with Rising Threat

Tuberculosis is the leading killer of HIV-positive individuals on a global scale. Health programmes are currently ill-prepared to tackle the crisis. In response, a special meeting of AIDS and TB research experts was convened this week by the World Health Organization's Global Tuberculosis Programme to identify the most relevant research and action to improve TB control in areas where HIV infection is prevalent or increasing.

"The HIV/TB dual epidemic is undermining efforts to control TB," warned Dr Arata Kochi, Director of WHO's Global TB Programme. "As the incidence of HIV rises in Asia, tuberculosis will take a deadly toll on those dually infected, killing almost one-third of HIV-positive people, and infecting many of their contacts with TB including those who are HIV-negative. Appropriate research and action are urgently needed to tackle this problem."

The Global Tuberculosis Programme, in cooperation with the Global Programme on AIDS, is mobilizing medical experts from industrial and low-income countries to develop a new HIV/TB research strategy. This strategy will seek to improve TB control programmes already disabled by growing HIV prevalence and to prevent devastation of TB programmes in countries with a newly emergent HIV problem. The new Joint UN Programme on AIDS (UNAIDS), which will become operational in January 1996, intends to further cooperate with the Global TB Programme.

By the end of the decade, around one-third of all deaths among HIV-positive people will result from TB, according to Global TB Programme estimates. In Abidjan, for example, 32 percent of AIDS cases were considered to have died from TB. HIV is now spreading most rapidly in Asia where TB infection is even more widespread than in Africa.

"The co-epidemic complicates efforts to care for AIDS patients and to identify and treat TB patients," said Dr Anthony Harries, a physician at Queen Elizabeth Central Hospital in Blantyre, Malawi. "Health workers are having to deal with ever-increasing caseloads of patients with HIV and TB, and are struggling to manage their programmes while limited by a shortage of manpower and funds, and hampered by a lack of appropriate technology."

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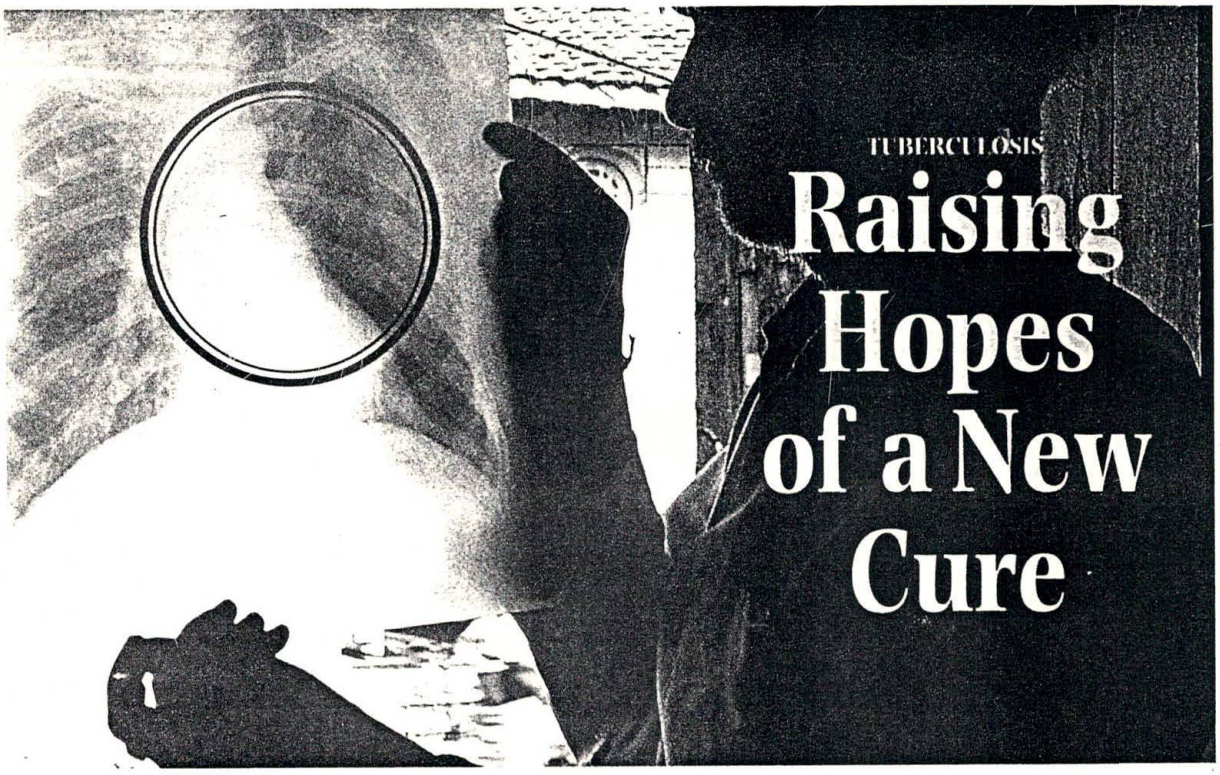


TUBERCULOSIS

Raising Hopes of a New Cure

Pilot TB-control projects run along WHO guidelines report significant success. But can they be replicated nationwide?

By ARUN SUBRAMANIAM

ALL along, the news has been grim. With 16 million cases, India accounts for almost half of the world's burden of pulmonary tuberculosis. Every year, 5,00,000 die of the disease. The national TB-control programme has proved largely ineffective, unable to check the spread of the disease. On an average, barely 35 per cent of patients get cured while an equal number get infected each year. Last fortnight, however, there appeared a glimmer of hope.

Significant successes were reported in five pilot TB-control projects covering 2.35 million people in Delhi, Bombay, Calcutta, Bangalore and Mehsana in Gujarat. These projects, initiated in 1993 under a new strategy recommended by the World Health Organisation (WHO), have been able to cure 83 per cent of the patients. And according to Rohit Sarin, national consultant on TB-control with the Centre's Directorate of Health Services, after just two months of treatment, 95 per cent of sputum-positive cases—those in a highly infectious state of the disease—had turned sputum-negative.

The WHO strategy is simple but a radical break from traditional methods of treatment: instead of relying on the patient to take the right dose of the right medicine, WHO recommended that health workers directly administer the drugs. The strategy, called DOTS (Directly Observed Treatment short course), which refers to a six-month regimen of chemotherapy, has proved successful in countries as diverse as Tanzania and the US.

Encouraged by the success, the Government has sought World Bank help to extend the pilot programme to cover 15 project sites in 10 cities and five states, covering a population of 14 million. But can the WHO strategy be replicated nationwide with the same success?

Successful pilot projects highlight the limitations in the Government's three-decade-old TB-control policy.

There are no definite answers yet. What's clear is that the success of the pilot projects has highlighted the limitations in the Government's three-decade-old National Tuberculosis Control Programme (NTP). In September 1992, a review of NTP by a government and WHO team had recognised its shortcomings. "Recent trends are discouraging," the review said, "indicating a programme which does not have any measureable impact and which appears to function far below its potential." The major reason for the NTP's failure, the review concluded, was its confusion over priorities: the NTP has been detecting cases and then treating them when it should have given priority to treating the most infectious (sputum-positive) cases.

Radiological evidence is often misleading

There were other drawbacks as well. Although microscopic examination of sputum is the recognised technique to diagnose TB, enormous resources were being squandered treating cases diagnosed on clinical and radiological evidence. Result: many respiratory disorders have been wrongly diagnosed as TB. Worse, treatment based on a misdiagnosis of the stage of the disease led to the development of drug-resistant strains of the bacteria. The programme has also been critically underfunded. Drugs for treating the 3.4 million infectious cases—at Rs 500 for each patient—cost Rs 170 crore, but the NTP was provided less than 1 per cent of that.

The review team suggested a shift in the NTP's emphasis from case detection to what it called treatment completion. Also, it recommended improvement in diagnosis, adoption of six-month, short-course chemotherapy, better

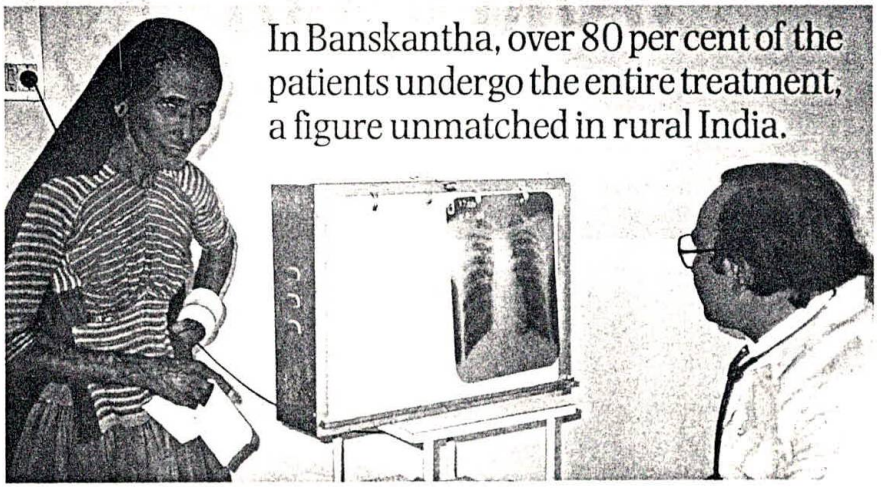
monitoring of patients and an uninterrupted supply of drugs. Much of this has been implemented in the pilot projects.

But can these methods be extended to every clinic and health centre dealing with TB? Quite unlikely. For one, almost 50 per cent of all TB cases are treated by private practitioners who employ a variety of treatment methods. A survey of 102 practitioners in Bombay found as many as 80 different drug regimens being prescribed. But equally, the efficacy of DOTS on a wider scale is open to question. According to M.W. Uplekar, research consultant at Bombay's Foundation for Research in Community Health, DOTS is "operationally more demanding". Experts say that not only does DOTS appear impractical for a highly scattered rural population, it also requires financial, technical and manpower support on a scale far beyond what the NTP—with an annual budget of about Rs 50 crore—can offer.

The Government has sought a $200 million loan from the World Bank to fund the revised NTP over the next five years. But as Sarin points out, that's barely sufficient to cover 20 per cent of all TB cases. Moreover, some experts fear that overemphasis on DOTS will drain resources from alternative, less expensive, local strategies for TB control.

One such strategy is evident in a unique programme in the backward and drought-prone district of Banaskantha in Gujarat. Started in 1984 and run by the Bhansali Trust, the TB-control programme now has 1,800 patients and has achieved WHO targets at a fraction of the cost. Over 80 per cent of the patients go through the entire course of treatment, a figure perhaps unmatched anywhere else in rural India. How? Primarily because it has been able to raise awareness and greatly involve health-care workers.

In Banskantha, over 80 per cent of the patients undergo the entire treatment, a figure unmatched in rural India.



A patient at the Bhansali Trust clinic: benefiting from awareness and health workers' involvement

REVISIONS IN CENTRE'S TB-CONTROL PROGRAMME

THEN	NOW
OBJECTIVES	
Case detection & treatment	Case holding & cure, priority to infectious cases
DIAGNOSIS	
Clinical and X-ray, minimal use of sputum microscopy	Sputum microscopy backed by X-ray
TREATMENT	
Short course for infectious cases, one year multi-drug therapy	Six-month, multi-drug therapy (short course) for all
DRUG ADMINISTRATION	
Left to patient	Supervised by health worker
RECORDS	
Focus on targets	Focus on treatment results
ORGANISATION	
District TB centre and general health workers	Additional medical officer and laboratory supervisor at sub-district level and decentralised treatment in community
MANAGEMENT	
Assistant DG, Health Services (TB)	Deputy DG+4 Assistant DGs+ Consultants

For instance, it gets referrals from former patients and *anganwadi* workers of the Central Government's Integrated Child Development Scheme, who are paid Rs 15 for every case detected. A village TB register is maintained by the *anganwadi* worker who visits patients regularly. Before treatment begins, workers visit the family to explain the importance of its completion. Whenever a patient fails to collect the drugs, the *anganwadi* worker is informed and one of the Trust's 20 TB workers visits the patient for counselling.

Uplekar attributes this success to the trust's high credibility—it has served the community for several years—and to the fact that all patients are diagnosed using both sputum microscopy and chest X-ray. The latter is an important psychological aid as patients appear to have great faith in it, something that the NTP's revised strategy doesn't appreciate.

But perhaps the programme's greatest strength lies in its novel mode of educating and motivating patients, their peers and their families. This does away with the need to administer the drugs under supervision as advocated by the revised NTP, thus saving on money and manpower. As trustee Ashok Bhansali sums it up, "Banaskantha might be one of the most illiterate districts in the country, but we're highly educated as far as TB is concerned." ■

Rapid Assessment TB
Data Collection Guidelines

Dr.W.Dechering, Femconsult,
The Hague, Netherlands

S. T. Chander

Data Collection Guidelines Rapid Assessment TB
Dr.W.Dechering, Femconsult

Objectives of the TB study
The project will have two components with the following objectives:

1. To carry out a social assessment in selected area of urban slums. This will entail identifying, in conjunction with the research institutes, the incidence of symptomatic cases (potential project beneficiaries) in selected urban centers with a focus on slum areas in the cities of bangalore, Pune, jaipur, Lucknow and Hyderabad; the availability and the quality of services for TB treatment, the individuals 'perceptions and attitudes towards TB, their understanding of the disease and its curability, their health seeking behavior, and the availability and utilization of health services for TB treatment. the studies should take into account gender differences, socio-economic status and other relevant demographic and social factors.
Specifically, the studies would involve:

a) Identifying two or more urban areas of different characteristics, including slums, in each of the five cities and develop a sampling procedure to obtain representative populations from each area.

b) Identifying symptomatic patients (i.e. patients with productive cough for more than two weeks)and obtaining information on their perceptions and interpretations of the symptoms, knowledge of causes, transmission and cure of TB, attitudes towards TB and health seeking behavior of individuals who become symptomatic with special attention to gender differences.

c) Identifying individuals who have been treated for TB to determine if, when and where they sought treatment, type and duration of treatment, experience with health providers and current health status.

d) Determining the current distribution, capacity and accessibility of health facilities in the study area and Identifying the referral sytems at work, if any. This would involve obtaining information on the knowledge, attitudes and perceptions of health staff regarding TB and TB patients.

e) Assessing the beneficaries' utilization of existing public health care facilities(public, private and those run by non-governmental organizations (NGO's), traditional healers and other health care providers when they become symptomatic by following up through exit interviews with users of selected health facilities.

f) Determining the reasons for failure to complete treatment by reviewing the records of defaulters from health institutions and following up with them at their home or workplace.

The most important goal of this study is to come up with ideas on IEC!. What is the information people use; rely on; what decision is based on what information; what are the information channels (friend; neighbour; health worker; radio; tv; newspaper; pamphlet,etc.) How is the communication between doctor and patient? How between health staff and patient? In all these situations that are part of this study, make always a in depth study how information is used and what communication has taken place.

Data collection guides

Emic approach to TB and related concepts

method : interview/conversation

City:
Slum area:
Household (identification):
Informant(s):
Date of interview:
Education: number of years
Ethnic group:
Language:
OCCUPATION / INCOME
What names do people use for cold/cough/bronchitis/pneumonia/wheeze/whooping cough/etc.?

Make a list like:
KSHAYA ROG (Maharati+Hindi)
KHAY ROG =rural maharati slang
RAJ Yakshma = upper class
BAD BIMARI (Hindi) specifically for TB.
CHOOTH KI BIMARI (used for leprosy /TB both)
TAPEDIC — Ayurvedic name.

Kannada- Kshaya Roga
" Rogam. (Telugu)
Flem :- Kafa. Kafam, Balgam (Urdu)

Ask what the relation is between the terms. Is A related to B and how?
E.g. is bronchitis a form of pneumonia? Is cold more serious than bronchitis?

Ask the people to describe symptoms of the terms or other relevant characteristics.

When we do some of these interviews, we gather information on the beliefs that people have on TB. Once these are known we can make use of them in a more systematic way by making belief frames. We can make up a list of belief frames.

For example : .....(name of disease) can you get from other people.
.....(name of disease) is transmitted by air
.....(name of disease) is transmitted by food
.....(name of disease) is transmitted by sex.

The informant is asked whether a belief is correct or not:

- Utensils or cloths of patients with TB have to be kept separated.
Correct: yes/no

- TB is curable. Correct: yes/no
- If you feel better, can you stop the treatment? Correct: yes/no

Among the beliefs check these opinions:
- TB can be treated in 3 months/6 months/9 months/12 months/18 months?

- Drugs from TB clinics are different than the drugs from the private doctors/pharmacies? In what sense?

- A person with TB has to be avoided (stigma)
- TB destroys the chance of marriage for a girl.

Perceived gravity or seriousness of each illness

Appropriate remedies or treatments inclusive home remedies

Expenses associated with treatment (Sample hypothetical questions: "What would you do?" "What would you do if you had more money?"

What can be (is,was) done to prevent each illness?

Rapid assessment

Slum Selection

selection of two areas:
One area where the people have been living for a longer time; where they experience a sense of security and start investing in their houses; where they have a good knowledge about the health institutions available; where there is some regularity of work.
The second area is more characterised by recent settlements: people have not regular income; lack of basic amenities; probably low level of knowledge of health institutions.

A map must be made for the area: on the map the doctors, dispensaries, govt. institutions have to be indicated. Also the shop with medicines against a cold; and the pharmacies. & Distance

Housing characteristics.
For all interviews that take place in the slum we want to check for the different characteristics of the building material for the house.

The following checklist give some ideas:
walls/roof
- wattle/matting with and without mud
- jute cloth
- plastic
- mudbrick/stone
- raw brick
- plaster of joints
- plastered
- tin sheet/asbestos sheet
- cement

doors & WINDOWS
- cloth
- wattle/mat
- tin sheet
- wood

floor
- rough ground
- smoothed earth
- stone/bricks rough or fitted
- cement

number of floors: 1,2 storey

Washing space
- token wall-rag
- frame wattle
- wall
- wattle/matting
- mud brick
- cement

road patu
- mud
- packed earth/drain ditches or not
- brick
- stone

Cooking - Fuel, Firewood, Gas, kerosene stove etc.

cement

- What is the area in square feet of the rooms?
- Is the house damp?
- ELECTRICITY
- POSSESSION
- ELECTRONIC GOODS
- WATER
- SANITATION

Household survey of symptomatic cough cases.

The team working on symptomatic cough patients should do a survey of a cluster type.
They should select about 100 households along a street or select a block where the houses on the main street are selected and the houses interior.

We have also discussed the possibility of taking all houses along a spiral. The width of the spiral is about 2 houses.

In the questionnaire the following questions have to be asked.

1. Are you concerned about the plague?
2. With how many members do you live here?
3. Had any members cough during at least the last 14 days?
   Who?
4. What action has been taken: - Home remedies
   - Private doctors: MBBS
   Ayurvedic
   Homeopaths
   - Govt. Hospital/dispensary:.....
   which?
5. What was the diagnosis? cold/pneumonia/TB/other .....

of recall

Use of and experiences with official health resources
methods: interviews, conversation's

City:
Slum area:
Household (identification):
Informant(s):
Date of interview:

When did you last use the official(government) health resource? What for?
- Dispensary/ Maternity Home
- Hospital
- District TB Centre

Is it easy for you to go there? (transport facilities; cost; duration)

What do you think about the services?

Has any health worker visited your household in the last two weeks? In the last month? In the last year? ever?

When was the last visit? What was it for? What advice was given? materials left?

Where did you go to for sputum research?

Was this always done at a govt. clinic ? Or did you also go to private clinic/lab?

What instruction was given for the production of sputum? Was it clear?

Did you produce the sputum at home or under supervision of the doctor or lab technician/staff?

Did they ask you for an X-ray?

Was it clear what you had to do at the health institution/ Did they explain it to you?

Shamsq

Interview with head of the government -sponsored health service(s).

Method; Interview

City:
Location in city:
catchment area:

Head's characteristics: age, sex, diploma; function; duration of stay in this job

Schedule: regular clinic hours and special hours for certain services (indicate each by day of the week)

Services offered:
- diagnose (sputum /X-ray/both)
- treatment (3 regimens under short course chemotherapy=scc/other regimens)
- home visits by health workers
- postcards for patient-retrieval (ask how many were send last month; if not, why? stigma of postcard?)
- incentives for treatment? like NGO's do?
- culture growing of sputum
- testing for sensitivity (for drug resistance)

Personnel: number of persons working full-time and part-time (including volunteers) and their responsibilities.

Equipment, materials, and medicines available specifically for treating TB (type of drugs) and reagents for diagnosis, Problems to supply of Materials/Medicines.

Cost of services and medicines to the patients (booklet for TB)

method of payment : token for TB (? Rps);

Utilisation: Average number of patients seen daily, normal waiting time, range of waiting times. In relation to the personnel and available equipment are there few patients; too many patients; or enough patients? Are there enough ' resources' for the patients coming (e.g. none, very few, few, enough)?

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Interview with health staff.

method : interview

City:
Name institution:

Staff member background:
age,
sex,
Marital status (single, married, common-law)
Speaks and writes language of the community (if applicable)
Lives in the community where service is located/ lives elsewhere.
Education (number of years completed in primary or secondary school)
Professional training (technical studies/university/diploma);
other courses
number of years in the health field
number of years in this health service
Do you like your job? Why? Why not?
What gives you the most satisfaction in your job?
What obstacles or problems confront you in your job?
How do you get along with other staff members? With supervisors? With subordinates?
What do you think are the principal health need and problems of the community? If aids is mentioned: Is TB less important?
How do you see TB? Is it increasing/stable/decreasing?
Why?
Do you feel you need additional training or updating in the health field/ In what specific areas? What do you think of scc? Short course chemotherapy.
Given the problems discussed, how can you improve your job situation? What changes do you suggest? What IEC-messages are important to who?
What do the people of the community think of the health service? Why?
How do they see TB? Why? What problems are here?
Do have ideas for solutions? Which?

* INFORMATION, EDUCATION, COMMUNICATION

Physical Characteristics of Health Resource.

Method: observation

City:
Name Institution:
Location:

Date:
make a plan and map (including scale to show approximate size) of the installation (clinic, pharmacy, etc.) Draw the route the patients follow in being treated by the various doctors/nurses.

Are their signboards showing the patient where he has to go to?

Describe the visual aids and graphic materials in the facility (realistic, abstract, cartoons, etc.)
Are there printed materials available? Are the walls printed with relevant graphics? Are there posters on the walls? Are they hand-done or printed? What are the dominant colours? Where did the graphic and visual material come from? Visit the Health Education Bureau with regard to their activities on TB. Who is responsible for preparing it? What are the messages? Like "Be aware of aids " as text-messages to people that can't read!!
To whom are the messages directed?

Is there other educational or audio-visual material? Is there a radio? Do patients listen to it while waiting?

Describe the light, water, and drainage. Does the plumbing work/ Are there toilets for staff and for patients?

Is the facility basically clean? Dirty? Is it new? Old? How Old?
Is it nearby a road or busstop?
Is it good ventilated? Is it easy to find?

The waiting room

Method: observation

City:
Name Institution:
Location:

Date:
Number of patients waiting and under what conditions (privacy, crowding, size, chairs, etc..)

Length of time patients wait and the total time they spend at the centre.

Activities that take place while patients wait
Is there a radio in the waiting room? Do the patients listen to it while they wait?
Are lectures or demonstrations given? Form and content.
Is there a question/answer session? Are educational materials or visual aids used during the lecture?

Interaction between staff and patients.

- Who initiates the interaction/
- Form (verbal greeting, questions, orders, request for information, scolding, etc.)
- Content
- Forms of courtesy
- Level of respect
- Tone of voice
- Language
- Degree of privacy
- Noise level in waiting room
- Means of advising patients that it is their turn

Positive and negative aspects of waiting room environment

Roysheday

The consultation

Method : Observation

City:
Name Institution:

Date:

Setting, surroundings, location:

Participants (subjects)

Sequence of events during the consultation
- Who(doctor, nurse, etc..) interviews the patient to gather data on symptoms, history, etc.?
- Who(doctor, nurse, etc..) examines the patient?
- Physical examination
- Diagnostic examination
- Treatment prescribed and by whom

Effect on the patient of each of the following factors:
- Cold, impersonal contact
- Neutral approach
- Friendly/interested approach
- Visual contact
- Tone of voice
- Physical contact

Patient /provider interaction
- Form (verbal, questions, orders, request for information, encouragement, scolding, etc.)
- Content
- Who talks and who listens?

health Education (Prevention of illness)
- Form
- Content
- Provider

Explanations and instructions given to the patient
- Clear and understandable
- Do they cover "What?', "Why?" and "How?"
- Is the patient asked to repeat the instructions for confirmation?
- Materials presented (e.g. prescriptions ,written explanations)

Summary of patient visit to health resource

method: observation

City:
Name Institution: / TYPE

Date:

Summarise the user's visit to the health resource , by recording information in a table like that below. Example data are shown. If user is referred to another health service, try to follow and record the sequence of events and interactions.

Sequence of Visit		Interactions	
Step	Duration	Actors	Did, said, etc..
1. waiting to register gave user a number	1 hour	user, clerk	user talked with other users while waiting; check
2. sputum sample window; lab tech writes down details of user	15 min	user, lab tech	lab tech give cup and tell to produce sputum at
3. to X-ray section	15 min	user	cannot find section

Pharmacies and Stores selling medicines

City:
Type of Business:
Location:
Informant(s):
Date (s):

interview the owner or manager of each pharmacy or store(if it sells medicines)

Regular and special store hours
- daily hours
- system of shifts with other pharmacies (night hours?)
- number per month
- what time span?

Services available
- sales of medicines, medical treatment, preventive treatment and advice, etc.

Staffing
- number of part-time and /or full-time employees

Equipment and medicines
- Specifically to treat TB (types of medicines:
- streptomycin
- rifampycine
- Isoniazide
- pyrazinamide?

Which are TB medicines are sold most?
What are the costs of the different medicines?(Rifampicin went up from 3.5 to 4.50)

If you are out of stock what do you recommend? Other drugs(describe.....) or referral to other drugstore? Do you ask the patient to wait until you have stock again?

If people complain about side effects what do you advise?

Utilisation

On the average, how many patients do you handle a day? Of those, what percentage are TB patients? What percentage have other respiratory illnesses? Where do the majority of the people live who use your services?
Do you refer patients to another service? Which ones? Where?

Communication

Do you think people believe what they hear on the radio?
Has there been (within the last year) an effective campaign to promote a health behaviour, treatment (medicine) or method in regard to TB? Which ones? What methods are used to promote it?

Pharmacy Staff

Method : Interview

City:
Type of Business:
Location:
Informant(s):
Date (s):

Interview each staff member at the pharmacies and stores (that sell medicines) in the community

Sex
Age
Ethnic group (if applicable)
Speaks and writes language of the community (if applicable)
Education (number of grades completed in primary and secondary school)
Professional training (technical studies, university, etc.)
Other training
Number of years in job
How did you learn this work?
How was present work learned?
Job responsibilities and tasks
Do you like your work or not? Why?
What do you think of TB?
What do you think of TB patients?

Exit Interview

Method : Interview

City: BANGALORE
Type of Institution: TB Centre
Location: MARKET
Informant(s):
Date (s): 8/2/96

Interview patients as they leave the health resource

What is the diagnosis (problem, illness)1 ?

Who decide you should go to the health resource?

Where do you come from? Distance travelled from home.

How did you get to the health resource (transportation)? Cost of transportation (if applicable).

Who accompanied you?

Who did you want to see /consult (doctor, nurse, etc.)? Were you seen? By whom? If you were not seen, why?

Before coming to the health resource, had you taken any medicine or consulted elsewhere for the

same illness? What was the result (if applicable)?

What illness did they say you have (diagnosis) 2 Do you understand the diagnosis?

Did you receive medicines, a prescription, or anything else?

Were you seen and nothing was done or said about what to do? Do you understand how to take the medicine? Will you buy the prescribed medicine/ If not, why? Did you receive any other instructions? If so,on what? Why? Understood?

Total cost of service.

What is your opinion of the services? Would you use the health resource again? What for?

What do you think should be done to make the service better? Easier to use?

Do you have health needs that are not being met by the service/ What are they? What should be done to meet those needs?

1) some of the questions can be asked in the waiting room if the researcher is following the patient through the sequence of the visit.

2) one can also check the patient's record if time allows. It is possible to do this on a sub-sample.

C. Kerala

Health institution
Private Doctor
Type of doctor (homeop/allop/ayurv)
Whether treating tb patients
How do you diagnose that he is suffering from TB

Ask him how he treats the following patient:
"40 year old male patient, weight 50 kg; diagnosis TB
Ask for the regimens he prescribes.

What tests are carried out for diagnose?
Where do you send them for the tests?
How do you react with the patient when you came to know that he is a tb-patient? (referrral or treatment?)
Do you tell illiterate patients where he has done something wrong (what is wrong)
Reaction of patient after knowing that he is suffering from tb
How do break the news
Do the patient continue to come to him after he has been assigned TB patient
What are the chances that a patient can be cured?
How do psychologically handle patient suffering from TB
What is cost/duration of treatment
What stage do patients come generally
What is the stage of the disease? When can it be detected?
What is the cost of the treatment/test?
How do you know that the patient is cured now ?
And when do you stop the treatment?
What advice does he give to the patient and his/her family and do they follow it or not?
What is the age group of your patients
Do you have more male or female patients
Do people give more emphasis on the treatment of male patients
Is there a gender bias?
Are female patients coming alone or are always accompanied by somebody else?
Society's perception about TB patients
Major symptoms and causes
What is the % of defaulters and what are their causes of defaulting?
Why do the patients come to private doctors instead of going to govt. doctors?

Seth chellaram
kishandas

Health seeking Behaviour

Treatment

What is your name

how old are you?

how many family members do you have?

whether anybody of your family is ill or not (M/F)

what is age of patient?

what disease ?

when did it start?

have you taken any treatment for this disease?

from did you get treatment (P/G)

If private, whether MBBS,Ayurvedic or Homeopath

what types of medicine have you taken?

how did you feel after treatment?

If he is not cured fully, what steps he has taken or wants to take?

whether doctor asked you to have an X-ray?

how long you was under treatment?

whether govt. facilities are available or not?

what type of govt facilities are available from Govt. hospital?

whether your family members are encouraging you to take the treatment or not?

what is the name of the disease according to the doctor?

whether you are taking home treatment or not?

ANY REMINDERS RECEIVED FORM HOSP?

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Private Sector

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COMMONLY OBSERVED ADVERSE REACTIONS TO ANTI-TUBERCULAR DRUGS AND THEIR MANAGEMENT

Sr. No.	Drug and its abbreviation	Adverse Reactions	Monitoring indices	Management
1.	ISONIAZID (H)	Peripheral Neuritis (common)	Pricking pain, Burning of feet and hands, etc.	Phyridorine 10 mg daily
		Hepatitis (rare)		
		Psychosis (rare)		
2.	RIFAMPICIN (R)	Gastro-intestinal upset	Loss of appetite, anusea, vomitting and pain in abdomen	To take drugs after meals; symptomatic treatment
		Cutaneous Reactions (mild & transient)	Itching all over the body, face, eyes with or without rashes	Antihistamines daily; reassure the patient
			If symptoms persist	Withhold drug: desensitize,
		Hepatitis	Clinical jaundice Liver function tests	Withhold all drugs till complete recovery. Reintroduce all other drugs (in usual dosage). Then add Rifampicin 150 mg daily. Increase dose by 150 mg on every 3rd day till usual dose is reached.
		Flu like syndrome	Fever, chills, malaise Headache & back pains	
		Orange urine, tears, saliva, mere yellow colouring of skin & eyes	No other symptom present	Reassure the patient by informing that it is normal phenomenon due to colour of drug.
3.	STREPTOMYCIN (S)	Vestibular damage (8th nerve damage)	Vertigo, ataxie & Giddiness	Discontinue the drug till complete recovery and resume in reduced dosage. To prevent the toxicity, use only 0.75 g dosage
		Hypersensitive reactions	Fever, Rash, circumoral parasthesis	Symptomatic treatment.
		Anaphylactic shock (rare)	-	Terminate the drug or desensitize the patient.
		In pregnancy & kidney disease drug should be avoided	-	-

4.	ETHAMBUTOL (E)	Optic neuritis	Dimness of vision due to reduction in visual acuity, field of vision and colour discrimination or all the three	Terminate the drug: recovery is good (dose related, more common in patients with renal insufficiency)
5.	PYRAZINAMIDE (Z)	Arthralgia, acute gout	Pain joints, swelling joints Limitation of movement of joints	Salicylates, oxyphenyl butazone. Reduction in dosage or discontinue the drug till symptoms disappear, start with reduced dosage.
		Hepatitis	Clinical Jaundice	Same as in hepatitis due to any drug
		Gastro - intestinal upset	Loss of appetite, nausea, vomitting and pain in abdomen	Same as in Gastro-intestinal upset due to any drug.
6.	THIOACETAZONE (T)	Gastro-intestinal upset	Loss of appetite, nausea, vomitting and pain abdomen	Same as in gastro-intestinal upset due to any drug.
		Cutaneous reactions	Itching all over the body	Symptomatic treatment
			Exfoliative dermatitis	Terminate the drug, if not may lead to Steven's - Johnson's Syndrome.
7.	P.A.S. (P)	Gastro-intestinal upset	Loss of appetite, nausea, and pain abdomen	Same as in gastro-intestinal upset due to any drug.
		Cutaneous reactions	Itching, rashes	Same as in cutaneous reactions due to any drug
		Hepatitis	Clinical Jaundice	Same as in hepatitis due to any drug.

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GUJARAT VOLUNTARY HEALTH ASSOCIATION
Newman Hall, P.B.4002, Ahmedabad 380 009

A Report of the X GVHA Convention Theme:

"TUBERCULOSIS"

Introduction:

The GVHA held its 10th Annual Convention and General Body Meeting at the Farmer' Hostel of the National Dairy and Development Board, Anand, on November 30th and December 1st, 1985. After the registration (by about 60 persons) and tea, the group met around 4.00 p.m. on the 30th November.

The theme for this meet was "Tuberculosis". Drs. Anil Patel of ARCH, Mangrol, and Lalit Shah of SEWA-RURAL, Jhagadia, were identified as the resource persons to initiate and lead the discussion. They both had prepared brief write-ups on the theme and the GVHA had circulated them in advance to the members, so that the members had time to reflect on the issues involved in understanding, diagnosing and treating tuberculosis, at the individual as well as at community level. The group actively participated in the discussion by reporting the field level experience.

Anil Patel made a very provocative but lucid presentation from an epidemiological perspective, with the group drawn into discussion at every juncture.

The first question he posed before the group was: what causes tuberculosis ? and what socio-cultural factors are found associated with TB ? The group responded by listing malnutrition, poor housing, overcrowding, social problems, air pollution and certain occupations as the major factors responsible for causing TB.

Infection vs. Disease:

To understand fully the causal relationship between each of these factors and TB and its spread in the community, Anil Patel indicated that it is important, to distinguish between TB infection and the disease, and the control of infection and the treatment of the disease. TB is a unique infectious disease whose germs, once they enter the human body, can remain in a dormant state or viable for years, whose

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bodies have not killed them without resulting in an active case of the disease. Yet, once infected, an individual can become diseased any time during her or his lifetime. In other words, TB disease has a very long and highly variable incubation period. It is thus possible that disease in old age may result from a childhood infection that has been latent in the interval.

In a country like India, the load of TB infection is so heavy that at any time one third to half of the total population (300 to 500 per 1000 population) is infected. According to some estimates, at age 25, about 80 percent are already infected. However, only 4 to 6 per 1000 population have active tuberculosis among whom the infection manifests into the disease.

The second important distinction is between the control of the infection at the community level and the treatment of the disease at the individual level. Again tuberculosis is unique and the treatment of individual TB cases alone can help control the infection in the community. Unlike other infectious diseases (such as small pox, poliomylitis, measles), there are no preventive measures to control the TB infection in the community, because the load of infection is very heavy and also because the efficacy of BCG vaccine is in doubt. Treating of individual cases, however, helps reduce the spread of infection.

Route of Transmission:

It is important to understand how exactly the TB infection spreads or its routes of transmission. It has been established that TB spreads through air. When an individual with active tubercle bacilli in his sputum coughs or sneezes, a spray of secretion may be expelled. Tiny particles, known as droplet nuclei, dry quickly when exposed to the air, and then take the form of aerosole and keep the TB bacilli suspended in the air for a long time. When inhaled, they usually pass directly to the alveoli. Thus persons who come in contact with TB patients over a long period of time become infected because the germs enter their lungs through breathing in air which has TB bacteria. The infected persons may or may not become active TB patients. However, the germs which are excreted in the sputum of the TB patients, in the form of a blob on the floor or in the spitoon, cannot easily enter another human body, contrary to the popular belief.

It is important to know that the factors which are responsible for causing TB infection are, not necessarily the same as those which cause the disease.

The necessary conditions for getting infected with TB germs are largely extrinsic. They are :

(1) contact with an open case of TB patient in the family or the immediate environment. At the same time, a patient whose condition is detected early and treated effectively will stop infecting other members of the family. This is very important from the view point of TB control programme.

(2) poor housing or overcrowding, measured in terms of square feet of space per person. The less square feet per person, more over-crowding, more the chance of spreading infection, should there be a case of TB in the family.

For TB infection to result in the active disease, the risk factors lie largely within the individual. Poor housing condition or overcrowding, which is an important factor in spreading TB infection, is not important in the manifestation of the disease. According to some studies, poverty per se is not found to be related to developing the disease, but the way family spends its income is found to be significant. The nutrition level of the individual in terms of her or his body weight is important. Persons who weigh less than the average for the population (controlling for age, sex and body frame, are found to be more prone to develop the disease compared to those with above average weight.

Diagnosis:

The next important question is how do we diagnose the disease or identify an active TB patient ? According to the group, a TB patient normally has the following symptoms:

1. a rise in body temperature in the evenings;
2. loss of appetite;
3. slow decline in weight;
4. chest pain;
5. sweating at night;
6. lethargy
7. blood in sputum; and
8. cough of long duration with or without expectoration.

Anil Patel pointed out that many of these symptoms are found in the cases of chronic malaria also; so how does one distinguish a TB case from a malarial case ?

Once a case of TB is suspected on the basis of clinical examination, one can resort to a battery of tests available to ascertain whether the patient is indeed a TB patient or not. The various procedure are: X-ray, screening, ESR, TC-DC, gland biopsy (if it is an extrapulmonary case), Mantoux test, AFB, (Acid Fast Bacilii) sputum culture, mass detection campaign using mini-X-rays (MMR), sputum examination, etc.

The group discussed the merits and limitations of each of these instruments of diagnosis, especially in the context of the rural community, efficacy, affordability, as well as availability or easy access to individual patients. It was strongly felt that objectively speaking examination of sputum under microscope was the best diagnostic test of TB. Further, cough and chest pain and/or low grade fever for more than one month are the most important symptoms of TB. Also important is the bringing out of sputum with or without blood.

About diagnosis of TB, Anil Patel reported that according to one study out of 53 active TB cases, 36 were found sputum positive through sputum microscopy during first examination itself. An additional 9 were detected as positive during the second examination. Thus in 85 percent of the cases (45 out of 53), two examinations gave positive result. (Reference: K. Toman, Tuberculosis: Case Finding and Chemotherapy (Questions and Answers), WHO, 1979.)

Isolation:

Having diagnosed a TB case, the question is: should one isolate the patient so that the infection does not spread ? While it is true that person to person transmission of TB occurs through cough, it takes about 3 months of treatment before most of the patients stop excreting bacilii in the sputum and almost all stop in 6 months. Can we isolate the patient that long ? Is it feasible ? Is it necessary ? It is pointed out, however, that when a patient is under treatment, the tiny droplets in aerosole carry medicines with which the patient is being treated along with the bacilii. As the droplets in aerosole rapidly evaporate, the concentration of drug in the droplets rapidly rise to a lethal level, killing almost instantly the bacteria. Thus, very soon after the treatment the patient ceases to be infective although he is still bringing out bacilii in the cough.

The medicine or the treatment thus provides chemical isolation such that the other members of the family do not get infected. Moreover effective treatment considerably reduces the intensity and the frequency of cough which helps reduce the number of bacilii being coughed out.

Dr. Lalit Shah's presentation touched upon the whole gamut of identifying or detecting TB, making sure that the patient continues to be treated or case holding, and finally, the actual treatment.

Case Detection:

According to Lalit Shah, out of 100 cases of TB in a community, only 30 are in fact detected; the rest go undetected. Out of those who are identified as TB cases, only 30 percent complete the course or chemotherapy, of which 2 to 5 percent are failures or in which there is a relapse. It means that out of 100 TB patients only about 9 are effectively treated in our country. Therefore, at the community level, both identification of TB patients and making sure that they hold on to treatment are very important first steps in the treatment of tuberculosis.

The question is: In order to control TB effectively, how do we increase case detection ? Among the various ways suggested by the group were the following :

1. Screening of symptomatics through MMR (mass miniature radiography).
2. Camp approach or a clinical examination of every individual by setting up camps in communities.
3. If a case is detected, contact all his family members immediately.
4. Finding out symptomatics through home visits.
5. Health education.
6. Mass mantoux test for children under age 3.
7. Follow-up of old cases to detect whether there is a relapse.

However, an opinion was voiced that the best way of case detection is through good treatment i.e.

1) Continuous supply of medicine.
2) Educating and encouraging the patient to complete the treatment course for one year.
3) A sympathetic approach.

It was also mentioned that if a sputum positive case is detected, it is very important to contact the family members of that person and check them out.

Case Holding:

Case holding is by far the most crucial link in the whole TB programme, and yet it is the weakest one in practice. If the TB centre or the health centre can hold the cases successfully for the entire duration of treatment, not only will these patients be cured, they will stop infecting others. Further, the health centres will be able to attract more new cases and thus indirectly improve the case detection rate also. Yet, the defaulting rate is generally very high. One needs to understand the causes of defaulting, if we want to improve case holding. Some of the readily identifiable causes of defaulting are :

(1) Patient feeling good within short time (1 to 2 months) after treatment; most of the obvious symptoms disappear.

(2) Side effects or toxicity of drugs.

(3) Patient does not realize the importance of taking or continuing treatment for long.

(4) No stock of medicines at the PHCs or dispensary.

(5) Long distances from the centre or inconvenience.

(6) Cost of medicines (cannot afford if not given free of charge).

(7) The diagnosis could be wrong.

Treatment:

The actual treatment or chemotherapy for TB has become so effective that virtually every patient can now be cured if the necessary medication is taken. Not only can the disease be cured but as stated earlier the patients are quickly rendered noninfectious.

Two important aspects of treatment which need some careful attention and were discussed are :

1. The actual treatment or chemotherapy and the regimen or schedule to be followed by the patient.

2. When do we say or declare a patient as cured ?

1. The drugs used for treating TB are :

(1) INH

(2) Streptomycin

(3) TXN Thircitazon

(4) ETH/RFM

(5) Rifampicin

(6) PAS

There are two phases of TB control of treatment; intensive phase lasting 1-2 months when bacteriocidal drugs such as INH, with SM or RFM are used with one bacteriostatic drug and the other phase is a maintenance phase of about 10 months duration when bacteriostatic drugs such as ETH/TZN are used with one bactericidal drug. i.e. INH (See Table 1).

The major controversies in the field of actual treat ment or the drugs are : (1) merits and demerits of streptomycin and its advantage, if any, over rifampicin, another antitubercatic; (2) the duration of treatment-whether the conservative approach of treating TB patient for 12 to 18 months should be followed or whether a short duration therapy of about 6 months is adequate or not.

The merits and demerits of streptomycin are as follows :

Merit	Demerits
- free supply in Govt. PHCs	- distance (injection requires patient visit CPD clinic everyday)
- very effective	- pain
	- injection abcess
	- cost
	- hepatitis possibility
	- toxicity < deafness, giddiness
	- case holding deteriorates.

On the other hand, the other drugs, which are orally administered, have certain advantages from the patient's point of view. A fortnight's supply can be given to the patient. However, it is difficult to ensure that the patient actually takes the required amount of drugs regularly. If he fails to turn up for another

Table 1

Recommended dosages of Anti-Tuberculosis Drugs (I.U.A.T. 1982)

Drug	Action	DOSE		Adverse Reactions
		Daily phase	Intermittent phase	
1	2	3	4	5
1. I.N.H. (H)	Bacteri-cidal	5-8 mg/Kg Maximum 300 Mg	12-15 Mg/Kg Maximum 700 Mg	Polyneuritis Rarely, Hepatitis & Psychosis
2. Rifampicin (R)	Bacteri-cidal	9-12 Mg/Kg* Maximum 600 Mg	Same as in daily phase	Hepatitis
3. Pyrazinamide(Z)	Bacteri-cidal	30 Mg/Kg Maximum 2 Gm	50 Mg/Kg Maximum 3 Gm	Arhralgia
4. Ethambutol (E)	Bacterio-static	25 Mg/Kg for 6 weeks 15 Mg/Kg there-after	40 Mg/Kg Maximum 2 Gm	Optic neuro-pathy
5. Streptomycin (S)	Bacteri-cidal	20 Mg/Kg Maximum 1 Gm	Same as in daily phase	Giddiness/ Deafness Skin reaction and Hepatitis, Rarely
6. Thiacetazone (T)	Bacterio-static	150 Mg**	-do-	Exfoliative Dermatitis
7. PAS (P)	Bacterio-static	5 Gm B.D.**	-do-	Anorexia, Vomiting, Diarrhoea etc.

* Usual daily dose for adults is 450 Mg if the patient's weight is less than 50 Kg, and 600 Mg if the weight is 50 Kg or above. Dose for Children is adjusted suitably. In intermittent phase, usual dose for adults is 600 Mg.

** Maximum adult dose. For children and under-weight adults, reduce dose proportionately.

fortnights' quota, then he has to be followed up at home as well. The issues involved in these two treatments were discussed at some length, but the group was indecisive as to which of these two should be preferred.

About the duration of treatment, the group did not arrive at any consensus. However, several members felt that it is safer to be conservative, and continue the treatment for a longer period, rather than opt for minitherapy because the experience with the short duration therapy is relatively new. However, research for the short course therapy is encouraging and seems promising for the future.

Lalit Shah, through a wall chart gave a list of possibilities of mini therapy, where the combination of drugs (3 to 4 days) were alternated, and the total cost of each of these treatment (Chart attached).

2. The next most important question is: when do we declare a patient cured ? What is "cure" clinically and epidemiologically ?

Clinically, a check-up of the patient would involve :

- signs of healing
- no cough
- no fever
- ESR normal
- Chest X-ray clear
- Sputum negative
- weight gain

However, most of the improvements occur within a month or two of the treatment and as a patient starts feeling good, his persistence declines and he may even stop the treatment. This is an issue which we have to somehow tackle.

Well designed trials have shown that 95 to 97% TB cases get cured, if they complete the 12-18 month standard treatment. And, those who become sputum negative in the first 6 months of treatment and continue to be sputum negative for the rest of the duration of the treatment also get cured completely. The value of other tests including X-rays is doubtful to say the least.

(GVHA thanks Mrs. Leelaben Visaria for the preparation of this report with the help of Drs. Anil Patel and Lalit Shah).

TREATMENT

THE DRUGS USED IN TREATMENT OF TUBERCULOSIS:

Recommended dosages of Anti-Tuberculosis Drugs (I.U.A.T. 1982)

Drug	Action	DOSE		Adverse Reactions
		Daily phase	Intermittent phase	
1	2	3	4	5
1. I.N.H.(H)	Bacteri-cidal	5-8 Mg/Kg Maximum 300 Mg	12-15 Mg/Kg Maximum 700 Mg	Polyneuritis Rarely, Hepatitis & Psychosis
2. Rifampicin(R)	-do-	9-12 Mg/Kg* Maximum 600 Mg.	Same as in daily phase	Hepatitis
3. Pyrazinamide(Z)	-do-	30 Mg/Kg Maximum 2 Gm	50 Mg/Kg Maximum 3 Gm	Arhralgia
4. Ethambutol(E)	Bacterio-static	25 Mg/Kg for 6 weeks 15 Mg/Kg thereafter	40 Mg/Kg Maximum 2 Gm	Optic neuropathy
5. Streptomycin(S)	Bacteri-cidal	20 Mg/Kg Maximum 1 Gm.	Same as in daily phase	Giddiness/ Deafness
6. Thiacetazone(T)	Bacterio-static	150 Mg**	--	Skin reaction and Hepatitis, Rarely, Exfoliative Dermatitis
7. PAS(P)	-do-	5 Gm B.D.**	--	Anorexia, Vomiting Diarrhoea etc.

* Usual daily dose for adults is 450 Mg if the patient's weight is less than 50 Kg, and 600 Mg if the weight is 50 Kg or above. Dose for Children is adjusted suitably. In intermittent phase, usual dose for adults is 600 Mg.

** Maximum adult dose. For children and under-weight adults, reduce dose proportionately.

VARIOUS REGIMENS: There are two phases of T.B. Treatment :
The intensive phase when bacteriocidal drugs such as INH, Streptomycin, Rifampicin and Pyrazinamide are used. The other phase is maintenance phase when Bacteriostatic drugs like ethambutol, Thiacetazone, PAS etc. are used with either one or two bacteriocidal drugs.

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DRUG REGIMENS RECOMMENDED UNDER NATIONAL TUBERCULOSIS PROGRAMME:

(A) For Sputum Positive Tuberculosis Patients (Adults)

Code No.	Drugs and Dosage	Mode and Rhythm of Administration	Instructions
R_1	Isoniazid 300 Mg + Thiacetazone 150 Mg	Both drugs in a single dose or in two divided doses orally, Daily	Self-administered at home after meal
R_2	Bi-Weekly regimen inj-streptomycin 0-75 G/1 G + Isonizaid 600 to 700 Mg (15 Mg/Kg body weight with pyridoxine	Intramuscularly Orally	Both drugs given at the same time under supervision of the treating physician twice weekly at intervals of 3 & 4 days
R_3	Isoniazid 300 Mg + PAS 10 G	In a single dose, in two divided doses. Both drugs orally, Daily	Self-administered at home after meal
R_4	Isoniazid 300 Mg + Ethambutol 20 Mg/Kg body weight, i.e. 800 Mg for patients weighing 50 Kg and 1000 to 1200 Mg for 50 Kg	Both drugs in a single dose orally Daily	Self-administered at home after meal
R_5	Biphase Regimen		
	A) Intensive Phase Inj. Streptomycin 0.75 G/1 G + Isoniazid 300 Mg + Thiacetazone 150 Mg. OR Ethambutol 20 Mg per Kg. body weight i.e. 800 Mg for HS 50 Kg. & 1000 to 1200 mg for those 50 kg OR PAS 10 G.	First Two Months Intramuscularly. Daily In a single dose orally daily. (PAS & Thiacetazone be given in two divided doses)	Injection given under supervision and the rest to be self-administered at home.
	B) Continuation Phase With R_1 R_2 R_3 OR R_4	As for each regimen	As for each regimen

(B) For the Sputum Negative Tuberculosis Patients (Suspect Cases)

Tuberculosis Patients in whose sputum AAFB are not seen, are advised Regimen R_1 i.e.

Isoniazid 300 Mg + Thiacetazone - single dose orally daily for 1 to 1½ yrs. Patients allergic to Thiacetazone can be treated with R_4

DURATION OF TREATMENT:

All patients should be treated for a minimum of one year and optimum of 1½ years duration irrespective of their disease status. Intensive efforts should be made to keep the patient on regular treatment for at least one year.

Treatment can be continued upto 2 years after review at the end of 18 months but continuation beyond two years has no added advantage.

Domiciliary treatment is the treatment of choice and hospitalisation for short periods is recommended only in the following conditions :

(A) Patients requiring surgical treatment.

(B) Management of serious complications like spontaneous pneumothorax, haemoptysis, diabetes, etc.

(C) Manifestations like millary and meningeal tuberculosis.

SHORT-COURSE CHEMOTHERAPY:

The duration of treatment for a long period of one to two years with standard anti-tubercular drugs, is believed to be one of the important causes for irregularity and premature stoppage of treatment by the Patients. With the advent of Rifampicin and Pyrazinamide. It has become possible to reduce the duration of treatment of Six months. There are three different types of bacterial population on which anti-tubercular drugs can act.

(a) Majority of the bacterial population are of actively multiplying type which responds to Isoniazid and Streptomycin.

(b) Second type of bacilli are intra-cellular and slow multiplying and the drug of choice against this group is pyrazinamide.

(c) The third group of bacilli are extra cellular and multiply slowly and intermittently (Spurter group) and the effective drug is Rifampicin.

Both Rifampicin and Pyrazinamide quickly eliminate the slow multipliers as well as the intermittently multiplying bacilli and help in sterilising the lesion. There is a fourth group of dormant bacilli which do not multiply at all and hence no drug on them.

At least three bactericidal drugs are used for the initial two months followed by two drugs in the continuation phase, in order to reduce the duration of treatment ~~of treatment~~ to six months. Bacteriostatic drugs have no place in short-course chemotherapy excepting that Ethambutol may sometimes be used to replace any bactericidal drug in case of drug intolerance. Clinical trials with short course regimen of Six Months durations have given encouraging results.

A number of short-course chemotherapy drug regimens have been tried out in various countries of the world, in different combinations and for varying periods. However, in any short course drug regimen, Rifampicin and Isoniazid have essentially to be administered, and the most effective regimen appears to be combination of Rifampicin.

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Isoniazid and Pyrazinamide of which Pyrazinamide is for the initial period of 2 months. Similarly if Streptomycin is also administered, it may be given for the first two months only. After the intensive daily phase of about 2 months with three or four bactericidal drugs, the subsequent treatment in the second phase may comprise of Rifampicin + Isoniazid daily or even intermittently (thrice or twice a week).

The ultimate results of use of short-course chemotherapy regimens containing Rifampicin and Pyrazinamide would, however, depend on ensuring that proper doses of the drugs in accordance with recommended regimens are given to the patient, which he also takes regularly for the optimum period. Haphazard used of drugs like Rifampicin in inadequate doses, for short-course periods would not be useful and is bound to create more technical problems and must be avoided. Some of the recommended short-course chemotherapy drug. Regimens, which have been tried out in various controlled clinical trials in different countries of the world and have given good results, are as follows:

SHORT-COURSE

1) SHRZ for 2 months plus RH daily for 4 months. Total duration 6 months
2) SHRZ for 2 months plus RH biweekly for 4 months. Total duration 6 months
3) EHRZ for 2 months plus RH daily for 4 months. Total duration 6 months
4) EHRZ for 2 months plus RH biweekly for 4 months. Total duration 6 months
5) SHRZ for 2 months plus SHZ daily for 4 months. Total duration 6 months
6) SHRZ for 2 months plus HT daily for 6 months. Total duration 8 months
7) RHZE for 6 months thrice weekly. Total duration 6 months
8) RHZS for 6 months thrice weekly. Total duration 6 months
9) SHR for 2 months plus HR daily for 4 months. Total duration 6 months
10) EHR for 2 months plus HR daily for 4 months. Total duration 6 months
11) HRZ Twice weekly for 2 months plus HR twice weekly for 4 months
12) HRZ for 2 months plus HR for 4 months. Total duration 6 months.

In the daily phase of the regimen, the dosage of R,Z is according to the body weight, namely patients weighing less than 50 Kg. would receive - 450 Mg of Rifampicin while a patient weighing 50 Kg or more would receive 600 Mg. Drugs like Streptomycin, Isoniazid, Rifampicin, Pyrazinamide are equally effective if given intermittently twice or thrice a week because after a short exposure to these drugs, the bacilli do not start multiplying for 3 or 4 days i.e. till the next dose becomes available. Addition of Streptomycin in the initial phase of treatment helps in reducing toxaemia and may be given initially with Rifampicin, Isoniazid and Pyrazinamide.

-x:0:x-

T.B

...ased by M. tuberculosis, both pul + non-pul, acute & chr, gen or

Distr - worldwide. In India - widespread, 1·8 % of pop ∴ have TB + or nearly 1/4th of them are infectious. same in cities + villages

continuous rise in age.

In India 9-10 million cases, abt 2 million bacillary.

No. of deaths - abt 1 million a year.

Bovine TB was a problem in India

Agent - Bacillus - killed by heat, but Thermal lasts a long time in the environment.

Source of inf - Human cases (adv pul) Non pul. not imp

thin sputum, pus, fluid, faeces, urine.

Host - age, more in males - no hereditary.

Environ/Social - std of living, housing, poverty, edu, occup overcrowding, large families, urbanis + industrialis, customs + habits - spitting, hukka, purdah, early marriages, social stigma

Mode of transm - open cases - droplet nuclei - coughing, sneezing, talking

Control of TB (1) early detection of cases - weeks or years.

By sputum ex of 1) cough > 4 wks, continuous fever, chest pain, haemoptysis (2) Chemoth - to break the chain of transmission anti TB drugs - first line + 2nd line - duration, daily & biweekly

(3) BCG. Imp Res.

District TB control

DIS

DIS 4:9

COMPLIANCE & DEFAULT IN TUBERCULOSIS PROGRAMME

INTRODUCTION:

The importance of tuberculosis as one of the most important health problems needs no emphasis. Such has been the progress made in the epidemiology the prevention, and especially the treatment of tuberculosis during the past three decades that this age old killere of man has at last become a preventable and curable disease. The main problem is not the need for mear regimens of treatment or mear drugs, but how to apply successfully the available knowledge.

Modern methods of tuberculosis control are based on the following principles:-

- case findge as early as possible.
- chemotherapy
- preventive measures
- Rehabilitation
- Surveilance

Thus, case findings is an essential component in the programme but it in itself has little purpose unless it is followed by chemotherapy. Case finding is always easier than to treat them successfully. The main problem of unsuccessful anti tuberculosis chemotherapy is - NON COMPLIANCE/DEFAULT.
Default means-failure to do something required by duty or law.

By National Tuberculosis Institute, drug defaulter is a patient who fails to turn up within 3-4 days of his due date for collection of drugs. In short course chemotherapy if patient fails to turn up with in 24 hours of due date he or she is lebelled as defaulter.

In 1½ coursetherapy, if patient fail to collect atleast 80% of the medication in 24 months time he is listed in the end non compliance list.

Compliance is defined as the extent to which a persons health related behaviours, i.e. taking medication keeping appointments etc., coincide with medical advice.

Magnitude of the problem:

Non compliance is a protean features of all self administered therapeutic regimens, regardless of the medical conditâns for which they are prescribed. In Kasturba(Luckno T.B.Clinic 272 cases were followed up. During a period of one year. Of these 112 patients defaulted 210 times during a period of ranging from 4 months to 1 year 82 cases were lost in the follow up.

In an South Indian study, 10% of patient had died or left the district by the end of the 12 month treatment period. 27% refused to attend the treatment services and of the remainder only 47% collected four -fifths of their medicaments. National Figures are TBC casedetection rate is 30% and out of this only 30% complete the treatment with a regimen 90% effective. The total efficacy will be only 9%.

Measurement of compliance:-

There are two basic methods of measurings compliance.

(1) Direct method: This consists of measuring the blood levels and/or urine levels of drugs and their metaboletes at the time whân the drgus and their metabolietes are espected to be present in the blood or urine several specific methods using reagents and dipsticks are in vogue and the appropriate time of testing urine level is between 4-6 hrs. after the drug was expected to have been taken.

2. Indirect method:

(a) Response to therapy: This is based on the finding that sputum bas not become AFB negative/there is no radiological or symptomatic improvement when you expect these to accure if the therapy was taken faithfully .But this method is unsatisfactory because:

(i) Months may elapse after initiation of therapy when you realise that adequate response has not occured.

(ii) Patient may develop complications and die

(iii) Factors other than non compliance, such as drug resistance might distort the estimation.

(iv) Patient may take just enough drug to become culture or smear negative but might not have taken enough to prevent relapse in the later date.

(b) Interview technique: The patient is asked in a non threatening manner, whether he/she has missed taking any of the prescribed doses. "Many people have

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...2

trouble remembering to take their medication. Since your last visit how many days have you forgotten to take yours".

(c) Pill count:- But patient often fail to return thin pillbottle or container. And patient may discard pills rather than swallow them.

(d) Judgement of the provider: Subjective judgement of the health care provider gives a very unreliable estimation.

(e) Packaging device: Some have advocated devices which can detect whether or not medication is removed from its packaging at appropriate time intereval.

DETERMINANTS OF COMPLIANCE:

(1) Demographic features of the patient:- age/sex education/socio-economic status occupation etc.,seem to have no significant association with compliance. These factors have an effect on access to health services,however.

(2) Features of the disease: The more disabled the patient isby the desease,the greater the likelihood of compliance.

(3) Features of the clinical selling: waiting time in a health care clinic has important effect on compliance rates. It seems logical to assume that a clean,easily accessible clinic with convenient houses of operation would be conducive to more compliant behaviours.

(4) feature of referral process:

The longer the interval between the line of referral and the time of appointment,the less likely it is that the patient will keep the appointment. Referral to see a specific provides rather than referral to a clinic,enhances compliance,provided it does not increase waiting time.

(5) Features of the regimen:-

(a) Duration of treatment. The duration of treatment has an unequivocal effect on compliance. In general adherence to treatment decreases with time. This is one consideration which has led to the study and recommendation use of short-course chemotherapy regimens.

(b) Number of medication prescribed: The larger the number,the lower the compliance rate. In chemotherapy of TBC multidrug is the necessity. Thus combined preparation of Rifinex(H/R) may improve compliance

(100 mg H/150 mg R)

(150 mg H / 300 mg R)

(c) Frequency of dosing:
To simplify the regimen so that drugs are taken once daily is important to obtain compliance. Less than daily basis(twice weekly) if not supervised willmost probably have lower compliance.

(d) Side effects: Although it seems logical that compliance would be adversely affected by drug side effects,this has not been proven experimentally.

(f) Cost: It is sometimes said that people do not value things that are given to them free. This is not a good agreement. A large volume of evidence exists that inability to buy even the cheapensive drugs is one of the main reasons for interruption of treatment in developing countries.

(g) Parenatal Medication: The use of parenateral medication such as streptomycin increases compliance mainly because of supervision required. Among the people here injection is a thing of great importance and that itself might increase compliance.

(6) Social Support: There is evidence that patient who receivd support from family and /or friends are more likely to comply better. Social stigma should be eliminated by education of the community.

(7) Personal beliefs of the patient:
The patient may firmly belive that,when the symptoms have subsided and he is feeling well again,he does not need any further treatment. Patient may not be convenced that he is in danger when he stops taking the drugs.

....3

(8) Defective education strategy: when patient is given too much information in the first session he has been shown the facilli under the microscope his chest xray, and has been informed about diet, infectiousness, cough, discipline, handling of sputum schedules of drug taking and possible side effects-patient may nothave understood what has been told. Some may be too shocked to learn that they had TBC that they failed to grasp essential information. Thus emphasis should be laid on the essentials of hisdisease and its treatment through clear easily understandable means of communication.

(9) Improper diagnosis: There is a category of patient who are given chemotherapy, though the diagnosis of TBC has been never confirmed by bacterological examination. In such cases patient may not suffer the consequences of not continuing the therapy. They may be right in doing so and should not be called defaulters. Unfortunately they may induce other patients who definetely need treatment to stop taking.

(10) Other co-existent deseases: In Kasturba TB clinic of Lucknow approximately 25% of the hospitalised tuberculosis patient have been found to be suffering from co existent deabetes melliten/chronic frenchitis allergic rheultis and tuberculosis bronchites besides many other medical problem such as nutritional anaemia, worm infestation and malnutrition. If these co existent problems are not delt appropriately the patientmight atribute them to eneffectiveness of anti-TBC therapy and discontinue.

(11) Drug resistance: Patient may fail to obtain relief due to drug resistance of the bacille he is harbouring and this may decrease compliance.

(12) Migration/marriage/death /festival etc.may prevent the patient from coming to clinics to obtain drugs.

STRATEGIES FOR IMPROVING COMPLIANCE:

No perfect solution is available but certain steps can be taken:-

(1) Health education: patient must first know what is expected of him or her. The basis of diagnosis, prognosis, importance of complying with medical advice should be explained in simple native language. The amount of information which can be retained by a patient in one selling is limited but information first presented to the patient is more easily recalled then material presented later.

The eneraction should be a two way communication and written instruction should be handed over to the patients.

(2) Improving appointment keeping:

A postal reminder card, mailed so that it arrives 1 or 2 days in advance of the scheduled appointment is probably the best initial approach to solving the problem. If the patient does not turn up within 4 days of the due date another letter should be sent or his home should be visited.

(3) IMPROVING COMPLIANCE WITH TREATMENT:

For repeated or chronic compliance problem, intstructions, reeducation and simple reminders will produce only transient benefit. In such cases:-

(a) discuss the problem with the patient and show your genuine cancern about non compliance. Try to identify the cause of non compliance and that should be eleminated by a combined effort.

(b) With the patients permission, identify family members, friends who will support compliance and give them encouragement.

(c) The drug regimen should be design two patients life style. Find a daily ritual that the patient finds pleasant and schedule medication taking just before or after that activity.

(d) For patients who lack motivation, providing small gifts, monetary incentives or rewards for reaching therapeutic goals may be helpful. More than monetary gifts, Words of praise or commendation letters end to these patients on such occasion will be more logical and effective.

(e) Writtend, agreement of compliance can be obtained at the beginning of the therapy

(f) Use of extended supervision: it is more expensive but it is effective.

(i) Direct supervision of admission-daily regime or twice weekly regime.

(ii) ! visit to follow up broken appointment can be extremely helpful. Sputum collection, urine tests can be done and problems can be discussed with the patien first hand.

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Tuberculosis In Children : Diagnosis, and Follow-Up

Dr. Susie Graham-Jones*

Introduction

The incidence and prevalence of tuberculosis (TB) in children in Nepal is not known. The adult prevalence is about 1.6% (sputum-positive). Diagnosis in children is a problematic affair, as there are no reliable diagnostic tests. Chest x-rays are not diagnostic in children; Mantoux tests are unreliable, especially in malnourished children; and the pick-up rate from laryngeal swabs and gastric washings is poor, even when facilities are available. Sputum tests are rarely of any use in children.

Nevertheless the experience of the Save the Children Fund (SCF) Mother and Child health clinics in 4 districts in Nepal shows that childhood TB is common and carries a high mortality. This report of the TB cases diagnosed at the new SCF clinic in Sindhupalchowk between Srawan 2039 and Kartik 2040 (15 months) is a follow up to a report on TB child patients at the Surkhet SCF clinic (Wiseman, 1980). We emphasise that health workers can be trained to make a clinical diagnosis of TB without any laboratory investigations, and that progress can be monitored by weight gain as well as regression of symptoms. A search has been made for factors associated with good or poor outcome of treatment.

I.- Diagnosis of TB in children

Following Wiseman (1980), we look first for a history of illness of more than one month in duration, and make enquiries for a suggestive family history of chronic illness. On examination, we look for signs of localized disease in lymph nodes and lungs, and for chronic atypical skin lesions. We also maintain a high index of suspicion in children who are chronically undernourished or unwell, but who do not have localized symptoms or signs. These children may show deterioration and anorexia after measles or whooping cough. There are also the children who do not respond to conventional treatment for chest infections, diarrhoea, or skin lesions.

We rarely diagnose TB, except for obvious gland TB, on a child's first visit to the clinic. But if we suspect it, we call patients back to the clinic within 2 weeks for a repeat history and examination. Family history is often elicited more fully at this second interview, and we ask for sputum tests from suspect adults. We also use the BCG vaccination as an abjunct to diagnosis. Unfortunately, scarpositive BCG does not seem to give very good protection against TB in children in South India (WHO, 1979 b) But an early reaction to BCG, taking the form of skin

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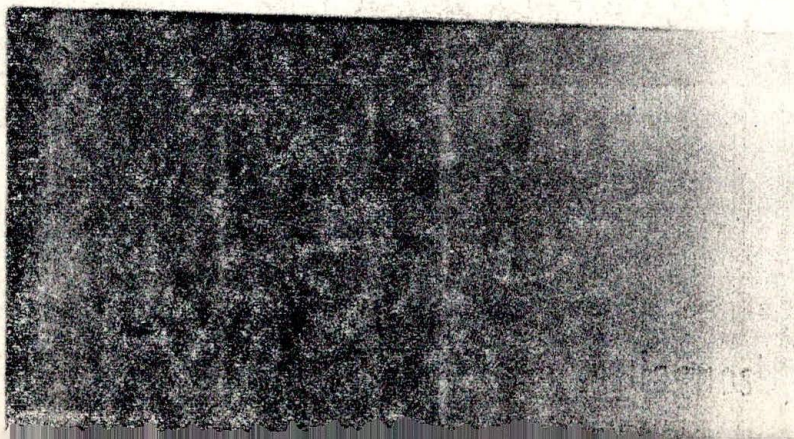

ulceration over the injection site within 2 weeks of vaccination (as opposed to the normal reaction which takes 1–2 months to develop as a small scar) may indicate active tuberculosis. This is a rather more sensitive test than the standard Mantoux test (Miller, 1978).

Training for clinic staff, health post staff and field workers in our programme has included much discussion and comparison of the signs and symptoms of TB in adults and children. We use posters and flip charts including emphasis on BCG vaccination for children and referral of patients to health services. These visual aids, and training booklets produced by the Britain–Nepal Medical Trust, (BNMT) Biratnagar, and by the Shining Hospital, Pokhara, are also used in health education sessions in schools, for patients at health posts, and in the clinic. We encourage health workers and field workers to attend the weekly TB follow up clinics at the Chautara clinic to see patients at various stages of treatment. The parents of these TB patients are often the most enthusiastic teachers.

II. Treatment

We continue to use the standard TB drugs available to hospitals and health posts through the Tuberculosis Control Project (HMG). The mainstay of treatment in children is ISONIAZID (Isonex) which is both bactericidal and bacteriostatic, and causes very few side effects in appropriate doses. It is combined with THIACETAZONE (TB 1) in most cases, a convenient formulation being RD–ZONE FORTE (isoniazid 300 mg + TB 1 150 mg) : but in order to avoid the side effects associated with thiacetazone we use the following dosage schedule according to the child's weight, including extra isoniazid and a relatively smaller dose of thiacetazone.

TABLE 1

Dosage of TB Drugs (Oral) According To Child's Weight

	RD-ZONE FORTE	+	Extra Isoniazid
WEIGHT less than 5 kg	1/4 tab	+	50 mg
6 — 14 kg	1/4 tab	+	100 mg
15 — 20 kg	1/2 tab	+	100 mg
21 kg upwards	1 tab		—

This oral regimes seems sufficient for many children with pulmonary disease, gland TB, skin TB and for those with non-specific signs, and avoids the necessity for injections and frequent clinic attendances. In seriously ill children, especially those with bone or meningeal disease, we start streptomycin injections (40mg / kg up to a MAXIMUM dose for children of 500 mg) daily for in-patients, or 3 times weekly for out-patients, always combined with the above oral regime. Streptomycin is given for 2 months, if possible. Isoniazid alone is given

occasionally to children less than two years old who are not seriously ill, have no localized symptoms, and are unlikely to develop resistant strains of mycobacteria. All patients are expected to continue treatment for a minimum of 12 months and this is made clear at the start. A special review is undertaken at 12 months to decide which patients should continue for a further 6 months. In a few cases with persistence of symptoms, ethambutol has been given for a two month trial period at 20–25mg / kg.

Other medicines are kept to an absolute minimum in order not to confuse the parents. Anemia (Hb <10g%) is treated with ferrous sulphate, and nutrition is discussed with all parents.

III. Presenting Features of Children Diagnosed as Having TB

The 130 cases diagnosed in the 15 – months study period in the Chautara MCH clinic are summarised below under various headings.

1. Age and Type of Tuberculosis

Although many cases of childhood TB present with vague symptoms, an attempt to classify all cases by "most likely focus" was made. The discrepancy with figures from Surkhet (Wiseman, 1980) may simply reflect the difficulty in classifying childhood TB.

TABLE 2

AGE (months)	Gland	Pulmonary	Abdominal	Bone	Meninges eye	Skin	Total number in age group
0 - 11 months	1	6	3	0	1	1	12
12 – 35 months	7	32	12	1	2	2	56
36 – 59 months	11	13	6	0	0	0	30
60 - 120 months	10	17	3	0	1	0	32
Total	29	68	24	1	4	3	130
% of total	22%	51%	18%	0.8%	3%	2%	100%
Of Wiseman '80 for ages less than 10 yrs	51%	34%	0.8%	7%	?	?	100%

2. Nutritional Status

Specific signs of malnutrition detected in these 130 cases, compared to the findings in all new child patients seen at the clinic over a 7 month period, (Asadh – Poush 2040) are

shown in Table 3. A weight-for-height of less than 80% of the reference figure (WHO, 1979 a) is defiend as 'wasting', a sign of excessive thinness, Signs of vitamin A deficiency include dryness and wrinkling of the conjunctivae, Bitot's spots, and conjunctival xerosis.

TABLE 3

Signs of Malnutrition	% of TB cases affected	Overall percentage of new clinic patients affected
Weight-for-height <80%	42%	10%
Nutritional oedema	17%	3%
Vitamin A deficiency	8%	2%

3. BCG Immunisation Status of TB Patients

The BCG figures in Table 4 show that a quarter of our TB patients had scarpositive BCG before they were seen in the clinic. Recent studies in South India (WHO, 1979b) have thrown doubt on the efficacy of BCG immunisation especially in populations with a high prevalence of malnutrition, and our figures are not reassuring either.

TABLE 4

	BCG given previously	Quick reaction to test, BCG	Never given BCG	Uncertain	Total
Number	31	16	36	47	100%
Percentage	24%	12%	28%	36%	100%

4. Family History of TB

It is assumed that most cases of childhood TB are transmitted from sputum positive adults now-a-days, since in our experience most parents boil milk and this lessens the transmission of bovine TB. The percentage of cases with a definite or suggestive family history of TB is shown in Table 5,

TABLE 5

	Definite FH of TB	Suspected FH of TB	No FH of TB	Uncertain	Total
Number	44	43	27	16	130
Percentage	34%	33%	21%	12%	100%

Thus it was possible to elicit a positive family history in 67% of our 130 newly diagnosed TB cases.

5. Sex

There were 61 boys and 69 girls in our 130 cases; the sexes are evenly distributed (47% boys, 53% girls). This is also true of a sample of 500 unselected, consecutive new clinic patients studied in the same period.

6. Caste / Ethnic Group

Patients were classified into 5 broad ethnic groups, and the 130 TB patients were compared with 500 unselected consecutive new clinic patients as follows:-

TABLE 6

	Brahmin / Chhetri	Newar	Tamang	Low-caste	Ghale/Magar	Total
TB patients						
Number	53	23	31	17	6	130
Percentage	41%	18%	24%	13%	5%	100%
Unselected new patients						
Number	237	129	50	68	16	500
Percentage	47%	26%	10%	14%	3%	100%

Compared with the unselected control group, the TB patient group appears to contain relatively more Tamangs and relatively fewer Newars. The differences between the two distributions is highly significant, using the complex chisquare test ($x^2 = 282$, df = 4, $p < 0.001$).

7. Distance of Home from Clinic

The distances are expressed in 'kos', where 1 'kos' is approximately an hour's walking distance. TB patients living in Chautara bazaar panchayat constitute 21% of the TB patients so far. A further 48% of TB patients live in the six surrounding panchayats, within 2 kos. Another 18% live approximately 3 kos distant, and the remaining 13% come from 4-8 hours' walk away.

IV. Follow up of TB patients

Of the 130 patients in this study, 70% (91) were followed up to at least 2 months after diagnosis. 30% (39 children) were lost to follow-up within the first month and not retraced.

Of those followed up, 10% (9 children) are known to have died, more than half of the deaths occurring within 2 months of starting treatment, most of them under two years of age and a majority with pulmonary or meningeal disease.

Of the 82 children known to have survived at least 2 months after diagnosis, information is available as follows:

TABLE 7

Treatment period for which information is available :	No. of children followed up	No. diagnosed as having TB	Follow-up Rate
11 months or more	10	14	71%
6 months	52	81	64%
2 months	67	121	55%

The follow-up rate has thus fallen as the programme has enlarged.

V. Outcome assessment

Besides the 'presenting features' analysed for all TB patients, extra information relating to treatment regime, side effects of drugs, and outcome of treatment is available on the 91 patients in the follow up study.

One major aim of the outcome studies is to clarify the factors associated with good or bad prognosis. In this retrospective study, the following assessments of treatment outcome have been used:-

a) CLINICAL IMPROVEMENT. Each patient's progress was assessed at the end point of the study (Poush 2040). Clinical progress with reference to presenting symptoms and signs was assessed as 'GOOD', 'FAIR' or 'POOR'. 'GOOD' Progrees, meaning virtually complete regression of signs + sympotoms, was found in 40% of patients followed up to at least 2 months.

b) TWO-MONTH WEIGHT GAIN expressed as a percentage of 'reference' weight gain (WG 2%). The 2-month reference weight gain (WG 2) was defined as the expected weight gain in two months of a "well-nourished" child of the same age. ("Well nourished here defined as 100% of reference weight-for-age). The reference figures for

weight gain and weight-for-age were taken from USA National Centre for Health Statistics growth curves as recommended by WHO (WHO, 1979 a)
Then : Actual/Expected 2-month weight gain × 100 = 'WG 2%'.

c) SIX-MONTH WEIGHT GAIN expressed as a percentage of 'reference' weight gain ('WG 6%'), calculated in the same way as for (b).
So : Actual/Expected 6-month weight gain × 100 = 'WG 6%'.

Since there is no single 'right' way of classifying outcome of treatment in these children, many of whom have received only a few months of treatment, all three methods of assessment were used.

The 'Contrast' Method : Analysis of Results

Patients, records were coded and sorted several times into different outcome groups using the 'd Base II, data handing package on a Sirton Z80 microcomputer.

Sort 1. **On clinical grounds, the patients'** records were sorted into those with 'GOOD', 'FAIR', and 'POOR' outcome at the endpoint of the study. Deaths were included in the 'POOR' outcome group.

Sort 2. Classification according to **2-month weight gain.** It is assumed that better-than-avarage weight gain is an indicator of improvement in most TB patients, many of whom are undernourished when diagnosed (see 'presenting features').
'GOOD' WG 2% was taken as ≥ 200% of reference WG 2.
'FAIR' WG 2% was taken as 101–199% of reference WG 2.
'POOR' WG 2% was anything up to reference WG 2, and included patients who lost weight or died within the 2-month period after treatment.

Sort 3. Classification by **6-month weight gain.** The criteria are slightly altered since relatively fewer patients achieve more than 200% of reference weight gain in this longer treatment period. For this sort, 'GOOD' WG 6% was taken as > 150% of reference WG 6.
'FAIR' WG6% taken as 101–149% of reference WG6.
'POOR' WG6% was taken as anything up to reference WG6, including those who lost weight or died 2–6 months after starting TB treatment.

Having sorted the records, comparisons between the 'GOOD' and 'POOR' outcome groups were made, picking out the additional features which discriminated between these groups. To maximise contrast, the intermediate 'FAIR' outcome groups are not presented here.

The results of four separate comparisons between contrasting subgroups of patients were analysed using Student's test for comparison of means, and the test for the significance of the difference between two independently computed proportions.

a) Comparison of 'GOOD' and 'POOR' clinical outcomes as of Poush 2040

The attributes studied are listed in the left hand column of table 8. The number of children in the 'GOOD'OUTCOME' group with these attributes in shown alongside that from the 'POOR OUTCOME' group in the centre, and the respective percentages, for comparison, in the right hand column.

A 'GOOD' outcome implies that all or most presenting symptoms and signs have been cured.

TABLE 8

Attribute	No. of children		Percentage of Group	
	'GOOD'	'POOR'	'GOOD'	'POOR'
Sex = Male	16	10	46%	50%
Age less than 36 months	19	14	54%	70%
Home 3 hours distance	7	6	20%	30%
Positive family history	21	10	60%	50%
Previous BCG	9	5	26%	25%
Caste Brahmin / Chhetri	16	6	46%	30%
Newar	10	5	29%	25%
Tamang	4	6	11%	30%
low – caste	3	3	9%	15%
Weight-for-height <80%	10	6	31%	30%
TB of lung	23	9	66%	45%
glands	5	4	14%	20%
abdomen	5	2	14%	10%
meninges	0	2	0%	10%
Given Streptomycin as well as oral drugs	19	9	54%	45%
Early defaulter	17	13	49%	65%
Number in group	35	20	100%	100%
Mean age ± S.E.M.	40.9±5 mth4	30.8±4 mths	–	–

None of the differences shown in Table 8 was statistically significant. The differences which **nearly** reached significance, and are therefore of possible value for prognosis, are:

(I) **age:** (poor outcome group mean age is younger, including a higher proportion of children uuder 3 years);

(II) **caste:** there is a higher proportion of Tamangs in the poor outcome group; and

(III) **TB type:** in that there is a higher proportion of meningeal TB, and a lower proportion of lung TB, in the poor outcome group.

b) Comparison of 'GOOD' and 'POOR' Weight gains at 2 months.

A similar tabulation and analysis to that used in (a) above was made. The salient points are summarised in Table 9.

TABLE 9

Attribute	Number of children		Percentage of group	
	'Good WG 2%'	'Poor WG 2%'	'Good WG 2%'	'Poor WG 2%'
Sex=Male	18	14	60%	40%
Age less than 36 months	10	27	33%	77%*
Caste Tamang	5	4	16%	11%
Weight-for-height <80%	15	10	50%	29%*
TB for lung	18	18	60%	51%
glands	5	5	17%	14%
abdomen	7	6	23%	17%
meninges	0	2	0%	6%
Given Streptomycin as well as oral drugs	16	17	53%	49%
Early defaulter	11	21	37%	60%
Number in group	30	36	100%	100%
Mean age ± S. E. M.	51 ± 5 months	29 ± 4 months	—	—*

This compasison of groups showing high vs low weight gain in the first two months of TB treatment does yield some significant comparisons*. The age difference is highly

significant (comparison of means by t. test $t = 3.72$, $df = 63$, $P < 0.001$) and reflects a preponderance of children under 3 years in the 'poor weight gain' group (comparison of proportions by z test, $z = 2.83$, $P < 0.002$). In the 'good weight gain' group, 50% of the children were wasted at the time of diagnosis, a significantly higher proportion than the 29% in the 'poor weight gain' group (comparison of proportions, $z = 1.97$, $P < 0.05$). During the early months of treatment, these wasted children are indeed those who gain most weight in 'catch-up' growth, although they are on average OLDER than the 'poor weight gain' group (the rate of weight gain is normally higher in younger children), Thus the rate of weight gain for sick, wasted children during treatment can overtake that of a relatively better-nourished and younger group.

The other differences shown in Table 9 did not reach significances. The suggested discriminating features of caste and TB typs derived from Table 8 are apparently not powerful factors in determining **weight gain** in the early months of treatment.

c) Comparison of 'GOOD' and 'POOR' Weight Gains at 6 months.

This comparison excludes the early deaths, and is based on a smaller number of patients on whom information at the 6-month point is available. The relevant points are summarised in Table 10; findings on all other attributes were not useful discriminants between these two groups.

TABLE 10

Attribute	Number of children		Percentage of group	
	'GoodWG 6%'	'Poor WG 6%'	'Good WG 6%	'Poor WG 6%'
Sex = Male	10	9	42%	50%
Caste Tamang	3	2	13%	11%
Newar	3	6	13%	33%
Brahmin/Chhetri	12	9	50%	50%
Low - caste	6	1	25%	6%
Weight-for-height <80%	9	4	41%	22%
TB of lung	17	12	71%	67%
glands	6	2	25%	11%
abdomen	1	3	4%	17%
Early defaulter	13	11	54%	61%
Number in group	24	18	100%	100%
Mean age ± S.E.M.	43±5 months	31±5 months	-	-*

The only statistically significant comparison between these two groups is the t test on the mean ages* ($t = 1.68$, df 40, $P < 0.05$). As in the two-months weight gain comparison, the 'good' group contained more 'wasted' children at the outset, but the difference is not significant in these smller groups ($z = 1.29$). Nor are the apparent caste -related differences shown in Table 10 statistically significant. There is a suggestion that children abdominal TB may do less well (at any rate in terms of weight gain) at this stage, but the difference between the proportions shown does not reach significance on these numbers ($z = 1.34$, not significant).

d) Comparison of 'BEST' and 'WORST' outcome groups.

Because the preceding analyses has failed to elucidate any definite discriminant features other than age, one further extreme example of the contrast method was attempted - comparing the 'best' group, who had all had at least 11 months of TB treatment with the 'worst' group, who had all died. Since the numbers in these two contrasting groups were small (10 and 9 respectively) this was done merely to see if any previously obscure factor emerged as relevant, rather than as a quantitative exercise. However, there were again no obvious discriminating features, other than age (mean 41 months for the 'best' group and 23 months for the 'worst'), and a suggestion that the 'worst' group was somewhat more malnourished at the start.

VI. Treatment regimes and side effects of TB drugs

No severe side effects have been reported during the study period, and drugs have not had to be changed because of side effects. Mild side effects were reported in 5 cases within 2 months of starting treatment:

1) vomiting in a three - year old on oral INH and TB 1
2) vomiting in a 9 month old on streptomycin and oral INH and TB 1.
3) diarrhoea and vomiting in at 2 - year old on oral INH and TB 1.
4) itchy rash at 2 weeks after starting oral INH and TB 1 in a 2 - year old.
5) fever in a five - year old on streptomycin and oral INH and TB 1.

This low incidence of side effects is probably due to the care with which dosage is related to the child's weight.

The **isoniazed only** regime has been used in 4 children under 2 years of age who have been followed up. Two have done well. and two have shown only slight improvement. This regime cannot yet be properly assessed.

Ethambutol has been added to oral INH and TB in 3 older children with persistent symptoms after 6 months of the standard regims. Two are now improving, and there have been no side effects.

VII. DISCUSSION

Diagnosis of TB in Children

With specific training for clinic health workers, TB diagnoses have risen from 3 to about 18 cases per month at the Chautara MCH clinic, out of an average of 225 new patients seen per month. We now estimate that about 10% of the total work load of the clinic is associated with TB diagnosis and follow up. This is one of the main topics for the in-service training programme for HMG health workers at the Chautara MCH project.

Follow up of TB in children – whose job ?

Follow up rates in most TB programes are disappointing, since patients have to be exceptionally well motivated to continue attending when symptoms have subsided. In this study, 30% of newly diagnosed TB patients (under 10 years old) were not followed up at all; and there was a 45% drop-out rate at 2 months after diagnosis, by the time the programme had ruuning for 15 months.

At present, the defaulter-chasing duties of Tuberculosis Control Project staff (HMG) are restricted to sputum-positive adult cases, who are the most infectious group. In this field district, we are working together with TBCP staff, health post staff, MCH/FP workers, and other agencies to try to ensure that 'at risk' individuals such as TB defaulters of all ages can be rapidly contacted.

Outcome of Treatment

Symptomatic improvement was marked in 40% of patients followed up to at least 2 months in this study. The mortality rate was 10% in the 15-month study period. Improvement in nutritional status was well defined. Wasting was present in 42% of newly diagnosed TB cases, but only 14% in those followed up at 2 months and 6% in those followed up at 6 months. Once weight gain has started, progress can be rapid; of those who gained weight at all, the average weight gain was 269% of reference weight gain at 2 months, and 169% at 6 months. More than half of all patients followed up gained weight faster than the expected reference rate of weight gain for children of similar ages.

Correlation of weight gain with reported chlinical progress, however, was not reliable. This is partly due to reporting of intercurrent illness, and partly also to improvement unrelated to weight gain.

The search for factors indicating likely outcome of treatment

In this study, factors such as sex, previous BCG immunisation, family history, ethnic group, presenting symptoms, and different drug regimes were found not to carry predictive power. The only useful indicator so far discovered is age of the child TB patient.

Younger children definitely bear a higher risk than older ones, A poor clinical outcome is found in 21% of the TB patients under 3 years old at the time of diagnosis, but in only 9% of those aged between 3 and 10 years. And there are relatively more 'under-threes' in all the poor-outcome groups than in the good-outcome groups, whichever outcome measure is used.

Malnutrition at the time of diagnosis may be followed by rapid weight gain during the first few months of treatment, and is not **per se** an indicator of poor prognosis. When outcome is assessed clinically the good-and poor outcome groups both contain approximately 30% of wasted children. This percentage falls faster in the good-outcome group than in the poor-outcome group.

There may be a small group of wasted children who do not gain weight well on TB treatment. Further analysis on a larger sample will be needed to see if there are other characteristics of this group which would help to detect them early on as needing special care.

Acknowledgements.

- Thanks to the staff of the SCF Chautara Mother and Child Health Care project and TBCP staff in Chautara for their cooperation.
- The Britain Nepal Medical Trust has provided help and encouragement and expertise in TB work over a number of years, while SCF staff have been taking the plunge into TB diagnosis in children – many thanks.
- The Sirton computer used for the analysis of TB records in this study was purchased with financial help from the Overseas Development Administration, UK.

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A study of "Tuberculosis" as presented in various training manuals and health education materials

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Resources

1. Manual for Community Health Workers (Ministry of H&FW)	Chapter 3.4 Responsibilities of CHW regarding tuberculosis Chapter 11.1.4 Cough and cold
2. Manual for Health Worker (Female) Vol.1 (Ministry of H&FW)	Chapter 12.11 BCG Vaccination
3. Manual for Health Workers (Female) Vol.2 (Ministry of H&FW)	Chapter 20.6 Tuberculosis
4. Manual for Health Workers (male) Vol.1 (Ministry of H&FW)	Chapter 12.11 BCG Immunization
5. Manual for Health Workers (Male) Vol.II (Ministry of H&FW)	Chapter 20.6 Tuberculosis
6. Manual for Health Assistants (male and female) (Ministry of H&FW)	Chapter 15 Tuberculosis
7. Where there is no Doctor (Indian reprint) (VHAI C.20)	

Health Education Materials

Apart from the health education pamphlets, slide sets and films of TB Association of India (national and State level branches) contact them for further details.

1 Set of slides produced by TRACE (Marie D'Souza)

2 Child hood tuberculosis : TALC set of slides (VHAI TBnH)

3 BCG vaccine and tuberculosis: Reprint VHAI D.32

4 TB can be cured: CMC Poster (VHAI D.12)

5 Tuberculosis is curable : Flash cards (VHAI D.80)

6 Tuberculosis is curable: Film strip (VHAI D.82)

7 Tuberculisis is curable: Slides (VHAI D.81)

8 TB patient retained record (VHAI HR3)

9 Recognition of lower respiratory infection : Chart for Anganwadis (PGI Chandigarh)

Other sources of information

1. Refer to TB Journals (India) for 1984-85 and collect information about any Health education materials

2. Write to Ms Seetha, National Tuberculosis Institute, Bellary Road, Bangalore 560003

3. Write to UNICEF Office New Delhi

3. Write to VHAI New Delhi for information later than that given in their blue catalogue (1983)

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TUBERCULOSIS IS CURABLE

VOLUNTARY HEALTH ASSOCIATION OF INDIA
C-14, Community Centre, Safdarjung Development Area
New Delhi - 110016

And

THE FOUNDATION FOR RESEARCH IN COMMUNITY HEALTH MANDWA

1. This is Ram and his wife Rukmani. They share the joys and sorrows of bringing up their children. They have two children, Krishna and Shoba. They have been living happily together but.....

2. For a month or two, Ram has not been feeling well. He often has fever. He used to enjoy Rukmani's cooking, but now he has lost his appetite. He is losing weight. He has cough. Rukmani is worried.

   Rukmani : "You should show yourself at the health centre"

   Ram : "Oh its just the change of season. I'll be better in a few days."

3. As the days pass, Ram gets thinner. His cough gets worse. He coughs up thick sputum every morning. Ram's coughing keeps Rukmani awake at night. Ram feels very tired.

   Rukmani : "You should show yourself at the health centre."

   Ram : "All right. I'll go tomorrow. I am still having fever and I don't feel well."

4. At the health centre the doctor examines Ram's chest.

   Doctor : "Ram how long have you been coughing sputum."

   Ram : "For about one month, doctor."

   Doctor : "I will give you some cough medicines. And I would like you to come back again. Before you come, please spit some sputum into a clay pot and bring it with you next time. We will test the sputum then."

...2/-

5. After a few days, Ram is still feeling ill. He has fever. He gets a clay pot and spits some sputum into it. Then he goes to the doctor. The doctor first examines the sputum under a microscope.

Doctor : "Ram you are very sick. Do you know why? You have tuberculosis in your chest. This is why you are feeling ill."

Ram (to himself) : "Just as I feared."

Rukmani : "This was our fate from the beginning." She begins to cry.

Doctor : "TB is not due to fate. Tuberculosis is caused by germs in the sputum. The disease spreads to you from a person ill with tuberculosis. Tuberculosis spreads by spitting and coughing."

6. Doctor : "Look, I see that you do not believe me. So I want to show you both the tuberculosis germs. This is a microscope. It is like a very strong pair of glasses. When you look through the microscope, you can see small small things which you cannot see just with your eyes."

First Rukmani looks and then, Ram looks through the microscope. He sees these germs which are shown on the right of this picture.

Ram : "Oh, I can see some long kind of worms here. Are they the tuberculosis germs?"

Doctor : "Yes they are the germs which are living inside your lungs, and they are growing there. But the medicine I will give you will kill the tuberculosis germs."

Rukmani wasn't listening (She kept on crying quietly).

Ram : "How did these germs get into my lungs?"

...3/-

Doctor : "Some months ago, I think, someone with tuberculosis coughed and coughed near you, then the germs went inside when you took a breath. The germs then made their home in your lungs."

7. Ram : "Oh yes, last year my brother stayed with us for several months. He was always coughing. He also had a lot of sputum. Just last month my brother died. We went to his village for his funeral."

Doctor : "Yes it is quite possible that you caught tuberculosis from your brother. But don't worry now."

Ram : "But my brother died of this disease."

Doctor : "I am giving you all the medicines. You will surely get well. But it will take a long time. It is very important for you to take the treatment for the full 18 months. Otherwise you may become sick again."

Ram : "Yes, but if I have to take so much medicine it will cost a lot of money."

Doctor : "The INH tablets for treatment of tuberculosis cost three rupees for a month's treatment. Usually you can get them free from any government health centre. You will need streptomycin injections for one month. They will cost you at least one rupee for each injection. Usually you can get them free from the government health centre."

8. Rukmani : "Here is your medicine. You must take this everyday. I would never have thought it was true what the doctor said, that we could buy INH tablets for a whole month for three rupees."

...4/-

Ram : "Well it is still expensive, Rukmani, especially when I cannot earn properly. But if I get well, then I can work again, and earn money. So it is good if I get well quickly."

Rukmani : "Yes, doctor said that in a month or two you will feel better and be able to work a little. Then our worries will be less."

9. Ram did not want to spread the disease to his children. So whenever he coughed and wanted to spit, he did not spit on the ground where the children played. Instead he spat into an old clay pot in the fire, and left the pot on the fire for 10 minutes to kill the germs. Then he used the same pot for spitting into the next morning. He was also careful to cover his mouth with his hand when he coughed so that he did not cough over the children.

10. Ram did not want his children to get tuberculosis. So he slept on the verandah until his cough and sputum went away. Then the children did not have to breathe up his air when he coughed. After taking his tablets every day for two months his cough became much less, and his sputum disappeared. He felt very relieved. He went to tell the doctor.

Ram : "Now I am feeling much better, and my cough is much less."

Doctor : "That is very good. You are getting well again. But it is important to take the treatment for the full 18 months. If you stop the disease will come back again. And it will be much worse then."

11. The doctor did not want the children to get tuberculosis. So the doctor asked Rukmani to bring the children for a check up. He found that Krishna and Shoba were both healthy. He gave them both an injection of BCG. This injection is given on the shoulder, and it helps to protect the child from tuberculosis. The injection does not cause fever."

...5/-

12. Ram had not been working for the past two months. He was worried.

Ram : "For these past two months I have not been earning any money."

Rukmani : "Yes, there is very little money left. And we only have grain enough to last for another month."

Ram : "The doctor advised me that we should consider family planning, so we do not have another child. Another child in the family would be one more to feed."

Rukmani : "And think how healthy Krishna and Shoba are. And they are both doing so well at school."

Ram : "So I shall ask the doctor about it when I go next week."

13. After a few months of treatment for tuberculosis Ram is back to work. He feels much stronger. He is not so thin. Now he is enjoying his food again. He has gained several kilos weight. Rukmani makes sure that he takes his tablets regularly. She does not want this disease to come back again. She wants Ram to take the tablets for 18 months as the doctor said.

14. Eighteen months go by. Ram visits the doctor for a final check up.

Doctor : "Oh how are you, Ram. How are you feeling now?"

Ram : "I am feeling very well, thank you doctor."

Doctor : "You certainly look well. I am glad that you have recovered . . Have you any cough or sputum?"

Ram : "No. And now I can work all day without getting tired. I am completely well again."

15. Ram is glad. The children are well, and did not get tuberculosis. The doctor had given them good advice. Ram kneww he was alive and well only because he took the treatment for the full 18 months. The tuberculosis is cured. The tuberculosis will not come back. The whole family is happy and healthy again.

DRUG REGIMENS

Recommended in National Tuberculosis Programme

a) For sputum positive TB patients

Code No.	Drugs and Dosage	Mode and Rythm of administration	Instructons
R 1	Isoniazid 300 mg + Thioacetazone 150 mg	Both drugs in a single dose or in two divided doses orally, daily	Self — administered at home after meal. Collected monthly from DTC/PHI
R 2	**Bi weekly regimen** Inj. Streptomycin 0.75 g / 1 g. + Isoniazid 600 to 700 mg (15 mg/kg body weight) with Pyridoxine 10 mg	Intramuscularly Orally	Both drugs given at the same time under supervision at DTC/ PHI twice weekly at intervals of 3 and 4 days.
R 3	Isoniazid 300 mg + PAS 10 g.	In a single dose. In two divided doses Both drugs orally, daily	Self-administered at home after meal. Collected monthly from DTC/PHI
R 4	Isoniazid 300 mg + Ethambutol 20 mg/kg body weight, i.e. 800 mg for pts. weighing ≧50 kg and 1200 mg for > 50 kg	Both drugs in a single dose, daily, orally	Self-administered at home after meal. Collected monthly from DTC/PHI
R 5	**Biphasic regimen** a. **Intensive phase** Inj. Streptomycin 0.75 g / 1 g. + Isoniazid 300 mg + Thioacetazone 150 mg or Ethambutol 20 mg per kg body weight i.e. 800 mg for pts. weighing <50 kg and 1200 mg for those > 50 kg or PAS 10 g.	**First two months** Intramuscularly. daily In a single dose orally, daily. (PAS and Thioacetazone may be given in two divided doses)	Injection given under supervision and the rest to be self-administered at home.
	b. **Continuation phase** With R_1, R_2, R_3, or R_4	**Remaining period** As for each regimen	As for each regimen

b) **For the sputum negative TB patients** (Suspect cases)

TB patients in whose sputum AFB are not seen, are prescribed Regimen R_1 i.e.

Isoniazid 300 mgm + Thioacetazone 150 mgm		Single dose orally daily for 1 to 1½ years

Patients, allergic to Thioacetazone can be treated with R_4

Duration of Treatment

All patients should be treated for a minimum of 1 year or optimum of 1½ years duration irrespective of their disease status. By duration of treatment for 1 year to 1½ years is meant that intensive efforts should be made to keep the patient on regular treatment for atleast one year. Even if patients at the end of one year are regular, treatment should be continued upto 18 months in order to prevent relapses.

Treatment can be continued upto 2 years after review at the end of 18 months but continuation beyond two years has no added advantage.

From:

National TB Institute

BANGALORE-560 003

Published by: **Karnataka State Tuberculosis Association**

No. 3, Union Street, Bangalore-1 Tel, No. 564387

DRUG REGIMENS

Recommended in National Tuberculosis Programme

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R 2	**Bi weekly regimen** Inj Streptomycin 0.75 g / 1 g. + Isoniazid 600 to 700 mg (15 mg/kg body weight) with Pyridoxine 10 mg	Intramuscularly Orally	Both drugs given at the same time under supervision at DTC/PHI twice weekly at intervals of 3 and 4 days.
R 3	Isoniazid 300 mg + PAS 10 g.	In a single dose. In two divided doses Both drugs orally, daily	Self-administered at home after meal. Collected monthly from DTC/PHI
R 4	Isoniazid 300 mg + Ethambutol 20 mg/kg body weight, i.e. 800 mg for pts. weighing ≥ 50 kg and 1200 mg for > 50 kg	Both drugs in a single dose, daily, orally	Self-administered at home after meal. Collected monthly from DTC/PHI
R 5	**Biphasic regimen** a. **Intensive phase** Inj. Streptomycin 0.75 g / 1 g. + Isoniazid 300 mg + Thioacetazone 150 mg or Ethambutol 20 mg per kg body weight i.e. 800 mg for pts. weighing < 50 kg and 1200 mg for those > 50 kg or PAS 10 g.	**First two months** Intramuscularly. daily In a single dose orally, daily. (PAS and Thioacetazone may be given in two divided doses)	Injection given under supervision and the rest to be self-administered at home.
	b. **Continuation phase** With R_1, R_2, R_3, or R_4	**Remaining period** As for each regimen	As for each regimen

b) **For the sputum negative TB patients** (Suspect cases)

TB patients in whose sputum AFB are not seen, are prescribed Regimen R_1 i.e.

Isoniazid 300 mgm + Thioacetazone 150 mgm	Single dose orally daily for 1 to 1½ years

Patients, allergic to Thioacetazone can be treated with R_4

Duration of Treatment

All patients should be treated for a minimum of 1 year or optimum of 1½ years duration irrespective of their disease status. By duration of treatment for 1 year to 1½ years is meant that intensive efforts should be made to keep the patient on regular treatment for atleast one year. Even if patients at the end of one year are regular, treatment should be continued upto 18 months in order to prevent relapses.

Treatment can be continued upto 2 years after review at the end of 18 months but continuation beyond two years has no added advantage.

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Tuberculosis

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CURRENT ISSUES

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High rate of transmission of TB in an office: impact of delayed diagnosis

Source: MacIntyre CR, Plant AJ, Hulls J, et al. High rate of transmission of tuberculosis in an office: impact of delayed diagnosis. Clin Infect Dis *1995;21:1170–4.*

Outbreaks of TB typically occur in high-risk settings such as hospitals, prisons and other institutions. However, sporadic outbreaks have been described in other closed environments including office buildings, schools and aircraft.

These authors report an outbreak in an office in Melbourne, Australia. Initially, two co-workers were reported to have the disease and were shown by restriction length polymorphism to be infected with identical *Mycobacterium tuberculosis* isolates.

The major factor associated with the spread of infection was the delay in diagnosis of the first case, which resulted in inadvertent spread over several months

Contact screening was performed on 195 of 210 workers at the office by means of the tuberculin skin test, which was read in 189 cases. Subjects with a positive reaction subsequently underwent chest radiography.

All skin-tested employees also completed a questionnaire concerning demographic details, including where they had worked within the office during the period of exposure, whether they had rotated to more than three sites during the same period and other risk factors for TB.

Office contacts were exposed to TB for four months. Seventy-five per cent had received bacille Calmette-Guérin (BCG) vaccination, 19% had not and 6% were unsure of their status.

Based on Australian standards, 46 (24%) of the 189 employees were shown to be infected. Of those, one converted from a negative to a positive reaction during the test period, 36 had a history and/or evidence of BCG vaccination, five had no such history and five were unsure of their status. No radiographic abnormalities were detected.

There was an association between infection and sitting in proximity to the index case during the period of exposure. On-site workers had a higher risk of being infected than did visiting workers (Table).

No significant association was detected between infection and rotating to three or more desks during the period of exposure, foreign birth, smoking, BCG vaccination or history of overseas travel.

The major factor associated with infection was the delay in diagnosis of the first case, which resulted in inadvertent spread over several months. The patient concerned had acted responsibly and sought medical attention on several occasions, yet despite a typical clinical presentation of pulmonary TB, chest radiography and sputum examination were not performed until she had been symptomatic for at least four months.

The authors conclude that efforts to raise the awareness of medical practitioners about the possibility of TB should be part of every TB control programme. In addition, details of public health measures aimed at the control and prevention of infectious diseases such as TB should be an integral part of undergraduate medical education. ■

Table. Factors associated with TB infection

Factor	OR (95% CI)	*p* value
Proximity to index case	4.24 (1.06–19.67)	< 0.05
Rotation to three or more desks	1.85 (0.68–5.01)	0.2
Foreign birth	1.95 (0.68–5.01)	0.1
History of overseas travel	1.22 (0.48–3.15)	0.05
Smoking	0.72 (0.26–1.58)	0.6
History of BCG vaccination	2.10 (0.70–6.69)	0.2
Working on site	5.48 (1.51–23.54)	0.005

OR = odds ratio; CI = confidence interval. Reprinted with permission.

Difficulty of diagnosing TB in childhood

Source: Schaaf HS, Beyers N, Gie RP, et al. Respiratory tuberculosis in childhood: the diagnostic value of clinical features and special investigations. Pediatr Infect Dis J *1995;14:189–94.*

The diagnosis of TB in childhood continues to be surrounded by considerable uncertainty. Diagnosis is seldom confirmed by culture and usually relies on a constellation of symptoms, clinical signs, tuberculin testing, chest radiography and a history of close contact with an adult case of pulmonary TB. The World Health Organization has suggested provisional guidelines that make use of these and other clinical features when diagnosing pulmonary TB in children (Table). The authors review their experience of the value of some of these criteria.

Over a 16-month period, children presenting to a paediatric outpatient facility from an area of high TB incidence (more than 400 per 100,000) were evaluated for close contact with adult pulmonary TB, weight loss, symptom duration, respiratory signs, lymphadenopathy and hepatosplenomegaly. They were also assessed by chest radiography and tuberculin testing (Mantoux or tine).

Probable TB was diagnosed in 258 children and confirmed in 109 (42%, mean age 31 months) by culture of *Mycobacterium tuberculosis* from gastric aspirate or another source. Eleven children with confirmed TB had normal chest radiography.

After review of special investigations, clinical course and follow-up of the remaining 149 children, 86 (58%, mean age 32.4 months) were considered to have probable TB and 63 (42%, mean age 27 months) not to have TB.

Significantly fewer children in the 'not TB' group than in the confirmed and probable groups had close adult pulmonary TB contact. There was no difference between the 'not TB' group and the confirmed and probable groups in the proportion presenting with weight loss, cough or other respiratory symptoms, symptom duration of more than two weeks, the presence of bronchial breathing, wheeze, hepatomegaly or splenomegaly or peripheral lymphadenopathy.

Many of the signs and symptoms commonly used to aid the diagnosis of childhood TB are, in fact, not very specific when used in an endemic area

Final diagnoses in the 'not TB' group included bacterial or viral pneumonia or bronchopneumonia (37 cases), asthma often accompanied by segmental collapse (nine cases) and cavitating pneumonia (three cases).

This study highlights, once more, the difficulty of accurately diagnosing TB in childhood. Many of the signs and symptoms commonly used to aid the diagnosis are, in fact, not very specific when used in an endemic area. Even in the presence of sufficient clinical criteria supporting the diagnosis of TB, continual reassessment is necessary. ■

Challenge of treating MDR-TB

Source: Cohn DL. Treatment of multidrug-resistant tuberculosis. J Hosp Infect *1995;30(suppl):322–8.*

Numerous studies have demonstrated the extraordinary efficacy of six- and nine-month regimens

Table. World Health Organization provisional guidelines for the diagnosis of pulmonary TB in children

A. Suspect TB
1. An ill child with history of contact with a confirmed case of pulmonary TB
2. Any child:
2.1. Not regaining normal health after measles or whooping cough
2.2. With loss of weight, cough and wheeze not responding to antibiotic therapy for respiratory disease
2.3. With painful swelling in a group of superficial nodes

B. Probable TB
A suspect case and any of the following:
1. Positive (≥ 10 mm) induration on tuberculin testing
2. Suggestive appearances on chest radiograph
3. Suggestive histological appearance of biopsy material
4. Favourable response to specific anti-TB therapy

C. Confirmed TB
1. Detection by microscopy or culture of tubercle bacilli from secretions or tissues or
2. The identification of tubercle bacilli as *Mycobacterium tuberculosis* by culture characteristics

Table. Drugs used to treat multidrug-resistant TB

Drug	Adult daily dosage	Common adverse events
Aminoglycosides		
Streptomycin	15 mg kg^{-1} 5–7 days/week	Ototoxicity, nephrotoxicity
Capreomycin	15 mg kg^{-1} 5–7 days/week	
Kanamycin	15 mg kg^{-1} 5–7 days/week	
Amikacin	15 mg kg^{-1} 5–7 days/week	
Quinolones	750 mg two times/day	Nausea, abdominal pain, tremulousness
Ciprofloxacin		
Ofloxacin	400 mg two times/day	
Other compounds		
Ethambutol	15–25 mg kg^{-1}	Optic neuritis, nausea
Pyrazinamide	30 mg kg^{-1}	Nausea, abdominal pain, rash hepatotoxicity, hyperuricemia
Ethionamide	250 mg two to three times/day	Metallic taste, abdominal pain, heptotoxicity, arthralgia
Cycloserine	250 mg two to three times/day	Depression, seizures, psychosis
Clofazimine	100–300 mg one time/day	Skin and body fluid discolouration, abdominal pain
Para-aminosalicylate	3 g four times/day	Nausea, abdominal pain, rash

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containing isoniazid and rifampicin in the treatment of pulmonary TB. However, multidrug-resistant TB (MDR-TB) represents a major clinical challenge. Mortality rates of 72–89% have been reported in HIV-infected individuals, with median intervals from diagnosis to death of only four to 16 weeks.

Poor outcomes are attributable to delayed diagnosis, slow reporting of antimycobacterial susceptibility results, inadequate treatment regimens and profound immunosuppression.

No prospective clinical trials have evaluated the optimal treatment of MDR-TB. However, a retrospective study has shown that only 56% of immunocompetent patients with secondary MDR-TB responded to prolonged courses of multiple-drug regimens, and 22% died of TB. Even fewer patients with AIDS responded, with median survivals of two to four months.

If possible, patients with MDR-TB should receive at least three drugs to which their isolates are susceptible for at least 24 months

If possible, patients with MDR-TB should receive at least three drugs to which their isolates are susceptible for at least 24 months. These regimens are likely to include ethambutol, pyrazinamide, a quinolone and an aminoglycoside. The Table shows the list of candidate drugs used to treat MDR-TB and the most common adverse events. Selected patients benefit from surgical intervention combined with aggressive chemotherapy.

MDR-TB is best prevented by directly observed therapy of patients with susceptible organisms and rigorous infection control practices in areas of high incidence. Effective treatment regimens await the development of novel compounds which have better *in vitro* activity against MDR-TB than currently available agents. ■

Disinfectants are not necessarily as mycobactericidal as they should be

Source: *Sattar SA, Best M, Springthorpe VS, et al. Mycobactericidal testing of disinfectants: an update.* J Hosp Infect *1995;30(suppl):372–82.*

TB is the most important life-threatening bacterial disease. Soon, the annual number of cases is expected to rise from the present eight million to more than 12 million due to the combined impact of AIDS, immunosuppression and demographic changes. Outbreaks of multidrug-resistant TB (MDR-TB) are particularly alarming.

Against this background, there is an urgent need to review infection control procedures, including the claims made for the mycobactericidal activity of disinfectants.

Mycobacteria are more resistant to disinfection than enveloped viruses and other types of vegetative bacteria, but a proper comparison with non-

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Genitourinary TB

Source: Halim A, Gow JG. Genitourinary tuberculosis: epidemiological resurgence and new advances. Asian J Surgery *1995;18:3–7.*

TB is an important diagnostic consideration in any patient with an unexplained urinary tract abnormality. Causative agents are *Mycobacterium tuberculosis*, *Mycobacterium bovis* and *Mycobacterium africanum*. Among them, *M tuberculosis* is the most virulent and infective.

In the kidney, the organism causes microscopic foci showing classical features of TB. The focus, primarily in the glomerulus, invades the collecting system which may ulcerate and be destroyed.

Low-virulence organisms produce a fibrous tissue reaction, resulting in stricture of the calyceal stem, obstruction and abscess formation. Fifty-three per cent of patients may also show calcification for which there appears to be no clear cause. An association has been reported between renal TB and hypertension.

TB ureteritis is an extension of the disease, commonly affecting the uterovesical junction. Bladder lesions are invariably secondary, and inflammation leads to bullous granulation and patchy cystitis.

The diagnosis may be confirmed primarily by isolation of *M tuberculosis* from three consecutive early morning urine specimens that should be cultured with and without pyruvate to exclude rare cases of bovine TB.

Genitourinary TB lends itself to effective short-course treatment, as the organisms are fewer in number than in other areas of infection and high concentrations of chemotherapeutic agents are achieved in urine.

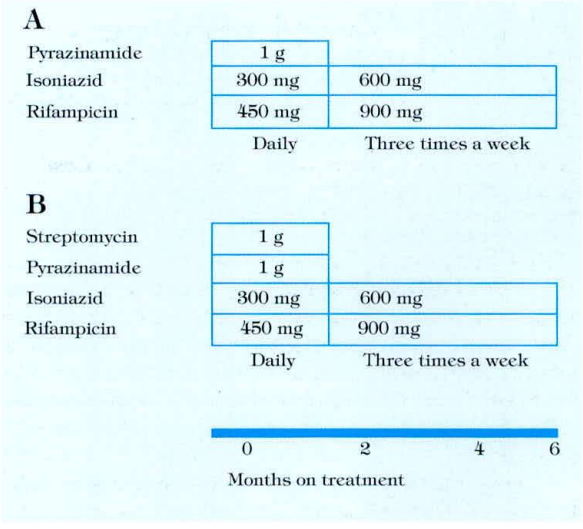

Figure. Courses of chemotherapy in the treatment of genitourinary TB: (A) standard course, (B) alternative course in fulminating infections. Both courses may be effectively terminated after four months. Reprinted with permission.

Both isoniazid and rifampicin pass readily into renal cavities at concentrations high enough to kill any *M tuberculosis*. The figure outlines the recommended regimens. Streptomycin may be added in the initial two months if there is any suggestion of resistance or if symptoms are intense.

Genitourinary TB lends itself to effective short-course treatment, as the organisms are fewer in number than in other areas of infection and high concentrations of chemotherapeutic agents are achieved in urine

The use of steroids is justified in severe disease, particularly when the bladder is affected. High doses (20 mg three times a day) are recommended. Surgery can have an important role in removing diseased tissue and for reconstructive purposes. ■

Eleven years of community-based DOT

Source: Chaulk CP, Moore-Rice K, Rizzo R, et al. Eleven years of community-based directly observed therapy for tuberculosis. J Am Med Assoc *1995; 274:945–51.*

These authors assessed the value of community-based directly observed therapy (DOT) for TB in Baltimore, Maryland, USA, a city historically known for its high case rate. Three comparisons were made:

- An 11-year retrospective comparison of TB case rates, sputum conversion rates (SCRs), rates of therapy completion, and confounding factors (AIDS, immigration, unemployment and poverty) between Baltimore and five major cities in the USA with the highest TB incidence in 1981 but no comprehensive DOT programmes.
- An 11-year trend of TB in Baltimore and the 19 major USA cities with the highest TB incidence in 1981.
- A seven-year trend of TB in both the five-city group and the 19-city group between 1985 and 1992.

Between 1981 and 1992, Baltimore experienced the greatest decline in TB incidence (from 35.6 to 17.2 per 100,000 population; –51.7%) and dropped from the sixth ranked city to the 28th (Figure). In contrast, the average incidence of TB increased by 2.1% in the five-city cohort and 1.8% in the 19-city cohort. Since 1985, TB incidence increased by 35.5% in the five cities and 28.5% in the 19 cities, but declined by 29.5% in Baltimore.

From 1986 to 1992, Baltimore's DOT-managed

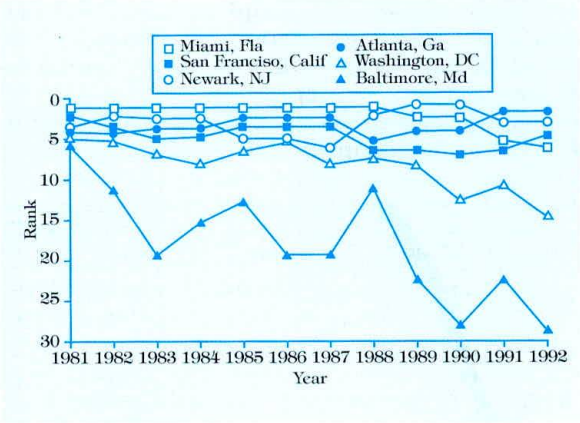

Figure. Eleven-year trends in ranking among six cities (population > 250,000) with the highest TB case rate in 1981. Reprinted with permission.

cases had the highest annual SCRs at three months (mean, 90.7%), and the highest therapy completion rates (mean, 90.1%) when compared with the five cities. These trends could not be attributed to differentials in the confounding factors.

Over time, more and more Baltimore cases were treated with DOT (86.5% by 1993). Relapse rates remained low, even among HIV-infected patients. Within Baltimore, the documented SCRs were significantly higher among DOT-managed cases than others. Multidrug-resistant TB remains rare (0.57%).

Despite highly prevalent medicosocial risk factors, Baltimore experienced a substantial decline in TB following implementation of community-based DOT

Thus, in contrast to the national increase in TB recorded in the USA during the 1980s, Baltimore experienced a substantial decline following implementation of community-based DOT, despite highly prevalent medicosocial risk factors. DOT facilitated high treatment rates and bacteriological evidence of cure. It may help reduce TB incidence elsewhere, particularly in cities with high case rates. ■

WHO calls for action against TB

Source: Nowak R. WHO calls for action against TB. Science *1995;267:1763.*

In a report released last year, the World Health Organization (WHO) revealed that an old scourge, TB, is still rampaging out of control, despite WHO's campaign to prevent its spread. Most alarmingly, multidrug-resistant (MDR) strains of *Mycobacterium tuberculosis* are being isolated at an increasing rate.

In the West, efforts to combat TB have largely relaxed due to the mistaken belief that the disease was brought under control with the introduction of effective drugs in the 1940s. In fact, the epidemic had simply been pushed into the poorer reaches of society — the inner city dwellers and the homeless — and is now re-emerging with a vengeance, partly due to the spread of HIV infection.

In developing countries, governments have been slow to channel resources into TB control, even though studies have shown it to be cost-effective in terms of productive lives saved.

Because only patients with active TB can transmit the disease, WHO argues that control programmes should focus on people with symptoms (usually chronic cough) rather than wasting resources on screening programmes that also pick up people with inactive forms of the disease.

Governments in both the developed and the developing world need to be made aware that TB is a huge problem, but that there is a cost-effective treatment

It is essential that patients complete their course of treatment in order to limit the spread of TB and prevent the emergence of resistance. The most effective way to ensure that this happens appears to be the use of directly observed therapy programmes.

Governments in both the developed and the developing world need to be made aware that TB is a huge problem, but that there is a cost-effective treatment. ■

Cost-effectiveness of anti-TB interventions

Source: Castelo A, Mathiasi PA, Iunes R, et al. *Cost effectiveness of antituberculosis interventions.* PharmacoEconomics *1995;8:385–99.*

The treatment of TB is ranked as the most cost-effective of all therapeutic programmes in terms of cost per year of lives saved. Nevertheless, TB kills or debilitates more adults between 15 and 59 years of age than any other disease; furthermore, about 2–4% of the burden of all disease, 7% of all deaths and 26% of all preventable deaths are directly attributable to TB.

About one-third of the world's population is infected with the TB bacillus. In the developing world, more women of childbearing age die from TB than from causes directly associated with pregnancy and childbirth. The deaths of adults in their prime, who are parents, community leaders and producers in most societies, represent a major social burden and

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Editorial

Primary Treatment of Tuberculosis

Dr. D. R. Nagpaul, honorary technical adviser, The Tuberculosis Association of India

It is not sufficiently appreciated in India, and perhaps elsewhere, that proper primary treatment of TB should occupy the centre stage of our endeavours. All the other concerns that are being pushed forward with a good deal of justification, such as multidrug-resistant TB and/or HIV-TB nexus, are of secondary importance. In fact, the rising trend in the emergence of drug resistance is a reflection of the frequently misconceived and mismanaged primary chemotherapy and, indirectly, an index of how "unconcerned" and "ill prepared" we in the profession generally are about providing good primary treatment to our TB patients. The reasons commonly advanced to explain this important shortcoming, by blaming patients and calling them defaulters, betrays how defensive we are about our failure to cope with this important requirement. Several studies in Indian medical literature have shown that doctors as well as public health services are as much to blame for poor treatment as are patients themselves. Perhaps we really do not care enough; but we must. In dealing with the consequential grave problems, really of our own making, we are using the same procedures, practices and attitudes that led to them in the first place. Are we ready to accept actual and moral responsibility for treatment failures and drug resistance?

Newly discovered fresh cases of TB yield the best treatment results possible — almost 100% in trials and 85% under field conditions

Proper primary treatment of TB has two great advantages. Newly discovered fresh cases of TB yield the best treatment results possible — almost 100% in trials and 85% under field conditions. Thus, reducing mortality and suffering can become a powerful tool for social happiness and economic development. Simultaneously, converting positive sputum to negative status can help control the spread of infection. It is true that by the time an infectious case is discovered, either by a private medical practitioner or the health services, some degree of spread of infection to close contacts has already taken place. However, it has also been shown that in some developed countries, good treatment programmes speed up the observed natural decline in TB cases from about 2% to over 10% per annum. The decline of cases under experimental conditions in the relatively small but closed communities of Eskimos in Canada and Greenland was around 15%. We stand to lose both of these advantages because of an ambivalent attitude to the importance of primary treatment of TB, not to mention the gravity of precipitating drug resistance.

Several assessments of the Indian National Tuberculosis Programme (NTP), the last carried out by a joint team of the Government of India, the World Health Organization and World Bank, have convincingly shown that no more than 30% of the cases in the community are being found. The standard 12- to 18-month treatment regimen is achieving about 30–40% treatment completion that improves to 40–50% with six months, short-course chemotherapy. How many patients become non-infectious at the end of treatment is not reliably known. The conditions prevailing in the private sector are perhaps worse, but largely unknown. A recent study carried out by the Foundation for Research in Community Health, Bombay, in the state of Maharashtra, and published as a monograph entitled "Tackling TB: The Search For Solutions", is an eye opener. Knowing that approximately 60% of patients with chest symptoms first contact a private medical practitioner in search of diagnosis and treatment, only deepens the general feeling of disquiet.

No useful purpose is served by separating case-finding from treatment and allotting them different priorities, as is sometimes done by programme planners

No useful purpose is served by separating case-finding from treatment and allotting them different priorities, as is sometimes done by programme planners. An infectious patient who lives, suffers and dies without being properly diagnosed should be as much our concern as the one who is placed on treatment but does not become infectious free. Both are a danger to the community. The treatment of resistant cases with every costly and toxic drug gives generally poor results, and the expense incurred from treating one resistant case can be sufficient for treating 10 fresh cases that yield more satisfying results. The revised strategy of NTP has laid down definite objectives for case-finding and treatment: detecting 70% of the estimated case-load in the community through quality sputum microscopy and achieving at least an 85% cure rate among infectious cases put on treatment for the first time. It will benefit the community, professional programme planners and executors, not to lose sight of these objectives. ■

As a part of their endorsement of *Tuberculosis: Current Issues*, the Tuberculosis Association of India will, from time to time, provide editorials.

CASE Studies

Two patients with a lump in the neck

Two patients presented with a lump in the neck. The first was a male, aged 24. The lump was in the left side of his neck, just above the clavicle. It had enlarged gradually over the preceding eight weeks. Otherwise, he had been generally well, although on one or two occasions he had awakened at night bathed in sweat, and his skin felt itchy. Six years earlier, he had had a similar but smaller lump removed from the other side of his neck. On examination, the scar from that operation could be seen in the right anterior triangle. The new lump was in the left anterior triangle, arising from behind the clavicle. It was 6 cm wide and 2 cm from front to back. The surface of the mass was not fixed to the skin and felt lobulated, and the consistency was firm and rubbery. The mass seemed fixed to deeper structures.

The second patient was a 30-year-old male who had no noteworthy past history. The lump was on the right side of his neck, under the ear. He had suddenly noticed it four days previously, but his wife said she had seen it three weeks before. He had been more concerned about pain and weakness in his right arm that had become progressively worse over the last four weeks. He had lost some weight and had suffered night sweating attacks. Examination showed a firm fixed tender mass 3 cm x 2 cm behind the right sternomastoid, with weakness and wasting of the muscles of the right arm supplied by the seventh cervical nerve and an absent triceps jerk.

QUESTIONS

1. Give at least three possible diagnoses that would fit either case.
2. What is the one investigation that would be most likely to establish the diagnosis in either case?

Night Sweats

A 26-year-old man presented with night sweats. Chest radiograph showed bilateral hilar and mediastinal lymph node enlargement. General examination revealed no abnormality. Investigations showed:

Hb 12.6 g/dl
WBC 7.3 x 10^9/l
ESR 55 mm in the first hour

QUESTIONS

1. Give three possible diagnoses.
2. Give five further tests likely to establish the diagnosis.

Answers on p. 8

Source: *These case studies were taken from Gillmar MDG, Gordon D, Sever PS, et al.* 100 cases for students of medicine. 2nd edn. *Churchill Livingstone, 1991; and Hawkins RL, ed.* Pocket Series for MRCP Part 2, Book 1: Cardiology and Respiratory Medicine. *Knutsford: Pastest, 1990.*

CASE STUDIES is a regular feature of *Tuberculosis: Current Issues.* Doctors' contributions will be accepted for publication subject to review. Please send your case study to Excerpta Medica Asia Ltd.

continued from p.5.

public health problem. Unfortunately, in the poorest countries, where the TB problem is greatest, control strategies that are economically feasible tend to be less effective.

Operationally, the main components of a TB control programme are: (i) detection and treatment of the disease; and (ii) prevention through vaccination and prophylaxis. Priority should be given to ensuring that patients complete their prescribed course of chemotherapy, as effective treatment is the most effective way of preventing TB from spreading and controlling the emergence of drug resistance.

Health units that achieve high cure rates should be able to attract most patients in their catchment areas for treatment and prevention. It does not seem warranted, therefore, to divert energy and resources away from treatment towards active case-finding or chemoprophylaxis before a cure rate of at least 85% is achieved.

Short-course chemotherapy, ideally via directly observed therapy (DOT), is preferable to standard anti-TB regimens in virtually all cases. However, the DOT programme adopted should be cost-effective in the context of local conditions and culture.

It does not seem warranted to divert energy and resources away from treatment towards active case-finding or chemoprophylaxis before a cure rate of at least 85% is achieved

With the exception of HIV-infected patients, chemoprophylaxis is unlikely to be justified on the grounds of cost-effectiveness in countries falling far behind the goal of an 85% cure rate among newly detected smear-positive TB cases.

Finally, bacille Calmette-Guérin vaccination is an important public health tool that should be used as part of a comprehensive strategy against TB, not as an isolated measure. ■

continued from p. 3

enveloped bacteria requires more data.

Flaws in current protocols for mycobactericidal activity are shown in the Table. Furthermore, these authors report that a product meant for 14-day reuse (2% alkaline glutaraldehyde) was non-mycobactericidal after only one week of actual use in an endoscopy unit. Taken together, these considerations make the available data on product efficacy unreliable, particularly in view of the increasing threat from MDR-TB.

Table. Shortcomings of current mycobactericidal protocols

Lack of proper quantitation
Unrealistically long contact times at higher than ambient temperatures
Absence of a suitable organic load
Ineffective neutralisers
Unsuitable surrogates for *Mycobacterium tuberculosis*
Improper recovery media
Inappropriate types of carriers

Available data on mycobactericidal efficacy are unreliable, particularly in view of the increasing threat from MDR-TB

Recent findings suggest that the following should make mycobactericidal tests more precise and reliable: the use of *Mycobacterium terrae* as a surrogate, better recovery media, flat surfaces as carriers, elimination of neutralisers, proper removal of cell clumps and a required ≥ 4 $\log_{10}$ reduction in the number of colony-forming units of the test bacterium after disinfectant treatment. All of these make product selection and registration easier.

There is also an urgent need to develop standardised protocols to determine the mycobactericidal activity of disinfectants under conditions of reuse. ■

ANSWERS TO CASE STUDIES

Case I and II

1. From their descriptions, the lumps in both cases almost certainly arise from lymph nodes, and the problem is that of the differential diagnosis of chronically enlarged cervical lymph nodes.

   Chronic lymphadenopathy is likely to be due to chronic infection or to infiltration with neoplasm. The lymphadenopathy of infectious mononucleosis, secondary syphilis or toxoplasmosis is transient, rather than persistent and and progressive. Lymphadenopathy secondary to a pyogenic infection elsewhere could present, as in these cases, except that the nodes would be very tender and would not tend to mat together as in the first case. Also, the site of the primary infection should have been found on examination. The chronic infection that is most likely is TB. The past history in the first case is a little suggestive of TB, with previous excision of a lump that may have been a tuberculous node. Both cases have had night sweats, typical of a tubercular infection.

   Possible neoplasms are many. Primary neoplasms of lymphoid tissue include lymphatic leukaemia, lymphosarcoma and reticulum cell sarcoma. In this age group, these are all less common than Hodgkin's disease. Hodgkin's disease often starts in cervical nodes that typically feel rubbery, as in the first individual, who also shows fever and pruritus, common systemic manifestations of Hodgkin's disease. The second case, with fever and weight loss, could also have Hodgkin's disease, with the additional problem of a deep-seated mass of Hodgkin's tissue compressing the seventh cervical nerve root. Both cases could also have a secondary neoplasm growing in their nodes, with a primary carcinoma elsewhere. This is perhaps the most likely diagnosis in the second case, as carcinoma is more prone to invade and compress neural tissue than is primary neoplastic lymphoid tissue or a simple inflammatory or tuberculous mass.
2. The one investigation likely to give a definite diagnosis in either case is biopsy of an affected node. This was performed. The diagnosis in the first case was nodular sclerosing Hodgkin's disease, and in the second, rather unexpectedly, was TB.

Case III

1. Lymph node TB, sarcoidosis and lymphoma can produce this appearance on chest radiograph and are the most likely diagnoses in this man.
2. Fibreoptic bronchoscopy and transbronchial biopsy might show evidence of pulmonary involvement in lymphoma or TB and will reveal non-caseating granulomata in 80% of cases of sarcoidosis, even in the absence of abnormaility in the lung fields on chest radiograph. Tuberculin skin testing might be helpful because it is likely to be positive in TB but negative in sarcoidosis. If the diagnosis remains unclear, mediastinoscopy and lymph node biopsy are indicated.

   The serum angiotensin converting enzyme may be elevated and Kveim test positive in sarcoidosis, but the delay inherent in obtaining the latter is unacceptable in this patient. ■

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ಈ ಪವಾಡ ಔಷಧಿಗಳಾವುವು?

ಸ್ಟ್ರೆಪ್ಟೋಮಿಸೀನ್ (Streptomycin) ಎಂಬುದು ಚುಚ್ಚು ಮದ್ದು. ಐ.ಎನ್.ಎಚ್. (I.N.H.) ಎಂಬುದು ಮಂತ್ರೋಂದು ಅದ್ಭುತವಾದ ಸೇವಿಸುವ ಔಷಧಿ. ಪಿ.ಎ.ಎಸ್. (P.A.S.) ಮತ್ತು ತಯಾಸಿಟಿಸೋನ್'' (Thiacetezone) ಎಂಬುವು ಇತರ ಔಷಧಿಗಳು. ಸಾಮಾನ್ಯವಾಗಿ ಎರಡು ಔಷಧಿಗಳನ್ನು ಒಟ್ಟಿಗೆ ಚಿಕಿತ್ಸೆಗಾಗಿ ಕೊಡುವರು. ಪಂಥ್ಯವಾಗಿ ನೆನಪಿನಲ್ಲಿಡಬೇಕಾದುದು; ಔಷಧಿಗಳನ್ನು ಕ್ರಮವಾಗಿ ಸೇವಿಸುವುದು. ಕೆಲವು ವೇಳೆ ಎರಡು ವರ್ಷ ನಿರಂತರ ಔಷಧಿ ಸೇವಿಸಬೇಕಾಗುವುದು. ಯಾವ ಔಷಧಿಗಳನ್ನು ಯಾವಾಗ ಮತ್ತು ಹೇಗೆ ತೆಗೆದುಕೊಳ್ಳಬೇಕೆಂಬುದನ್ನು ವೈದ್ಯರು ನಿರ್ಧರಿಸುತ್ತಾರೆ.

ಕ್ಷಯ ರೋಗಿಗೆ ಮನೆಯಲ್ಲಿಯೇ ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಚಿಕಿತ್ಸೆ ಕೊಡಬಹುದೆಂದು ಮೇಲೆ ಹೇಳಿದೆಯಷ್ಟೆ. ಬಹಳವಾಗಿ ಜ್ವರ ಮತ್ತು ಆಲಸಿಕೆ ಇಲ್ಲದಿದ್ದ ಪಕ್ಷದಲ್ಲಿ ಕಟ್ಟುನಿಟ್ಟಾದ ವಿಶ್ರಾಂತಿ ಅನುಚಿತ. ಅವನು ಇಷ್ಟಪಡುವುದಾದರೆ ಮನೆಯಲ್ಲಿಯೇ ಓಡಾಡಿಕೊಂಡಿರಬಹುದು. ಮೂರು ಅಥವಾ ಆರು ತಿಂಗಳು ಚಿಕಿತ್ಸೆ ಪಡೆದ ನಂತರ ತನ್ನ ದಿನಚರಿ ಕೆಲಸಗಳಲ್ಲಿ ತೊಡಗಬಹುದು. ರೋಗಿಯ ಸ್ಥಿತಿ ಉಲ್ಬಣಗೊಂಡು ಅವನ ಶ್ವಾಸಕೋಶ ತೀರಾ ಹದಗೆಟ್ಟಾಗ ಅಥವಾ ರಕ್ತವನ್ನು ಬಹಳವಾಗಿ ಕಾರಿಕೊಂಡಾಗ ಅವನಿಗೆ ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಚಿಕಿತ್ಸೆ ಮಾಡುವುದು ಉಚಿತ. ರೋಗಿಗೆ ಶಸ್ತ್ರ ಚಿಕಿತ್ಸೆಯನ್ನು ಆಸ್ಪತ್ರೆಯಲ್ಲಿಯೇ ಮಾಡಬೇಕಾಗುವುದು.

ಇತರ ಅಂಗಾಂಗಗಳ ಕ್ಷಯ

ಐದು ಮತ್ತು ಪದಿನೈದು ವರ್ಷ ಒಳಗಿನ ಮಕ್ಕಳಿಗೆ ಕತ್ತಿನ ಭಾಗದಲ್ಲಿ ಊತವು ಕಾಣಬರುತ್ತದೆ. ಇಂತಹ ಊತವು ಕತ್ತಿನ ಗ್ರಂಥಿಗಳಿಗಂಟಾಗುವ ಕ್ಷಯದ ಅಂಟಿನಿಂದ ಇರಬಹುದು, ದೇಹದ ಕೀಲುಗಳಲ್ಲಿ ಮತ್ತು ಮೂಳೆಗಳಲ್ಲಿ ಕ್ಷಯ ರೋಗವು ಕಾಣಿಸಿಕೊಳ್ಳಬಹುದು. ಒಂದು ವೇಳೆ ಮಗುವಿನ ಕತ್ತಿನ ಜಾಗದಲ್ಲಿ ಊತವು ಹೆಚ್ಚಾಗುತ್ತಾ ಹೋದರೆ, ಅಥವಾ ಯಾವುದಾದರೂ ಕೀಲು ನೋವಿನ ದೆಸೆಯಿಂದ ಕುಂಟುತ್ತಿದ್ದರೆ ಅಥವಾ ಬೆನ್ನು ಮೂಳೆಯ ನೋವಿನಿಂದ ನರಳುತ್ತಿದ್ದರೆ ಕ್ಷಯ ರೋಗದ ಅಂಟುವಿನ ಬಗ್ಗೆ ಸಂಶಯ ಪಡಬೇಕಾಗುತ್ತದೆ. ನಿಖರವಾದ ಕಾರಣಕ್ಕಾಗಿ ವೈದ್ಯರಲ್ಲಿ ಸಲಹೆ ಪಡೆಯುವುದು ಉತ್ತಮ.

ಬಳಸುವ ಪದಾರ್ಥಗಳಾದ ಪಾತ್ರೆ, ಪೆನ್ಸಿಲ್ ಮತ್ತು ಪೆನ್ನುಗಳಿಗೆ ಈ ಕ್ರಿಮಿಗಳು ಅಂಟಿಕೊಳ್ಳುವುದು. ಮಕ್ಕಳು ಸಿಕ್ಕಿದ ಪದಾರ್ಥಗಳನ್ನು ಬಾಯಲ್ಲಿಟ್ಟು ಕಚ್ಚುವ ದುರಭ್ಯಾಸವನ್ನು ನಾವು ಕಾಣಬಹುದಲ್ಲವೇ? ಒಂದು ವೇಳೆ ಕ್ಷಯ ರೋಗ ಕ್ರಿಮಿಗಳಿಂದ ಕಲುಷಿತವಾದ ಪೆನ್ಸಿಲ್ಲೊಂದನ್ನು ಮಗುವು ಬಾಯಲ್ಲಿಟ್ಟುಕೊಂಡರೆ, ಸಾವಿರಾರು ಕ್ರಿಮಿಗಳು ಆ ಮಗುವಿನ ದೇಹದೊಳಗೆ ಸೇರಿಕೊಳ್ಳಬಹುದು. ಕ್ರಿಮಿಗಳು ದೇಹವನ್ನು ಹೊಕ್ಕುವ ಸಾಮಾನ್ಯವಾದ ಮಾರ್ಗವೆಂದರೆ, ನಾವು ಉಸಿರಾಡುವ ಗಾಳಿಯ ಮೂಲಕ.

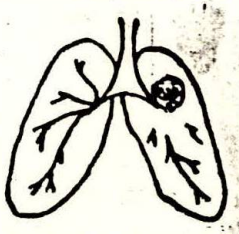
ಕ್ರಿಮಿಗಳು ಗಾಳಿಯಲ್ಲಿ ಹೇಗೆ ಸೇರಿಕೊಳ್ಳುತ್ತವೆ? ಒಬ್ಬ ರೋಗಿ ಕೆಮ್ಮುವಾಗಾಗಲೀ, ಗಟ್ಟಿಯಾಗಿ ಮಾತನಾಡುವಾಗಾಗಲೀ ಸಾವಿರಾರು ಕ್ರಿಮಿಗಳಿಂದ ಕೂಡಿದ, ಸೂಕ್ಷ್ಮವಾದ ಸಣ್ಣಸಣ್ಣ ಉಗುಳಿನ ತುಂತುರುಗಳು ಗಾಳಿಯಲ್ಲಿ ಸೇರಿಕೊಳ್ಳುತ್ತವೆ. ಆಗ ಮಗುವು ರೋಗಿಯ ಹತ್ತಿರವೇ ಇದ್ದ ಪಕ್ಷದಲ್ಲಿ ಕ್ರಿಮಿಗಳಿಂದ ಕಲುಷಿತವಾದ ಗಾಳಿಯನ್ನು ಸೇವಿಸುವ ಸಂಭವವುಂಟು.

ಕ್ಷಯ ರೋಗದ ಅಂಟು

ಕ್ಷಯ ರೋಗದ ಕ್ರಿಮಿಗಳು ದೇಹವನ್ನು ಮೊದಲ ಬಾರಿಗೆ ಪ್ರವೇಶಿಸಿದಾಗ ಯಾಯಿಲೆಯನ್ನೇನೂ ಉಂಟುಮಾಡುವುದಿಲ್ಲ. ತನಗೆ ಕ್ಷಯ ರೋಗದ ಅಂಟು ತಗಲಿದೆಯೆಂದು ವ್ಯಕ್ತಿಗೇನೂ ಗೋಚರವಾಗಿರುವುದಿಲ್ಲ. ಆದರೆ, ಈ ಕ್ರಿಮಿಗಳ ಪ್ರವೇಶದಿಂದ ದೇಹದಲ್ಲಿ ಕೆಲವಾರು ಬದಲಾವಣೆಗಳು ಉಂಟಾಗುತ್ತವೆ. ಪುನಃ ಸೇರಬಹುದಾದ ರೋಗಾಣುಗಳನ್ನು ಎದುರಿಸಲು ತಕ್ಕ ನಿರೋಧಕ ಶಕ್ತಿಯನ್ನು ಪಡೆಯುತ್ತಾನೆ. ಎರಡನೆಯದಾಗಿ ಅವನಲ್ಲಿ "ಸೂಕ್ಷ್ಮತೆ"ಯೂ ಉಂಟಾಗುತ್ತದೆ. ಇಂತಹ 'ಸೂಕ್ಷ್ಮತೆ'ಯನ್ನು ದೇಹದ ಚರ್ಮವನ್ನು ಪರೀಕ್ಷಿಸುವ "ಟ್ಯೂಬರ್‌ಕ್ಯುಲಿನ್" ಪರೀಕ್ಷೆಯಿಂದ ಕಂಡುಹಿಡಿಯಬಹುದು. ಈ ಪರೀಕ್ಷೆಯಿಂದ ಚುಚ್ಚಿದ ಜಾಗದಲ್ಲಿ ಊತವು ಕಂಡುಬರುತ್ತದೆ. ಆ ಊತದ ಸುತ್ತಲೂ ಎರಡು-ಮೂರು ದಿನಗಳ ನಂತರ ಕೆಂಪಗಾಗುತ್ತದೆ. ಇಂತಹ ಪ್ರತಿಕ್ರಿಯೆಯಂಟಾಗುವುದು ರೋಗಾಣುವನ್ನು ಹೊಂದಿದ ವ್ಯಕ್ತಿಯಲ್ಲಿ ಮಾತ್ರ, ಅವನಲ್ಲಿ ರೋಗಾಣುವಿನ ಅಂಟು ಇಲ್ಲದಿದ್ದ ಪಕ್ಷದಲ್ಲಿ "ಟ್ಯೂಬರ್‌ಕ್ಯುಲಿನ್" ಪರೀಕ್ಷೆಗೆ ಯಾವ ಪ್ರತಿಕ್ರಿಯೆಯೂ ಇರುವುದಿಲ್ಲ. ಈ ಪರೀಕ್ಷೆಗೆ ಪ್ರತಿಕ್ರಿಯೆಯೇನಾದರೂ ಕಂಡುಬಂದಲ್ಲಿ ಅವನು ಕ್ಷಯ ರೋಗದಿಂದ ನರಳುತ್ತಿದ್ದಾನೆಂಬ ಭಾವನೆಯಲ್ಲ. ಅವನಲ್ಲಿ ಕ್ಷಯದ ರೋಗಾಣುಗಳು ಹೊಕ್ಕಿ ಸೂಕ್ಷ್ಮತೆಯನ್ನುಂಟು ಮಾಡಿದೆಯೆಂದು ಮಾತ್ರ ತಿಳಿದುಕೊಳ್ಳಬೇಕು.

ರೋಗ

ಯಾವಾಗ ರೋಗ ಕಾಣುಬರುತ್ತದೆ? ಕೆಲವಾರು ತಿಂಗಳುಗಳ ಅಥವಾ ವರ್ಷಗಳ ನಂತರ, ದೇಹದಲ್ಲಿ ಸೇರಿಕೊಂಡ ಕ್ರಿಮಿಯಾಣುಗಳು ವೃದ್ಧಿಗೊಂಡು ನಿಧಾನವಾಗಿ ''ಕೊಳೆಯುವಂತೆ'' ರೋಗವು ಕಾಣಿಸಿಕೊಳ್ಳುವುದು. ಟೊಮ್ಯಾಟೋ ಹಣ್ಣು ಅಥವಾ ಮಾವಿನ ಹಣ್ಣು ಕೊಳೆಯುವ ರೀತಿಯಲ್ಲಿ ಕ್ಷಯ ರೋಗಗಳು ತನ್ನ ಪರಿಣಾಮವನ್ನುಂಟುಮಾಡುತ್ತವೆ. ಈ ವೇಳೆಯಲ್ಲಿ ರೋಗಿಯು ಕೆಮ್ಮು, ಜ್ವರ, ಎದೆಯ ನೋವು, ತೂಕ



ದಲ್ಲಿ ಇಳಿತ, ಮತ್ತು ಹಸಿವಾಗದಿರುವಿಕೆಯಿಂದ ನರಳುತ್ತಾನೆ. ಅವನು ಕೆಮ್ಮುವಾಗ ಕಫವು ಬರುತ್ತದೆ. ಕೆಲವು ವೇಳೆ ಅವನ ಉಗುಳಿನಲ್ಲಿ ಸ್ವಲ್ಪ ರಕ್ತವೂ ಇರುತ್ತದೆ. ಅವನ ಶ್ವಾಸ ಕೋಶದಲ್ಲಿ ಕಾಯಿಲೆಯು ಹೆಚ್ಚಾದಾಗ ರೋಗಿಯು ತೀವ್ರವಾಗಿ ನರಳುತ್ತಾನೆ. ಕೆಲವು ವೇಳೆ ಕಫದಿಂದ ಕೂಡಿದ ಕೆಮ್ಮುಲಿದ್ದರೂ ರೋಗವು ಅಷ್ಟಾಗಿ ರೋಗಿಗೆ ಗೊತ್ತಾಗುವುದಿಲ್ಲ, ಆದ್ದರಿಂದ, ಕೆಮ್ಮುಲೇ ಕ್ಷಯ ರೋಗದ ಮುಖ್ಯವಾದ ಗುರುತೂ ಅಥವಾ ಲಕ್ಷಣ.

ರೋಗದ ರೀತಿ

ರೋಗವು ಹೆಚ್ಚಾದಂತೆಲ್ಲಾ ಕೆಲವು ರೋಗಿಗಳು ಬಹುವಾಗಿ ನರಳುತ್ತಾರೆ. ಹಾಗೂ ಒಂದಕ್ಕಿಂತ ಪೇಲ್ಪಟ್ಟು ದೇಹದ ಅಂಗಾಂಗಳು ಈ ರೋಗದ ಪಿಡಿತದೆಲ್ಲಿ ಸಿಕ್ಕಿ ಕೊಳ್ಳುವುವು. ಸಾಧಾರಣವಾಗಿ ಈ ರೋಗವು ನಿರಂತರವಾಗಿ ಕಾಡುವುದು. ಸಣ್ಣದಾಗಿ ಕಾಣುವ ಜ್ವರ, ಕೆಮ್ಮುಲು, ಮತ್ತು ಇತರೆ ನರಳುವಿಕೆ ಇದ್ದರೂ ರೋಗಿಯು ಹಾಸಿಗೆ ಹಿಡಿದು ಮಲಗುವಂತೆ ಅವನಿಗೆ ಅನಿಸುವುದಿಲ್ಲ. ವಯಸ್ಕರಾದ ರೋಗಿಗಳು ತಮ್ಮ ಕೆಲಸದಲ್ಲಿ ನಿರತರಾಗಿರಲೂಬಹುದು, ಮಕ್ಕಳು ಶಾಲೆಗೂ ಹೋಗುತ್ತಿರುತ್ತಾರೆ. ಕೆಮ್ಮುಲು ಹೆಚ್ಚಾಗಿ, ತುಂಬಾ ನಿಶ್ಶಕ್ತಿಯುಂಟಾದಾಗ ಮಾತ್ರ ವೈದ್ಯರಲ್ಲಿಗೆ ಹೋಗಬೇಕೆನಿಸುತ್ತದೆ. ತಮಗಿರುವ ಖಾಯಿಲೆ ತಿಳಿದಾಗ ಸಕಾಲಿಕ ಚಿಕಿತ್ಸೆಯನ್ನು ಪಡೆಯಲು ಪ್ರಯತ್ನಿಸಬಹುದು. ಆದ್ದರಿಂದಲೇ, ಕ್ಷಯ ರೋಗದ ಬಗ್ಗೆ ಸಾಕಷ್ಟು ತಿಳಿಯುವುದು ಉತ್ತಮ.

ಪರೀಕ್ಷೆ

ಮೇಲೆ ತಿಳಿಸಿದಂತಹ ಖಾಯಿಲೆಯ ಲಕ್ಷಣಗಳಿದ್ದಾಗ ಮತ್ತು ಆ ತೊಂದರೆಗಳು ಸಾಮಾನ್ಯ ಚಿಕಿತ್ಸೆಗಳಿಗೆ ಜಗ್ಗದೆ ಮುಂದುವರೆದಾಗ, ಕ್ಷಯ ರೋಗದ ಪರೀಕ್ಷೆಗಳನ್ನು ಮಾಡಿಸುವುದು ಒಳ್ಳೆಯದು.

"ಟ್ಯೂಬರ್‌ಕ್ಯುಲೀನ್" ಪರೀಕ್ಷೆಯಿಂದ ಕ್ಷಯ ರೋಗದ ಅಂಟು ಇಲ್ಲವೆಂದು ದೃಢಪಟ್ಟಲ್ಲಿ ಯಾವ ಯೋಚನೆಯೂ ಇಲ್ಲ. ಕೆಮ್ಮು ಮತ್ತು ಜ್ವರ ಇದ್ದರೂ ಕೂಡ

ಅವುಗಳು ಈ ಸ್ಥಿತಿಯಲ್ಲಿ ಕ್ಷಯ ರೋಗದ ಲಕ್ಷಣಗಳೇನೂ ಅಲ್ಲ. ಆದರೆ "ಟ್ಯೂಬರ್‌ಕ್ಯುಲೀನ್" ಪರೀಕ್ಷೆಯಿಂದ ದೇಹದಲ್ಲಿ ರೋಗಾಣುಗಳು ಸೇರಿಕೊಂಡಿವೆಯೆಂದು ತಿಳಿದಾಗ ಕ್ಷಯರೋಗದಿಂದ ನರಳುತ್ತಿದ್ದಾನೆಂದು ತಿಳಿಯಲೂಬಹುದು ಎದೆಯ ಎಕ್ಸರೇ, ಕಫದ ಪರೀಕ್ಷೆಗಳಿಂದ ರೋಗದ ಇರುವಿಕೆಯನ್ನು ಕಂಡುಹಿಡಿಯಬೇಕಾಗಿದೆ. ಆದ್ದರಿಂದ ರೋಗದ ಲಕ್ಷಣಗಳು ಕಂಡುಬಂದಲ್ಲಿ ಎಕ್ಸರೇ ಮತ್ತು ಕಫದ ಪರೀಕ್ಷೆಗಳನ್ನು ಮಾಡಿಸಬೇಕು.

ಕಫದ ಪರೀಕ್ಷೆ

ರೋಗಿಯ ಕಫವನ್ನು ಸೂಕ್ಷ್ಮದರ್ಶಕದಿಂದ ಪರೀಕ್ಷೆ ಮಾಡಿ ಕ್ಷಯದ ಕ್ರಿಮಿಗಳನ್ನು ಕಂಡುಹಿಡಿಯುತ್ತಾರೆ. ಎಕ್ಸರೇ ಪರೀಕ್ಷೆಗಿಂತ ನಿಖರವಾಗಿ ರೋಗದ ಇರುವಿಕೆಯನ್ನು ಈ ಸಾಧನದಿಂದ ಕಂಡುಹಿಡಿಯುವುದು ಖಚಿತವಾದ ಮಾರ್ಗ.

ಕೆಲವು ವೇಳೆ ಸೂಕ್ಷ್ಮದರ್ಶಕದಿಂದ ರೋಗಾಣುಗಳನ್ನು ಕಂಡು ಹಿಡಿಯಲಾಗದೆ ಹೋಗಬಹುದು. ಅಂತಹ ಸಂದರ್ಭಗಳಲ್ಲಿ ರೋಗಿಯ ಕಫವನ್ನು ಕಲ್ಚರ್ (Culture-ಕೃಷಿ) ಎಂಬ ಪರೀಕ್ಷೆಗೆ ಒಳಪಡಿಸುತ್ತಾರೆ. ರೋಗಿಯ ಕಫವನ್ನು ಕ್ರಿಮಿ ಬೆಳೆವಣಿಗೆಗೆ ಸಹಾಯಕವಾದ ವಸ್ತು ವಿರುವ ಗಾಜಿನ ಸೀಸೆಯಲ್ಲಿಟ್ಟು, ಕ್ರಿಮಿಗಳ ಉತ್ಪತ್ತಿಗೆ ಅವಕಾಶ ಮಾಡಿಕೊಡುತ್ತಾರೆ. ಕೆಲವು ದಿನಗಳ ನಂತರ ಕ್ರಿಮಿಗಳ ಬೆಳವಣಿಗೆ ಕಂಡುಬರುತ್ತದೆ. ಅಂತಹ ಬೆಳವಣಿಗೆಯಲ್ಲಿ ಲಕ್ಷೋಪಲಕ್ಷ ಕ್ರಿಮಿಗಳು ಕಂಡುಬರುತ್ತದೆ, ಅವುಗಳನ್ನು ಮತ್ತೆ ಸೂಕ್ಷ್ಮದರ್ಶಕದಿಂದ ಪರೀಕ್ಷೆ ಮಾಡಬಹುದು.

ಚಿಕಿತ್ಸೆ

ಕ್ಷಯ ರೋಗಿಗಳಿಗೆ ಚಿಕಿತ್ಸೆ ನೀಡಲು ಇಂದು ಅತ್ಯಂತ ಪರಿಣಾಮಕಾರಿಯಾದ, ಪ್ರಪಾಡ ಶಕ್ತಿಯುಳ್ಳ ಔಷಧಿಗಳು ನಮಗೆ ದೊರಕುತ್ತವೆ. ಅವುಗಳು ಶಕ್ತಿವರ್ಧಕ ದ್ರಾವಕಗಳಲ್ಲ (Tonics). ರೋಗಿಗೆ ಯಾವ ಅಪಾಯವನ್ನೂ ಉಂಟುಮಾಡದೆ ಕ್ರಿಮಿಗಳನ್ನು ನಿಧಾನವಾಗಿ ನಾಶ ಪಡಿಸುವ ರಾಸಾಯನಿಕ ವಸ್ತುಗಳು. ಸುಮಾರು ೨೫ ವರ್ಷಗಳಿಂದೀಚೆಗೆ ಈ ಔಷಧಿಗಳು ಕ್ಷಯ ರೋಗದ ಚಿಕಿತ್ಸೆಗೆ ದೊರಕುತ್ತಿವೆ. ಆದಕ್ಕೆ ಮೊದಲು ರೋಗಿಗಳನ್ನು ಗಿರಿಧಾಮಗಳಲ್ಲಿರುವ ಕ್ಷಯ ರೋಗ ಆಸ್ಪತ್ರೆಗಳಿಗೆ (T. B. Sanatorium) ಸೇರಿಸಿ, ಚಿಕಿತ್ಸೆ ನಡೆಸುತ್ತಿದ್ದರು. ಅಲ್ಲಿ ಅವರನ್ನು ಕಟ್ಟುನಿಟ್ಟಾದ ವಿಶ್ರಾಂತಿ, ಗಾಳಿ ಸೇವನೆ ಮತ್ತು ಉತ್ಕೃಷ್ಟವಾದ ಆಹಾರಗಳಲ್ಲಿ ಇಡಲಾಗುತ್ತಿತ್ತು. ಆದರೆ, ಈಗ ಅವರು ಬೆಟ್ಟದ ತುದಿಗಳಿಗೆ ಹೋಗಿ ಆರೋಗ್ಯಧಾಮಗಳಲ್ಲಿ ಸೇರಿಕೊಳ್ಳುವ ಪ್ರಮೇಯವಿಲ್ಲ. ಈಗ ದೊರಕುವ ಔಷಧಿಗಳನ್ನು ಕ್ರಮವಾಗಿ ಮತ್ತು ಸಕಾಲಿಕವಾಗಿ ರೋಗಿಗಳು ಸೇವಿಸುವಂತೆ ಮಾಡಿ ಅವರಿಗೆ ಅವರ ಮನೆಗಳಲ್ಲಿಯೇ ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಚಿಕಿತ್ಸೆ ನೀಡಬಹುದು. ರೋಗಿಗಳು ಈ "ಗೃಹಚಿಕಿತ್ಸಾ ವಿಧಾನ" ವನ್ನು ಬಹುವಾಗಿ ಮೆಚ್ಚುತ್ತಾರೆ. ಏಕೆಂದರೆ, ಅವರ ಕುಟುಂಬಿಕ ಜೀವನಕ್ಕೆ ಈ ಚಿಕಿತ್ಸಾ ಕ್ರಮದಿಂದ ಹೆಚ್ಚು ಅಡ್ಡಿಯುಂಟಾಗುವುದಿಲ್ಲ.

ಕ್ಷಯರೋಗದ ವಿಚಾರವಾಗಿ ತಿಳಿದಿರಬೇಕಾದ

ಕೆಲವು ಮುಖ್ಯ ಅಂಶಗಳು

1. ಕ್ಷಯ ರೋಗವು ಒಬ್ಬರಿಂದೊಬ್ಬರಿಗೆ ಹರಡುವ ರೋಗ, ವಂಶಪಾರಂಪರ್ಯವಾಗಿ ಬರುವುದಿಲ್ಲ.

2. ಇದು, ಕ್ಷಯರೋಗ ಕ್ರಿಮಿಗಳಿಂದ ಉಂಟಾಗುತ್ತದೆ.

3. ಕ್ಷಯ ರೋಗಿಗಳು ಸಿಕ್ಕಿದಕಡೆ ಉಗುಳುವುದರಿಂದ ಅದರಲ್ಲಿರುವ ಕ್ರಿಮಿಗಳು ಒಬ್ಬರಿಂದ ಒಬ್ಬರಿಗೆ ರೋಗವು ಹರಡುತ್ತದೆ.

4. ಕ್ಷಯರೋಗದ ಚಿಕಿತ್ಸೆಯು ದೀರ್ಘಕಾಲವಾದುದು. ಕನಿಷ್ಪ ಪಕ್ಷ ಒಂದು ವರ್ಷ ನಿರಂತರವಾಗಿ ನಡೆಯಬೇಕು.

5. ಅನೇಕ ರೋಗಿಗಳು ಸ್ವಲ್ಪ ಗುಣ ಕಂಡಕೂಡಲೆ ಚಿಕಿತ್ಸೆಯನ್ನು ಗೊತ್ತಾದ ಕಾಲಕ್ಕಿಂತ ಮೊದಲೇ ನಿಲ್ಲಿಸುತ್ತಾರೆ.

6. ಗೃಹ ಚಿಕಿತ್ಸೆಯಿಂದ ಖಾಯಿಲೆಯವರ ಸಂಪರ್ಕ ಹೊಂದುವ ಇತರರಿಗೆ ಯಾವ ಅಪಾಯವು ಇಲ್ಲ.

7. ರೋಗಿಗಳು ಚಿಕಿತ್ಸೆ ಪಡೆಯುತ್ತಿರುವಾಗ ತಮ್ಮ ದಿನಚರಿ ಕೆಲಸಗಳನ್ನು ಮಾಡಿಕೊಳ್ಳ ಬಹುದು.

8. ನವೀನ ಔಷಧಿಗಳು ಪ್ರಬಲವಾಗಿರುವುದರಿಂದ ರೋಗಿಗಳಿಗೆ ಹೆಚ್ಚಿನ ಊಟ, ತಿಂಡಿ, ಮೊಟ್ಟೆಗಳು ಮತ್ತು ಹಣ್ಣು ಮುಂತಾದುವುಗಳು ಅವಶ್ಯಕತೆಯಿಲ್ಲ.

9. ಖಾಯಿಲೆಯನ್ನು ಎಷ್ಟು ಜಾಗ್ರತೆ ಕಂಡು ಹಿಡಿದರೆ ಅಷ್ಟು ಬೇಗ ವಾಸಿಯಾಗುತ್ತದೆ. ಕೆಮ್ಮು, ಎದೆನೋವು, ಸಂಜೆಬರುವಜ್ವರ, ತೂಕ ಕಡಿಮೆಯಾಗುವಿಕೆ, ಹಸಿವೇ ಇಲ್ಲಿದಿರುವುದು ಮತ್ತು ಕಾರಣವಿಲ್ಲದೆ ಆಯಾಸವಾಗುವಿಕೆ ಇವೆಲ್ಲ ಈ ಖಾಯಿಲೆಯ ಲಕ್ಷಣಗಳು, ರಕ್ತ ಮಿಶ್ರಿತಕಫ ಇದ್ದಲ್ಲಿ ಕೂಡಲೇ ವೈದ್ಯರ ಸಲಹೆ ಅಗತ್ಯ.

10. ಸೂಕ್ಷ್ಮ ದರ್ಶಕ ಯಂತ್ರದಿಂದ ರೋಗಿಯ ಉಗಳನ್ನು ಪರೀಕ್ಷೆ ಮಾಡುವುದರಿಂದ ಈ ರೋಗವನ್ನು ಖಚಿತ ಪಡಿಸಬಹುದು.

—ಹೆಚ್ಚಿನ ವಿಷಯಗಳಿಗೆ, ದಯವಿಟ್ಟು ಈ ಕಳಕಂಡಲ್ಲಿ ವಿಚಾರಿಸಿರಿ—

ಕರ್ನಾಟಕ ಆರೋಗ್ಯ ಸ್ವಯಂಸೇವಾ ಸಂಸ್ಥೆ

VOLUNTARY HEALTH ASSOCIATION OF KARNATAKA

'ರಜನಿ ನಿಲಯ' ನಂ. 60, ರಾಮಕೃಷ್ಣ ಮಠದ ರಸ್ತೆ,

ಅಲಸೂರು, ಬೆಂಗಳೂರು-560 008

ಮುಖ ಬಿಳಿಚಿಕೊಳ್ಳುವುದು ?
ದೌರ್ಬಲ್ಯಹೀನ ? ಆಯಾಸ ? ರಕ್ತಹೀನತೆ ?

ರಕ್ತ ಹೀನತೆ ಎಂದರೇನು ?

ನಮ್ಮ ರಕ್ತ ಕೆಂಪು ಕಣಗಳನ್ನು ಒಳಗೊಂಡಿದೆ. ಇದನ್ನೇ ನಾವು ಹೊಮೊಗ್ಲೊಬಿನ್ ಅನ್ನುತ್ತೇವೆ. ನಮ್ಮ ರಕ್ತದಲ್ಲಿ ಪ್ರತಿ 100 ಮಿಲಿಲೀಟರ್‌ನಲ್ಲಿ 13 ರಿಂದ 14 ಗ್ರಾಂ-ಗಳಷ್ಟು ಹೊಮೊಗ್ಲೊಬಿನ್ ಇರುತ್ತದೆ. ಹೊಮೊಗ್ಲೊಬಿನ್‌ನ ಈ ಪ್ರಮಾಣ 11 ರಿಂದ 12 ಗ್ರಾಂ ಗಳಿಗೂ ಕಡಿಮೆಯಾದಲ್ಲಿ, ಆದಕ್ಕೆ ನಾವು ರಕ್ತ ಹೀನತೆ-ಎನಿಮಿಯಾ ಅನ್ನುತ್ತೇವೆ.

ರಕ್ತ ಹೀನತೆ ಹೇಗೆ ಉಂಟಾಗುತ್ತದೆ ?

ನಮ್ಮ ದೇಹಕ್ಕೆ, ಕಬ್ಬಿಣ, ಫಾಲಿಕ್ ಆಮ್ಲ, ವಿಟಮಿನ್-ಬಿ-12 ಮತ್ತು ವಿಟಮಿನ್-ಸಿ ಅಂಶದ ಪೋಷಕ ದ್ರವ್ಯಗಳ ಅಗತ್ಯವಿದೆ. ಈ ಪೋಷಕ ದ್ರವ್ಯಗಳಿಂದಾಗಿಯೇ ನಮ್ಮ ರಕ್ತ ಸ್ವಸ್ಥವಾಗಿರುತ್ತದೆ. ನಮಗೆ ಅಗತ್ಯವಾದ ಈ ಪೋಷಕ ದ್ರವ್ಯಗಳನ್ನು, ನಾವು ನಮ್ಮ ಆಹಾರದಿಂದ ಪಡೆಯಬಹುದಾಗಿದೆ. ನಾವು ತಿನ್ನುವ ಪದಾರ್ಥಗಳಲ್ಲಿ ನಮಗೆ ಈ ಪೌಷ್ಟಿಕಾಂಶಗಳು ದೊರೆಯದಿದ್ದಲ್ಲಿ, ಅದರಲ್ಲೂ ವಿಶೇಷವಾಗಿ ಕಬ್ಬಿಣಾಂಶ ದೊರೆಯದಿದ್ದಲ್ಲಿ, ಅದು ರಕ್ತ ಹೀನತೆಗ ಮಾರ್ಗವಾಗುತ್ತದೆ.

ರಕ್ತ ಹೀನತೆ ಯಾರಿಗೆ ಆಗುತ್ತದೆ ?

ಭಾರತದ ಜನತೆಯಲ್ಲಿ ಅನೇಕರಿಗೆ ರಕ್ತ ಹೀನತೆ ಇದೆ. ಗರ್ಭಿಣಿಯರು ಮತ್ತು ಇನ್ನೂ ಶಾಲೆಗೆ ಹೋಗದೆ ಇರುವ ಮಕ್ಕಳಲ್ಲಿ ರಕ್ತ ಹೀನತೆ ಇರುವುದು ತೀರ ಸಹಜವಾಗಿದೆ. ಗರ್ಭಿಣಿಯರಿಗೆ ಮತ್ತು ಶಾಲೆಗೆ ಹೋಗದೆ ಇರುವ ಚಿಕ್ಕಮಕ್ಕಳಿಗೆ ಕಬ್ಬಿಣಾಂಶದ ಅಗತ್ಯ ಬಹಳವಾಗಿದೆ. (ಪುರುಷರಿಗಿಂತ ಮಹಿಳೆಯರಲ್ಲಿ ರಕ್ತ ಹೀನತೆ ತಲೆದೋರುವುದು ತೀರ ಸಹಜವಾಗಿದೆ—ಏಕೆ)

ಪುರುಷರಿಗಿಂತ, ಮಹಿಳೆಯರಿಗೆ ಹೆಚ್ಚಿನ ಕಬ್ಬಿಣಾಂಶದ ಅಗತ್ಯವಿದೆ. ಮುಟ್ಟಿನ ಸಮಯದಲ್ಲಿ, ಮಹಿಳೆಯರು ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ಕಬಿಣಾಂಶವನ್ನು ಕಳೆದುಕೊಳ್ಳುವುದೇ ಇದಕ್ಕೆ ಕಾರಣವಾಗಿದೆ.

ರಕ್ತ ಹೀನತೆಗೆ ಕಾರಣವಾದ ಸಾಧಾರಣ ಅಂಶಗಳಾವುವು ?

ನಾವು ಹಸಿರು ತರಕಾರಿಯಂತಹ ಪುಷ್ಟಿಕರವಾದ ಆಹಾರವನ್ನು ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ತಿನ್ನದೇ ಇದ್ದಲ್ಲಿ, ಅದರಿಂದ ನಮಗೆ ರಕ್ತ ಹೀನತೆ ಉಂಟಾಗಬಹುದು. ಹಸಿರು ತರಕಾರಿ ಮತ್ತು ಎಲೆಪಲ್ಯಗಳು ಅಗ್ಗವಾಗಿದ್ದು ಹೆಚ್ಚು ಪುಷ್ಟಿಕರವಾಗಿವೆ. ಆದಾಗ್ಯೂ ಅನೇಕ ಜನರು ಇವುಗಳನ್ನು ತಿನ್ನುವುದಿಲ್ಲ. ಬಹುಶಃ ಈ ಜನರಿಗೆ ರಕ್ತ ಹೀನತೆಯ ಬಗ್ಗೆ ಏನೇನೂ ತಿಳಿಯದು.

ಮಲೇರಿಯಾದಿಂದ ಅಥವಾ ಕೊಕ್ಕೆ ಹುಳು (Hook Worm) ಹುಳವಿನಿಂದ ನಾವು ಪೀಡಿತರಾಗಿದ್ದಲ್ಲಿ, ನಮಗೆ ರಕ್ತ ಹೀನತೆ ತಲೆದೋರ ಬಹುದು.

ಮಹಿಳೆಯರು ಮೇಲಿಂದ ಮೇಲೆ ಗರ್ಭ ತಳೆದು, ಅನೇಕ ಮಕ್ಕಳನ್ನು ಹೆತ್ತಲ್ಲಿ, ಅವರಿಂದಲೂ ಸಹ ರಕ್ತ ಹೀನತೆ ಉಂಟಾಗುತ್ತದೆ. ಇದಕ್ಕೆ ಮುಖ್ಯವಾದ ಎರಡು ಕಾರಣಗಳಿವೆ.

1. ಹೆರಿಗೆಯ ಸಮಯದಲ್ಲಿ ಬಹಳಷ್ಟು ರಕ್ತಹೋಗುತ್ತದೆ. ಅದರ ಜೊತೆಗೆ ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ದೇಹದಲ್ಲಿನ ಕಬ್ಬಿಣಾಂಶವೂ ಹೋಗುತ್ತದೆ.
2. ಸಂಸಾರ ದೊಡ್ಡದಾದಂತೆಲ್ಲಾ ಬೆಳೆಯುವ ಮಕ್ಕಳಿಗೆ ಆಹಾರ ಒದಗಿಸುವಲ್ಲಿ, ತಾಯಿ ಹೆಚ್ಚಿನ ಆಹಾರ ಉಳಿಯಲಿಕ್ಕಿಲ್ಲ.

ರಕ್ತ ಹೀನತೆಯನ್ನು ಹೇಗೆ ಗುರುತಿಸಬಹುದು ?

ಇಲ್ಲಿ ಕೊಡಲಾಗಿರುವ ಲಕ್ಷಣಗಳಲ್ಲಿ ಯಾವುದಾವರೂ ಆಗಿದ್ದಲ್ಲಿ, ಅದು ರಕ್ತ ಹೀನತೆಯ ಆಗಿರಬಹುದು.

—ನೀವು ಬಹು ಬೇಗನೆ ಆಯಾಸಗೊಳ್ಳುತ್ತಿರಿ —ಏನನ್ನೆ ಆಗಲಿ ತಿನ್ನಲು ನಿಮಗೆ ಮನಸ್ಸಾಗದು

—ನಿತ್ಯಕ್ಕಿಂತ ಸ್ವಲ್ಪ ಹೆಚ್ಚಿನ ಕೆಲಸಮಾಡಿದಾಗ ಉಸಿರುಗಟ್ಟುತ್ತದೆ

—ತಲೆಸುತ್ತುವುದು —ಮುಖ ಬಿಳಿಚಿಕೊಂಡಿರುವುದು,

—ಮೈಮೇಲೆ, ಅದರಲೂ ವಿಶೇಷವಾಗಿ, ಕೈಯಗೆಣ್ಣುಗಳು, ಉಗುರುಗಳು ಮತ್ತು ಮುಖದ ಸುತ್ತಲೂ ರಕ್ತಹೆಪ್ಪುಗಟ್ಟಿದಂತಾಗಿ ಬಿರುಕಾಗಿರುತ್ತದೆ.

ತೀವ್ರ ರಕ್ತಹೀನತೆಯ ಸಂಕೇತ ಅಥವಾ ಚಿಪ್ಪಗಳು :

—ನಿಮ್ಮ ನಾಲಿಗೆ ಸಾಪಾಗಿ, ಬಿಳಿಚಿಕೊಂಡು ಸಮಯಹೋಹುತೆ ಕಾಣ ತೊಡಗುತ್ತದೆ.

ರಕ್ತ ಹೀನತೆಯಿಂದ ನಮ್ಮನ್ನು ನಾವು ರಕ್ಷಿಸಿಕೊಳ್ಳುವುದು ಹೇಗೆ ?

ರಕ್ತ ಹೀನತೆಯನ್ನು ತಡೆಗಟ್ಟಲು, ನಾವು ಕಬ್ಬಿಣಾಂಶವುಳ್ಳ ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಆದಷ್ಟು ಹೆಚ್ಚಿಗೆ ತಿನ್ನಬೇಕು. ಇಡಿಯಾದ ಆಹಾರ ಧಾನ್ಯಗಳು, ಬೇಳೆಕಾಳುಗಳು, ಹಸುರು ತರಕಾರಿ ಮತ್ತು ಎಲೆಪಲ್ಯಗಳು, ದ್ರಾಕ್ಷಿ, ಅಂಜೀರ ಮುಂತಾದ ಒಣಗಿಸಿದ ಹಣ್ಣುಗಳು, ಮಾಂಸ ಮೊಟ್ಟೆ ಹಾಗೂ ಯಕೃತ್ತು ಇವುಗಳಲ್ಲಿ ಕಬ್ಬಿಣಾಂಶ ವಿರುತ್ತದೆ.

ಕ್ಷಯ ರೋಗ

೧ ಕ್ಷಯ ರೋಗ ಎಂದರೇನು?

ಕ್ಷಯ ರೋಗವು ಒಂದು ಅಂಟು ಜಾಡ್ಯ. ಇದು ನಮ್ಮ ದೇಶದ ಒಂದು ಮುಖ್ಯವಾದ ಜನಾರೋಗ್ಯ ಸಮಸ್ಯೆಯಾಗಿದೆ.

೨ ಕ್ಷಯರೋಗ ಯಾವ ಕಾರಣದಿಂದ ಬರುತ್ತದೆ?

ಕ್ಷಯ ರೋಗವು (ಟ್ಯುಬರ್‌ಕುಲೋಸಿಸ್ ಬ್ಯಾಸಿಲೈ) ಕ್ಷಯರೋಗದ ಜೀವಾಣುಗಳಿಂದ ಬರುತ್ತದೆ. ಇವು ಕ್ಷಯ ರೋಗಿಯ ಕಫದಲ್ಲಿ ಇರುತ್ತವೆ.

೩ ಕ್ಷಯ ವಂಶಪಾರಂಪರ್ಯ ಬರುವ ರೋಗವೇ?

ಇಲ್ಲ. ಇದು ವಂಶಪಾರಂಪರ್ಯ ಬರುವುದಿಲ್ಲ.

೪ ಕ್ಷಯ ರೋಗ ಸಮಸ್ಯೆಯ ಗಾತ್ರವೇನು?

ಕ್ಷಯ ರೋಗದಿಂದ ನರಳುವವರಸಂಖ್ಯೆ ಬಹಳ. ಇದರಲ್ಲಿ ಕ್ಷಯರೋಗ ಜೀವಾಣುಗಳನ್ನು ಕೆಮ್ಮುತ್ತಿರುವ ರೋಗಿಗಳ ಸಂಖ್ಯೆ ನಮ್ಮ ದೇಶದಲ್ಲಿ 22 ಲಕ್ಷ. ಅಂದರೆ ಪ್ರತಿ ಸಾವಿರ ಜನಸಂಖ್ಯೆಗೆ, 4 ಜನರು ಬಳಲುತ್ತಾರೆ. ಸುಮಾರು 5,00,000 ರೋಗಿಗಳು ನಮ್ಮ ದೇಶದಲ್ಲಿ ಈ ಖಾಯಿಲೆಯಿಂದ ಪ್ರತಿ ವರ್ಷವೂ ಸಾಯುತ್ತಾರೆ.

೫ ಕ್ಷಯ ರೋಗದ ಲಕ್ಷಣಗಳೇನು?

ಕೆಮ್ಮು, ಕಫ, ಜ್ವರ, ಎದೆನೋವು ಮತ್ತು ಕಫದಲ್ಲಿ ರಕ್ತ ಬೀಳುವುದು ಹಸಿವು ಇಲ್ಲದಿರುವಿಕೆ, ತೂಕ ಕಡಿಮೆಯಾಗುವಿಕೆ ಇವು ಮುಖ್ಯವಾದ ಲಕ್ಷಣಗಳು.

೬ ಈ ಲಕ್ಷಣಗಳಿದ್ದಲ್ಲಿ ಏನು ಮಾಡಬೇಕು?

ಅಂಥವರು ಅತಿ ಹತ್ತಿರದ ಸರ್ಕಾರೀ ಆಸ್ಪತ್ರೆಗೆ ಹೋಗಿ ತಮ್ಮ ಕಫವನ್ನು ಕೊಟ್ಟು ಪರೀಕ್ಷಿಸಿಕೊಳ್ಳಬೇಕು. ಇದರಲ್ಲಿ ಕ್ಷಯರೋಗ ಜೀವಾಣುಗಳಿದ್ದಲ್ಲಿ ಕ್ಷಯರೋಗ ಇದೆಯೆಂದು ವಿಚಿತವಾಗವುದು. ಇದಕ್ಕೆ ಕ್ಷಕಿರಣ ಪರೀಕ್ಷೆ ಅಗತ್ಯವಿಲ್ಲ.

೭ ಕ್ಷಯ ರೋಗವು ಸಂಪೂರ್ಣವಾಗಿ ಗುಣವಾಗುವುದೇ?

ಹೌದು, ಸಂಪೂರ್ಣವಾಗಿ ಗುಣವಾಗುವುದು.

೮ ಗುಣವಾಗಲು ಏನುಮಾಡಬೇಕು?

ತಪ್ಪದೆ ನಿರಂತರವಾಗಿ ಕನಿಷ್ಟ 18 ತಿಂಗಳು ಕಾಲ ಕ್ಷಯರೋಗ ಗುಣಪಡಿಸುವ ಔಷಧಿಗಳನ್ನು ವೈದ್ಯರ ಸಲಹೆಯಂತೆ ಸೇವಿಸಬೇಕು. ಇದಕ್ಕೆ ರೋಗಿಗಳ ಮತ್ತು ಅವರ ಬಂದು ಬಳಗದ ಸಹಕಾರ ಅತ್ಯಗತ್ಯ.

೯ ನಮ್ಮ ಸರ್ಕಾರ ಇದರ ಹತೋಟಿಗೆ ಏನು ಅನುಕೂಲ ಮಾಡಿದೆ?

ಪ್ರತಿ ಸರ್ಕಾರೀ ಆಸ್ಪತ್ರೆಯಲ್ಲೂ ಈ ರೋಗಕ್ಕೆ ಬೇಕಾದ ಔಷಧಿಗಳನ್ನು ದಾಸ್ತಾನು ಮಾಡಿ ರೋಗಿಗಳಿಗೆ ಉಚಿತವಾಗಿ ತಿಂಗಳಿಗೊಮ್ಮೆ ಹಂಚುತ್ತಾರೆ. ಇದರ ಸೌಲಭ್ಯವನ್ನು ಎಲ್ಲರೂ ತಮ್ಮ ಮನೆಯ ಹತ್ತಿರವಿರುವ ಸರ್ಕಾರೀ ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಪಡೆಯಬಹುದು.

೧೦ ಕ್ಷಯ ರೋಗವನ್ನು ಮನೆಯಲ್ಲಿಯೇ ಇದ್ದು ಕೊಂಡು ಗುಣಪಡಿಸಿಕೊಳ್ಳ ಬಹುದೇ?

ಹೌದು, ಇದು ಸಾಧ್ಯ ಮತ್ತು ಸುಲಭ.

೧೧ ಕ್ಷಯ ರೋಗವು ಗುಣವಾಗಲು ಹೆಚ್ಚಿನ ವಿಶ್ರಾಂತಿ ಮತ್ತು ಪೌಷ್ಟಿಕ ಆಹಾರ ಅಗತ್ಯವೆ?

ಇವುಗಳ ಅಗತ್ಯ ಅಷ್ಟೇನಿಲ್ಲ.

೧೨ ಕ್ಷಯ ರೋಗಿಯು ಮನೆಯಲ್ಲಿದ್ದರೆ ಮನೆಯ ಇತರರಿಗೆ ಈ ಕಾಯಿಲೆ ಬರುವುದಿಲ್ಲವೇ?

ಬರುತ್ತದೆ. ಆದರೆ ಕ್ಷಯ ರೋಗಿಗೆ ವೈದ್ಯರ ಸಲಹೆಯಂತೆ ತಕ್ಕ ಔಷಧೋಪಚಾರ ನಿರಂತರವಾಗಿ ಮಾಡಿಸಿ ಮತ್ತು ವೈದ್ಯರು ಹೇಳಿದಂತೆ ನಡೆದುಕೊಂಡರೆ, ಈ ಖಾಯಿಲೆ ಬೇರೆಯವರಿಗೆ ಬಾರದಂತೆ ಮಾಡಬಹುದು.

೧೩ ಇತರರಿಗೆ ಈ ಕಾಯಿಲೆ ಹರಡದಂತೆ ಏನು ಮಾಡಬೇಕು?

ಬಿ.ಸಿ.ಜಿ. ಚುಚ್ಚುಮದ್ದನ್ನು ಮನೆಯವರೆಲ್ಲರಿಗೂ ಹಾಕಿಸಬೇಕು.

೧೪ ಬಿ.ಸಿ.ಜಿ. ಚುಚ್ಚುಮದ್ದನ್ನು ಎಲ್ಲಿ ಮತ್ತು ಯಾವಾಗ ಹಾಕಿಸಬಹುದು?

19 ವರ್ಷ ಒಳಗಿರುವ ಎಲ್ಲ ಜನರಿಗೂ ಬಿ.ಸಿ.ಜಿ. ಚುಚ್ಚುಮದ್ದನ್ನು ಹಾಕಿಸಬೇಕು ಇದರ ಸೌಲಭ್ಯ ರಾಜ್ಯದ ಎಲ್ಲಾ ಸರ್ಕಾರೀ ಟಿ.ಬಿ. ಸೆಂಟರ್‌ಗಳಲ್ಲಿ ಇರುವುದು. ಪ್ರತಿ ಹಳ್ಳಿಗೂ 5-7 ವರ್ಷಗಳಿಗೊಮ್ಮೆ ಸರ್ಕಾರಿ ಬಿ.ಸಿ.ಜಿ. ಗುಂಪು (ಟೀಮು) ಮನೆ ಮನೆಗೂ ಬಂದು ಬಿ.ಸಿ.ಜಿ. ಚುಚ್ಚುಮದ್ದನ್ನು 19ವರ್ಷದೊಳಗಿರುವ ಎಲ್ಲಾ ಮಕ್ಕಳಿಗೂ ಕೊಡುವರು. ಇದೇ ರೀತಿ ಇದರ ಸೌಲಭ್ಯ ಪ್ರತಿ ಶಾಲೆಗೂ ದೊರಕುವುದು. ದೊಡ್ಡ ಪಟ್ಟಣಗಳಲ್ಲಿ ಎಲ್ಲಾ ಪೆರಿಗೆ ಆಸ್ಪತ್ರೆಗಳಲ್ಲಿ ಕೂಡ ಇದರ ಸೌಲಭ್ಯ ಇದೆ.

೧೫ ಬಿ.ಸಿ.ಜಿ.ಯನ್ನು ಹುಟ್ಟಿದ ಮಗುವಿಗೆ ಕೊಡಬಹುದೇ?

ಹೌದು, ಕೊಡಬಹುದು.

೧೬ ಬಿ.ಸಿ.ಜಿ. ಚುಚ್ಚುಮದ್ದನ್ನು ಸಿಡುಬು, ದೇವಿ, (ಸ್ಮಾಲ್‌ಪಾಕ್ಸ್), ಟ್ರೈಪಲ್ ಆಂಟಿಜನ್ ಮತ್ತು ಪೋಲಿಯೋಗಳ ಜೊತೆಯಲ್ಲಿ ಕೊಡಬಹುದೆ?

ಹೌದು, ಕೊಡಬಹುದು.

ಯಲ್ಲಿಡಬಹುದು. ಹಿರಿಯರ ನಾಣ್ಣುಡಿಯಂತೆ, "ಮುಂಜಾನೆಯೇ ಎದ್ದು ರಾತ್ರಿ ಮುಂದಾಗಿ ಮಲಗುವುದು. ಮನುಷ್ಯನನ್ನು ಆರೋಗ್ಯವಂತನಾಗಿಯೂ, ಸ್ಥಿತಿವಂತನಾಗಿಯೂ ಮತ್ತು ಬುದ್ಧಿವಂತನಾಗಿಯೂ ಮಾಡುವುದು." ಎಂಬ ಮಾತಿಗೆ ಗಮನವೀಯಬೇಕು. ಶಿಸ್ತಿನಿಂದ ಕೂಡಿದ ಜೀವನ, ಮತ್ತು ಮಿತವಾದ ಆಟಪಾಟಗಳು, ಆರೋಗ್ಯವನ್ನು ವೃದ್ಧಿಸುವುದು. ಹಾಗೂ ದೇಹದ ರಕ್ಷಣಾ ಕ್ರಮಗಳನ್ನು ಚೇತನ ಗೊಳಿಸುವುದು.

ಕ್ಷಯ ರೋಗದಿಂದ ದೂರವಿರಲು ಗಮನಿಸಬೇಕಾದ ನಡೆವಳಿಕೆಗಳು :

೧. ನಿಮ್ಮ ಕತ್ತಿನ ಜಾಗದಲ್ಲಿ ಊದಿಕೊಂಡರೆ : ಕಾಲು ಕೀಲುಗಳ ನೋವಿನಿಂದ ಕುಂಟುತ್ತಿದ್ದರೆ ; ನಿಶ್ಯಕ್ತರಾಗಿ ಸಂಜೆಯ ವೇಳೆ ಆಯಾಸವಾಗುತ್ತಿದ್ದರೆ : ದಿನದ ಯಾವ ವೇಳೆಯಲ್ಲಾದರೂ ಜ್ವರ ಬಂದಂತೆ ಭಾಸವಾಗುತ್ತಿದ್ದರೆ ; ಅಥವಾ ಎರಡು - ಮೂರು ವಾರಗಳು ಎಡಬಿಡದೆ ಕೆಮ್ಮುತ್ತಿದ್ದರೆ : ಅಥವಾ ಎದೆಯಲ್ಲಿ ಹಿಡಿತ ಕಂಡುಬಂದು, ನೋವಾಗುತ್ತಿದ್ದರೆ: ಕೂಡಲೇ ವೈದ್ಯರಲ್ಲಿಗೆ ಹೋಗಿ ಸಲಹೆ ಪಡೆಯಿರಿ.

೨. ಎಲ್ಲೆಂದರಲ್ಲಿ ಉಗುಳುವುದು ಕೆಟ್ಟ ಅಭ್ಯಾಸ—ಹಾಗೆ ಮಾಡಬೇಡಿ.

೩. ಕೆಮ್ಮುತ್ತಿರುವ ವ್ಯಕ್ತಿಯ ಎದುರು ನಿಲ್ಲಬೇಡಿ.

೪. ನಿಮಗೆ ಕೆಮ್ಮುಲಿದ್ದರೆ, ಕೆಮ್ಮುವಾಗ ನಿಮ್ಮ ಬಾಯನ್ನು ಕರವಸ್ತ್ರದಿಂದಾಗಲೀ, ಬೀರೆಯ ಬಟ್ಟೆಯಿಂದಾಗಲಿ, ಮುಚ್ಚಿಕೊಳ್ಳಿ.

೫. ಕ್ಷಯ ರೋಗವನ್ನು ತಡೆಗಟ್ಟಬಹುದು, ಹಾಗೂ ಗುಣಪಡಿಸಬಹುದು, ಆದ್ದರಿಂದ ಈ ರೋಗದ ಬಗ್ಗೆ ಅಳುಕಬೇಡಿ.

೬. ಶೀಘ್ರವಾದ ಪರೀಕ್ಷೆ ಮಾಡಿದರೆ, ಶೀಘ್ರವಾಗಿ ಮತ್ತು ಖಚಿತವಾಗಿ ಗುಣವಾಗುತ್ತದೆ. ಆದ್ದರಿಂದ ನಿಮ್ಮಲ್ಲೇನಾದರೂ ಕ್ಷಯ ರೋಗವಿರುವ ಬಗ್ಗೆ ಸಂಶಯ ಬಂದರೆ, ಕೂಡಲೇ ವೈದ್ಯರನ್ನು ವಿಚಾರಿಸಿರಿ.

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"ಕ್ಷಯ ರೋಗವನ್ನು ಧ್ವಂಸಮಾಡಿ"

BEAT TUBERCULOSIS

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ಪೀಠಿಕೆ :

ಕ್ಷಯ ರೋಗ ನಮ್ಮ ದೇಶದಲ್ಲಿ ಸರ್ವೇಸಾಮಾನ್ಯವಾಗಿದೆ. ಚಿಕ್ಕವರೂ, ದೊಡ್ಡವರೆನ್ನದೆ ಎಲ್ಲರೂ ಈ ರೋಗದಿಂದ ನರಳುತ್ತಾರೆ. ಕ್ರಮವಾದ ಮತ್ತು ಸಕಾಲಿಕವಾದ ಚಿಕಿತ್ಸೆ ಇಲ್ಲದಿದ್ದರೆ ಈ ರೋಗ ಉಲ್ಬಣಿಸಿ ಸಾವಿಗೂ ಕಾರಣವಾಗಬಹುದು. ಈಗಲೂ ಪ್ರತಿ ವರ್ಷವೂ ಈ ರೋಗದಿಂದ ಐದು ಲಕ್ಷಕ್ಕೂ ಹೆಚ್ಚು ಮಂದಿ ಮರಣ ಹೊಂದುತ್ತಾರೆ. ನಮ್ಮ ದೇಶದಲ್ಲಿ ಸುಮಾರು ಏಪ್ಪತ್ತು ಲಕ್ಷ ಮಂದಿ (7 million) ಈ ಖಾಯಿಲೆಯಿಂದ ನರಳುತ್ತಾರೆ. ಆದ್ದರಿಂದ ಈ ರೋಗವನ್ನು ಬಹು ಮುಖ್ಯವಾದ ಸಾರ್ವಜನಿಕ ಆರೋಗ್ಯದ ಸಮಸ್ಯೆಯೆಂದು ಪರಿಗಣಿಸಲಾಗಿದೆ. ಶಾಲಾ ಮಕ್ಕಳು, ಕ್ಷಯ ರೋಗವೆಂದರೇನು, ಈ ರೋಗವು ಅಂಟುವುದು ಹೇಗೆ, ಇದನ್ನು ಹೇಗೆ ತಡೆಗಟ್ಟಬಹುದು ಮತ್ತು ಈ ರೋಗದಿಂದ ಗುಣಹೊಂದುವುದು ಹೇಗೆ, ಎಂಬ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಳ್ಳುವುದು ಬಹು ಮುಖ್ಯವಾಗಿದೆ.

ಒಂದು ಕಾಲದಲ್ಲಿ ಜನರು ಕ್ಷಯ ರೋಗವನ್ನು ಗುಣವಾಗದ ರೋಗವೆಂದು ನಂಬಿದ್ದರು. ಆದರೆ ಈಗ ಆ ರೀತಿಯೇನಲ್ಲ. ರೋಗವನ್ನು ಶೀಘ್ರವಾಗಿ ಕಂಡುಹಿಡಿದು, ಸಕಾಲಿಕ ಮತ್ತು ಸರಿಯಾದ ಚಿಕಿತ್ಸೆ ಮಾಡಿಸಿದರೆ ಬಹಳ ಮಂದಿ ರೋಗಿಗಳು ಈ ರೋಗದಿಂದ ಗುಣವಾಗಬಲ್ಲರು.

ಶಾಲಾಮಕ್ಕಳಿಗೆ ಕ್ಷಯ ರೋಗದ ಬಗ್ಗೆ ಸೂಕ್ತ ವಿಚಾರಗಳನ್ನು ತಿಳಿಯಪಡಿಸುವುದೇ ಈ ಪುಸ್ತಿಕೆಯ ಮುಖ್ಯ ಉದ್ದೇಶ.

ಕ್ಷಯ ರೋಗವೆಂದರೇನು ?

ನಮ್ಮ ದೇಶದಲ್ಲಿ ಕ್ಷಯ ರೋಗವನ್ನು ಕೆಲವಾರು ಹೆಸರುಗಳಿಂದ ಕರೆಯುತ್ತಾರೆ. ದೇವನಾಗರಿಯಲ್ಲಿ "ಕ್ಷಯರೋಗ" ಎಂಬ ಹೆಸರಿದೆ. "ಟ್ಯೂಬರ್‌ಕ್ಯುಲ್ ಬ್ಯಾಸಿಲಸ್" ಎಂಬ ಕ್ರಿಮಿಗಳಿಂದ ಈ ರೋಗವುಂಟಾಗುತ್ತದೆ. ದೇಹದಲ್ಲಿ ಈ ಕ್ರಿಮಿಗಳು ಪ್ರವೇಶಿಸಿದ ಮೇಲೆ ಯಾವುದೇ ಅಂಗಾಂಗಗಳಲ್ಲಿ ಈ ರೋಗವು ಉಂಟಾಗಬಹುದು. ಆದರೆ, ಸಾಧಾರಣವಾಗಿ ಎದೆಯ ಶ್ವಾಸಕೋಶಗಳಲ್ಲಿ ಈ ರೋಗವು ಕಾಣಿಸಿಕೊಳ್ಳುವುದು. ಈ ಕ್ರಿಮಿಗಳು ದೇಹವನ್ನು ಹೇಗೆ ಪ್ರವೇಶಿಸುತ್ತವೆ? "ಟ್ಯೂಬರ್‌ಕ್ಯುಲ್" ಕ್ರಿಮಿಗಳು ಸಾಧಾರಣದ ದೃಷ್ಟಿಗೆ ಗೋಚರವಾಗುವುದಿಲ್ಲ. ಆದರೆ, ಸೂಕ್ಷ್ಮದರ್ಶಕ (Microscope) ಯಂತ್ರದ ಮೂಲಕ ನೋಡಿದರೆ ಬಗ್ಗಿರುವ 'ಕೊಂಡಿ'ಗಳಂತೆ (rod) ಕಂಡುಬರುತ್ತವೆ. ರೋಗಿಯು ಉಗುಳುವ ಕಫದಲ್ಲಿ ಈ ಕ್ರಿಮಿಗಳು ಸಾಧಾರಣವಾಗಿ ಲಕ್ಷಗಟ್ಟಲೆ ಸೇರಿಕೊಂಡಿರುತ್ತವೆ. ರೋಗಿಯು ಅಜಾಗರೂಕತೆಯಿಂದ ಉಗುಳುವಾಗ ಅವನು

ಮುಂಜಾಗ್ರತೆ ಕ್ರಮ

ಕ್ಷಯದ ಕ್ರಿಮಿಗಳ ಸಂಪರ್ಕದಿಂದ ದೂರವಿರಲು ಅಸಾಧ್ಯದ ಮಾತು. ಏಕೆಂದರೆ ಸಾವಿರಾರು ಕ್ಷಯ ರೋಗಿಗಳು ನಮ್ಮೊಡನೆಯೇ ಇರುತ್ತಾರೆ. ಕ್ಷಯ ರೋಗದಿಂದ ನರಳುತ್ತಿರುವ ರೋಗಿಗಳು ಉಗುಳುವಾಗ ಯಾವುದಾದರೂ ಪಾತ್ರೆಯನ್ನಾಗಲೀ ಉಪಯೋಗಿಸಿದರೆ, ಹಾಗೂ

ಕೆಮ್ಮುವಾಗ ಕರವಸ್ತ್ರದಿಂದ ತಮ್ಮ ಬಾಯನ್ನು ಮುಚ್ಚಿಕೊಂಡರೆ ಬಹಳ ಒಳ್ಳೆಯದು. ಈ ಜಾಗರೂಕತೆಯನ್ನು ತಪ್ಪದೇ ಅನುಸರಿಸಿದರೆ, ರೋಗಿಯು ಮನೆಯಲ್ಲಿದ್ದರೂ, ರೋಗವು ಹರಡುವುದು ತೀರಾ ವಿರಳ.

ಬಿ. ಸಿ. ಜಿ. ವ್ಯಾಕ್ಸಿನೇಷನ್ (B. C. G. Vaccination)

ಕ್ಷಯ ರೋಗವನ್ನು ಮುಂಜಾಗ್ರತೆಯಾಗಿ ತಡೆಯುವ ಪದ್ಧತಿ. ಬಿ. ಸಿ. ಜಿ. ಲೇಕಡಾ ಅರವತ್ತು ತೀವ್ರವಾದ ರೋಗದಿಂದ ರಕ್ಷಣೆ ನೀಡುವುದರಲ್ಲಿ ಬಿ. ಸಿ. ಜಿ. ಹೆಚ್ಚು ಸಹಕಾರಿಯಾಗಿದೆ. ಶಾಲಾ ಮಕ್ಕಳೆಲ್ಲರೂ ಬಿ.ಸಿ.ಜಿ.ಯನ್ನು ಹಾಕಿಸಿಕೊಳ್ಳುವಂತೆ ಎಲ್ಲರೂ ಸಲಹೆ ನೀಡಬೇಕು.

ದೇಹದ ಶಕ್ತಿಯನ್ನು ವೃದ್ಧಿಸುವುದು ರಕ್ಷಣೆಯ ಮತ್ತೊಂದು ಮಾರ್ಗ. ಒಳ್ಳೆಯ ಆಹಾರ ಸೇವಿಸುವುದರಿಂದಲೂ, ಶಿಸ್ತಿನಿಂದ, ಮತ್ತು ಶಿಷ್ಟದಿಂದ ಕೂಡಿದ ವ್ಯಾಯಾಮ ಮಾಡುವುದರಿಂದಲೂ ದೇಹವನ್ನು ಸದಾ ಉತ್ತಮ ಸ್ಥಿತಿ

ಈ ಪವಾಡ ಔಷಧಿಗಳಾವುವು?

ಸ್ಟ್ರೆಪ್ಟೋಮಿಸೀನ್ (Streptomycin) ಎಂಬುದು ಚುಚ್ಚು ಮದ್ದು. ಐ.ಎನ್.ಎಚ್. (I.N.H.) ಎಂಬುದು ಮಂತ್ರೋಂದು ಅದ್ಭುತವಾದ ಸೇವಿಸುವ ಔಷಧಿ. ಪಿ.ಎ.ಎಸ್. (P.A.S.) ಮತ್ತು ತಯಾಸಿಟಿಸೋನ್'' (Thiacetezone) ಎಂಬುವು ಇತರ ಔಷಧಿಗಳು. ಸಾಮಾನ್ಯವಾಗಿ ಎರಡು ಔಷಧಿಗಳನ್ನು ಒಟ್ಟಿಗೆ ಚಿಕಿತ್ಸೆಗಾಗಿ ಕೊಡುವರು. ಎಂಬುದನ್ನು ನೆನಪಿನಲ್ಲಿಡಬೇಕಾದುದು; ಔಷಧಿಗಳನ್ನು ಕ್ರಮವಾಗಿ ಸೇವಿಸುವುದು. ಕೆಲವು ವೇಳೆ ಎರಡು ವರ್ಷ ನಿರಂತರ ಔಷಧಿ ಸೇವಿಸಬೇಕಾಗುವುದು. ಯಾವ ಔಷಧಿಗಳನ್ನು ಯಾವಾಗ ಮತ್ತು ಹೇಗೆ ತೆಗೆದುಕೊಳ್ಳಬೇಕೆಂಬುದನ್ನು ವೈದ್ಯರು ನಿರ್ಧರಿಸುತ್ತಾರೆ.

ಕ್ಷಯ ರೋಗಿಗೆ ಮನೆಯಲ್ಲಿಯೇ ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಚಿಕಿತ್ಸೆ ಕೊಡಬಹುದೆಂದು ಮೇಲೆ ಹೇಳಿದೆಯಷ್ಟೆ. ಬಹಳವಾಗಿ ಜ್ವರ ಮತ್ತು ಆಲಸಿಕೆ ಇಲ್ಲದಿದ್ದ ಪಕ್ಷದಲ್ಲಿ ಕಟ್ಟುನಿಟ್ಟಾದ ವಿಶ್ರಾಂತಿ ಅನುಚಿತ. ಆವನು ಇಷ್ಟಪಡುವುದಾದರೆ ಮನೆಯಲ್ಲಿಯೇ ಓಡಾಡಿಕೊಂಡಿರಬಹುದು. ಮೂರು ಅಥವಾ ಆರು ತಿಂಗಳು ಚಿಕಿತ್ಸೆ ಪಡೆದ ನಂತರ ತನ್ನ ದಿನಚರಿ ಕೆಲಸಗಳಲ್ಲಿ ತೊಡಗಬಹುದು. ರೋಗಿಯ ಸ್ಥಿತಿ ಉಲ್ಬಣಗೊಂಡು ಆವನ ಶ್ವಾಸಕೋಶ ತೀರಾ ಹದಗೆಟ್ಟಾಗ ಅಥವಾ ರಕ್ತವನ್ನು ಬಹಳವಾಗಿ ಕಾರಿಕೊಂಡಾಗ ಆವನಿಗೆ ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ಚಿಕಿತ್ಸೆ ಮಾಡುವುದು ಉಚಿತ. ರೋಗಿಗೆ ಶಸ್ತ್ರ ಚಿಕಿತ್ಸೆಯನ್ನು ಆಸ್ಪತ್ರೆಯಲ್ಲಿಯೇ ಮಾಡಬೇಕಾಗುವುದು.

ಇತರ ಅಂಗಾಂಗಗಳ ಕ್ಷಯ

ಐದು ಮತ್ತು ಹದಿನೈದು ವರ್ಷ ಒಳಗಿನ ಮಕ್ಕಳಿಗೆ ಕತ್ತಿನ ಭಾಗದಲ್ಲಿ ಊತವು ಕಾಣಬರುತ್ತದೆ. ಇಂತಹ ಊತವು ಕತ್ತಿನ ಗ್ರಂಥಿಗಳಿಗಂಟಾಗುವ ಕ್ಷಯದ ಆಂಟಿನಿಂದ ಇರಬಹುದು, ದೇಹದ ಕೀಲುಗಳಲ್ಲಿ ಮತ್ತು ಮೂಳೆಗಳಲ್ಲಿ ಕ್ಷಯ ರೋಗವು ಕಾಣಿಸಿಕೊಳ್ಳಬಹುದು. ಒಂದು ವೇಳೆ ಮಂಗುವಿನ ಕತ್ತಿನ ಜಾಗದಲ್ಲಿ ಊತವು ಹೆಚ್ಚಾಗುತ್ತಾ ಹೋದರೆ, ಅಥವಾ ಯಾವುದಾದರೂ ಕೀಲು ನೋವಿನ ದೆಸೆಯಿಂದ ಕುಂಟುತ್ತಿದ್ದರೆ ಅಥವಾ ಬೆನ್ನು ಮೂಳೆಯಂ ನೋವಿನಿಂದ ನರಳುತ್ತಿದ್ದರೆ ಕ್ಷಯ ರೋಗದ ಆಂಟುವಿನ ಬಗ್ಗೆ ಸಂಶಯ ಪಡಬೇಕಾಗುತ್ತದೆ. ನಿಖರವಾದ ಕಾರಣಕ್ಕಾಗಿ ವೈದ್ಯರಲ್ಲಿ ಸಲಹೆ ಪಡೆಯುವುದು ಉತ್ತಮ.

ಬಳಸುವ ಪದಾರ್ಥಗಳಾದ ಪಾತ್ರೆ, ಪೆನ್ಸಿಲ್ ಮತ್ತು ಪೆನ್ನುಗಳಿಗೆ ಈ ಕ್ರಿಮಿಗಳು ಆಂಟಿಕೊಳ್ಳುವುದು. ಮಂಕ್ಕಳು ಸಿಕ್ಕಿದ ಪದಾರ್ಥಗಳನ್ನು ಬಾಯಲ್ಲಿಟ್ಟು ಕಚ್ಚುವ ದುರಭ್ಯಾಸವನ್ನು ನಾವು ಕಾಣಬಹುದಲ್ಲವೇ? ಒಂದು ವೇಳೆ ಕ್ಷಯ ರೋಗ ಕ್ರಿಮಿಗಳಿಂದ ಕಲುಷಿತವಾದ ಪೆನ್ಸಿಲ್ಲೊಂದನ್ನು ಮಗುವು ಬಾಯಲ್ಲಿಟ್ಟುಕೊಂಡರೆ, ಸಾವಿರಾರು ಕ್ರಿಮಿಗಳು ಆ ಮಗುವಿನ ದೇಹದೊಳಗೆ ಸೇರಿಕೊಳ್ಳಬಹುದು. ಕ್ರಿಮಿಗಳು ದೇಹವನ್ನು ಹೊಕ್ಕುವ ಸಾಮಾನ್ಯವಾದ ಮಾರ್ಗವೆಂದರೆ, ನಾವು ಉಸಿರಾಡುವ ಗಾಳಿಯ ಮೂಲಕ.

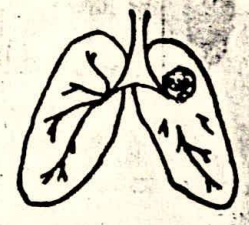
ಕ್ರಿಮಿಗಳು ಗಾಳಿಯಲ್ಲಿ ಹೇಗೆ ಸೇರಿಕೊಳ್ಳುತ್ತವೆ? ಒಬ್ಬ ರೋಗಿ ಕೆಮ್ಮುವಾಗಾಗಲೀ, ಗಟ್ಟಿಯಾಗಿ ಮಾತನಾಡುವಾಗಾಗಲೀ ಸಾವಿರಾರು ಕ್ರಿಮಿಗಳಿಂದ ಕೂಡಿದ, ಸೂಕ್ಷ್ಮವಾದ ಸಣ್ಣಸಣ್ಣ ಉಗುಳಿನ ತುಂತುರುಗಳು ಗಾಳಿಯಲ್ಲಿ ಸೇರಿಕೊಳ್ಳುತ್ತವೆ. ಆಗ ಮಗುವು ರೋಗಿಯ ಹತ್ತಿರವೇ ಇದ್ದ ಪಕ್ಷದಲ್ಲಿ ಕ್ರಿಮಿಗಳಿಂದ ಕಲುಷಿತವಾದ ಗಾಳಿಯನ್ನು ಸೇವಿಸುವ ಸಂಭವವುಂಟು.

ಕ್ಷಯ ರೋಗದ ಆಂಟು

ಕ್ಷಯ ರೋಗದ ಕ್ರಿಮಿಗಳು ದೇಹವನ್ನು ಮೊದಲ ಬಾರಿಗೆ ಪ್ರವೇಶಿಸಿದಾಗ ಯಾಯಿಲೆಯನ್ನೇನೂ ಉಂಟುಮಾಡುವುದಿಲ್ಲ. ತನಗೆ ಕ್ಷಯ ರೋಗದ ಆಂಟು ತಗಲಿದೆಯೆಂದು ವ್ಯಕ್ತಿಗೇನೂ ಗೋಚರವಾಗಿರುವುದಿಲ್ಲ. ಆದರೆ, ಈ ಕ್ರಿಮಿಗಳ ಪ್ರವೇಶದಿಂದ ದೇಹದಲ್ಲಿ ಕೆಲವಾರು ಬದಲಾವಣೆಗಳು ಉಂಟಾಗುತ್ತವೆ. ಪುನಃ ಸೇರಬಹುದಾದ ರೋಗಾಣುಗಳನ್ನು ಎದುರಿಸಲು ತಕ್ಕ ನಿರೋಧಕ ಶಕ್ತಿಯನ್ನು ಪಡೆಯುತ್ತಾನೆ. ಎರಡನೆಯದಾಗಿ ಆವನಲ್ಲಿ "ಸೂಕ್ಷ್ಮತೆ"ಯು ಉಂಟಾಗುತ್ತದೆ. ಇಂತಹ 'ಸೂಕ್ಷ್ಮತೆ'ಯನ್ನು ದೇಹದ ಚರ್ಮವನ್ನು ಪರೀಕ್ಷಿಸುವ "ಟ್ಯೂಬರ್‌ಕ್ಯುಲಿನ್" ಪರೀಕ್ಷೆಯಿಂದ ಕಂಡುಹಿಡಿಯಬಹುದು. ಈ ಪರೀಕ್ಷೆಯಿಂದ ಚುಚ್ಚಿದ ಜಾಗದಲ್ಲಿ ಊತವು ಕಂಡುಬರುತ್ತದೆ. ಆ ಊತದ ಸುತ್ತಲೂ ಎರಡು-ಮೂರು ದಿನಗಳ ನಂತರ ಕೆಂಪಗಾಗುತ್ತದೆ. ಇಂತಹ ಪ್ರತಿಕ್ರಿಯೆಯುಂಟಾಗುವುದು ರೋಗಾಣುವನ್ನು ಹೊಂದಿದ ವ್ಯಕ್ತಿಯಲ್ಲಿ ಮಾತ್ರ, ಆವನಲ್ಲಿ ರೋಗಾಣುವಿನ ಆಂಟು ಇಲ್ಲದಿದ್ದ ಪಕ್ಷದಲ್ಲಿ "ಟ್ಯೂಬರ್‌ಕ್ಯುಲಿನ್" ಪರೀಕ್ಷೆಗೆ ಯಾವ ಪ್ರತಿಕ್ರಿಯೆಯೂ ಇರುವುದಿಲ್ಲ. ಈ ಪರೀಕ್ಷೆಗೆ ಪ್ರತಿಕ್ರಿಯೆಯೇನಾದರೂ ಕಂಡುಬಂದಲ್ಲಿ ಆವನು ಕ್ಷಯ ರೋಗದಿಂದ ನರಳುತ್ತಿದ್ದಾನೆಂಬ ಭಾವನೆಯಲ್ಲ. ಆವನಲ್ಲಿ ಕ್ಷಯದ ರೋಗಾಣುಗಳು ಹೊಕ್ಕಿ ಸೂಕ್ಷ್ಮತೆಯನ್ನುಂಟು ಮಾಡಿದೆಯೆಂದು ಮಾತ್ರ ತಿಳಿದುಕೊಳ್ಳಬೇಕು.

ರೋಗ

ಯಾವಾಗ ರೋಗ ಕಾಣುಬರುತ್ತದೆ? ಕೆಲವಾರು ತಿಂಗಳುಗಳ ಅಥವಾ ವರ್ಷಗಳ ನಂತರ, ದೇಹದಲ್ಲಿ ಸೇರಿಕೊಂಡ ಕ್ರಿಮಿಯಾಣುಗಳು ವೃದ್ಧಿಗೊಂಡು ನಿಧಾನವಾಗಿ ''ಕೊಳೆಯುವಂತೆ'' ರೋಗವು ಕಾಣಿಸಿಕೊಳ್ಳುವುದು. ಟೊಮ್ಯಾಟೋ ಹಣ್ಣು ಅಥವಾ ಮಾವಿನ ಹಣ್ಣು ಕೊಳೆಯುವ ರೀತಿಯಲ್ಲಿ ಕ್ಷಯ ರೋಗಗಳು ತನ್ನ ಪರಿಣಾಮವನ್ನುಂಟುಮಾಡುತ್ತವೆ. ಈ ವೇಳೆಯಲ್ಲಿ ರೋಗಿಯು ಕೆಮ್ಮು, ಜ್ವರ, ಎದೆಯ ನೋವು, ತೂಕ



ದಲ್ಲಿ ಇಳಿತ, ಮತ್ತು ಹಸಿವಾಗದಿರುವಿಕೆಯಿಂದ ನರಳುತ್ತಾನೆ. ಅವನು ಕೆಮ್ಮುವಾಗ ಕಫವು ಬರುತ್ತದೆ. ಕೆಲವು ವೇಳೆ ಅವನ ಉಗುಳಿನಲ್ಲಿ ಸ್ವಲ್ಪ ರಕ್ತವೂ ಇರುತ್ತದೆ. ಅವನ ಶ್ವಾಸ ಕೋಶದಲ್ಲಿ ಕಾಯಿಲೆಯು ಹೆಚ್ಚಾದಾಗ ರೋಗಿಯು ತೀವ್ರವಾಗಿ ನರಳುತ್ತಾನೆ. ಕೆಲವು ವೇಳೆ ಕಫದಿಂದ ಕೂಡಿದ ಕೆಮ್ಮುಲಿದ್ದರೂ ರೋಗವು ಅಷ್ಟಾಗಿ ರೋಗಿಗೆ ಗೊತ್ತಾಗುವುದಿಲ್ಲ, ಆದ್ದರಿಂದ, ಕೆಮ್ಮುಲೇ ಕ್ಷಯ ರೋಗದ ಮುಖ್ಯವಾದ ಗುರುತೂ ಅಥವಾ ಲಕ್ಷಣ.

ರೋಗದ ರೀತಿ

ರೋಗವು ಹೆಚ್ಚಾದಂತೆಲ್ಲಾ ಕೆಲವು ರೋಗಿಗಳು ಬಹುವಾಗಿ ನರಳುತ್ತಾರೆ. ಹಾಗೂ ಒಂದಕ್ಕಿಂತ ಮೇಲ್ಪಟ್ಟು ದೇಹದ ಅಂಗಾಂಗಳು ಈ ರೋಗದ ಹಿಡಿತದೆಲ್ಲಿ ಸಿಕ್ಕಿ ಕೊಳ್ಳುವುವು. ಸಾಧಾರಣವಾಗಿ ಈ ರೋಗವು ನಿರಂತರವಾಗಿ ಕಾಡುವುದು. ಸಣ್ಣದಾಗಿ ಕಾಣುವ ಜ್ವರ, ಕೆಮ್ಮುಲು, ಮತ್ತು ಇತರೆ ನರಳುವಿಕೆ ಇದ್ದರೂ ರೋಗಿಯು ಹಾಸಿಗೆ ಹಿಡಿದು ಮಲಗುವಂತೆ ಅವನಿಗೆ ಅನಿಸುವುದಿಲ್ಲ. ಪಯಸ್ಕರಾವ ರೋಗಿಗಳು ತಮ್ಮ ಕೆಲಸದಲ್ಲಿ ನಿರತರಾಗಿರಲೂಬಹುದು, ಮಕ್ಕಳು ಶಾಲೆಗೂ ಹೋಗುತ್ತಿರುತ್ತಾರೆ. ಕೆಮ್ಮುಲು ಹೆಚ್ಚಾಗಿ, ತುಂಬಾ ನಿಶ್ಶಕ್ತಿಯುಂಟಾದಾಗ ಮಾತ್ರ ವೈದ್ಯರಲ್ಲಿಗೆ ಹೋಗಬೇಕೆನಿಸುತ್ತದೆ. ತಮಗಿರುವ ಖಾಯಿಲೆ ತಿಳಿದಾಗ ಸಕಾಲಿಕ ಚಿಕಿತ್ಸೆಯನ್ನು ಪಡೆಯಲು ಪ್ರಯತ್ನಿಸಬಹುದು. ಆದ್ದರಿಂದಲೇ, ಕ್ಷಯ ರೋಗದ ಬಗ್ಗೆ ಸಾಕಷ್ಟು ತಿಳಿಯುವುದು ಉತ್ತಮ.

ಪರೀಕ್ಷೆ

ಮೇಲೆ ತಿಳಿಸಿದಂತಹ ಖಾಯಿಲೆಯ ಲಕ್ಷಣಗಳಿದ್ದಾಗ ಮತ್ತು ಆ ತೊಂದರೆಗಳು ಸಾಮಾನ್ಯ ಚಿಕಿತ್ಸೆಗಳಿಗೆ ಜಗ್ಗದೆ ಮುಂದುವರೆದಾಗ, ಕ್ಷಯ ರೋಗದ ಪರೀಕ್ಷೆಗಳನ್ನು ಮಾಡಿಸುವುದು ಒಳ್ಳೆಯದು.

"ಟ್ಯೂಬರ್‌ಕ್ಯುಲೀನ್" ಪರೀಕ್ಷೆಯಿಂದ ಕ್ಷಯ ರೋಗದ ಆಟು ಇಲ್ಲವೆಂದು ದೃಢಪಟ್ಟಲ್ಲಿ ಯಾವ ಯೋಚನೆಯೂ ಇಲ್ಲ. ಕೆಮ್ಮು ಮತ್ತು ಜ್ವರ ಇದ್ದರೂ ಕೂಡ ಅವುಗಳು ಈ ಸ್ಥಿತಿಯಲ್ಲಿ ಕ್ಷಯ ರೋಗದ ಲಕ್ಷಣಗಳೇನೂ ಅಲ್ಲ. ಆದರೆ "ಟ್ಯೂಬರ್‌ಕ್ಯುಲೀನ್" ಪರೀಕ್ಷೆಯಿಂದ ದೇಹದಲ್ಲಿ ರೋಗಾಣುಗಳು ಸೇರಿಕೊಂಡಿವೆಯೆಂದು ತಿಳಿದಾಗ ಕ್ಷಯರೋಗದಿಂದ ನರಳುತ್ತಿದ್ದಾನೆಂದು ತಿಳಿಯಕೂಡದು ಎದೆಯ ಎಕ್ಸರೇ, ಕಫದ ಪರೀಕ್ಷೆಗಳಿಂದ ರೋಗದ ಇರುವಿಕೆಯನ್ನು ಕಂಡುಹಿಡಿಯಬೇಕಾಗಿದೆ. ಆದ್ದರಿಂದ ರೋಗದ ಲಕ್ಷಣಗಳು ಕಂಡುಬಂದಲ್ಲಿ ಎಕ್ಸರೇ ಮತ್ತು ಕಫದ ಪರೀಕ್ಷೆಗಳನ್ನು ಮಾಡಿಸಬೇಕು.

ಕಫದ ಪರೀಕ್ಷೆ

ರೋಗಿಯ ಕಫವನ್ನು ಸೂಕ್ಷ್ಮದರ್ಶಕದಿಂದ ಪರೀಕ್ಷೆ ಮಾಡಿ ಕ್ಷಯದ ಕ್ರಿಮಿಗಳನ್ನು ಕಂಡುಹಿಡಿಯುತ್ತಾರೆ. ಎಕ್ಸರೇ ಪರೀಕ್ಷೆಗಿಂತ ನಿಖರವಾಗಿ ರೋಗದ ಇರುವಿಕೆಯನ್ನು ಈ ಸಾಧನದಿಂದ ಕಂಡುಹಿಡಿಯುವುದು ಖಚಿತವಾದ ಮಾರ್ಗ.

ಕೆಲವು ವೇಳೆ ಸೂಕ್ಷ್ಮದರ್ಶಕದಿಂದ ರೋಗಾಣುಗಳನ್ನು ಕಂಡು ಹಿಡಿಯಲಾಗದೆ ಹೋಗಬಹುದು. ಅಂತಹ ಸಂದರ್ಭಗಳಲ್ಲಿ ರೋಗಿಯ ಕಫವನ್ನು ಕಲ್ಚರ್ (Culture-ಕೃಷಿ) ಎಂಬ ಪರೀಕ್ಷೆಗೆ ಒಳಪಡಿಸುತ್ತಾರೆ. ರೋಗಿಯ ಕಫವನ್ನು ಕ್ರಿಮಿ ಬೆಳೆವಣಿಗೆಗೆ ಸಹಾಯಕವಾದ ವಸ್ತು ವಿರುವ ಗಾಜಿನ ಸೀಸೆಯಲ್ಲಿಟ್ಟು, ಕ್ರಿಮಿಗಳ ಉತ್ಪತ್ತಿಗೆ ಅವಕಾಶ ಮಾಡಿಕೊಡುತ್ತಾರೆ. ಕೆಲವು ದಿನಗಳ ನಂತರ ಕ್ರಿಮಿಗಳ ಬೆಳವಣಿಗೆ ಕಂಡುಬರುತ್ತದೆ. ಅಂತಹ ಬೆಳವಣಿಗೆಯಲ್ಲಿ ಲಕ್ಷೋಪಲಕ್ಷ ಕ್ರಿಮಿಗಳು ಕಂಡುಬರುತ್ತದೆ, ಅವುಗಳನ್ನು ಮತ್ತೆ ಸೂಕ್ಷ್ಮದರ್ಶಕದಿಂದ ಪರೀಕ್ಷೆ ಮಾಡಬಹುದು.

ಚಿಕಿತ್ಸೆ

ಕ್ಷಯ ರೋಗಿಗಳಿಗೆ ಚಿಕಿತ್ಸೆ ನೀಡಲು ಇಂದು ಅತ್ಯಂತ ಪರಿಣಾಮಕಾರಿಯಾದ, ಪವಾಡ ಶಕ್ತಿಯುಳ್ಳ ಔಷಧಿಗಳು ನಮಗೆ ದೊರಕುತ್ತವೆ. ಅವುಗಳು ಶಕ್ತಿವರ್ಧಕ ದ್ರಾವಕಗಳಲ್ಲ (Tonics). ರೋಗಿಗೆ ಯಾವ ಅಪಾಯವನ್ನೂ ಉಂಟುಮಾಡದೆ ಕ್ರಿಮಿಗಳನ್ನು ನಿಧಾನವಾಗಿ ನಾಶ ಪಡಿಸುವ ರಾಸಾಯನಿಕ ವಸ್ತುಗಳು. ಸುಮಾರು ೨೫ ವರ್ಷಗಳಿಂದೀಚೆಗೆ ಈ ಔಷಧಿಗಳು ಕ್ಷಯ ರೋಗದ ಚಿಕಿತ್ಸೆಗೆ ದೊರಕುತ್ತಿವೆ. ಅದಕ್ಕೆ ಮೊದಲು ರೋಗಿಗಳನ್ನು ಗಿರಿಧಾಮಗಳಲ್ಲಿರುವ ಕ್ಷಯ ರೋಗ ಆಸ್ಪತ್ರೆಗಳಿಗೆ (T. B. Sanatorium) ಸೇರಿಸಿ, ಚಿಕಿತ್ಸೆ ನಡೆಸುತ್ತಿದ್ದರು. ಆಲ್ಲಿ ಅವರನ್ನು ಕಟ್ಟುನಿಟ್ಟಾದ ವಿಶ್ರಾಂತಿ, ಗಾಳಿ ಸೇವನೆ ಮತ್ತು ಉತ್ಕೃಷ್ಟವಾದ ಆಹಾರಗಳಲ್ಲಿ ಇಡಲಾಗುತ್ತಿತ್ತು. ಆದರೆ, ಈಗ ಅವರು ಬೆಟ್ಟದ ತುದಿಗಳಿಗೆ ಹೋಗಿ ಆರೋಗ್ಯಧಾಮಗಳಲ್ಲಿ ಸೇರಿಕೊಳ್ಳುವ ಪ್ರಮೇಯವಿಲ್ಲ. ಈಗ ದೊರಕುವ ಔಷಧಿಗಳನ್ನು ಕ್ರಮವಾಗಿ ಮತ್ತು ಸಕಾಲಿಕವಾಗಿ ರೋಗಿಗಳು ಸೇವಿಸುವಂತೆ ಮಾಡಿ ಅವರಿಗೆ ಅವರ ಮನೆಗಳಲ್ಲಿಯೇ ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಚಿಕಿತ್ಸೆ ನೀಡಬಹುದು. ರೋಗಿಗಳು ಈ "ಗೃಹಚಿಕಿತ್ಸಾ ವಿಧಾನ" ವನ್ನು ಬಹುಪಾಲು ಮೆಚ್ಚುತ್ತಾರೆ. ಏಕೆಂದರೆ, ಅವರ ಕುಟುಂಬಿಕ ಜೀವನಕ್ಕೆ ಈ ಚಿಕಿತ್ಸಾ ಕ್ರಮದಿಂದ ಹೆಚ್ಚು ಅಡ್ಡಿಯುಂಟಾಗುವುದಿಲ್ಲ.

ಮುಖ ಬಿಳಿಚಿಕೊಳ್ಳುವುದು ?
ದೌರ್ಬಲ್ಯಹೀನ ? ಆಯಾಸ ? ರಕ್ತಹೀನತೆ ?

ರಕ್ತ ಹೀನತೆ ಎಂದರೇನು ?

ನಮ್ಮ ರಕ್ತ ಕೆಂಪು ಕಣಗಳನ್ನು ಒಳಗೊಂಡಿದೆ. ಇದನ್ನೇ ನಾವು ಹೊಮೊಗ್ಲೊಬಿನ್ ಅನ್ನುತ್ತೇವೆ. ನಮ್ಮ ರಕ್ತದಲ್ಲಿ ಪ್ರತಿ 100 ಮಿಲಿಲೀಟರ್‌ನಲ್ಲಿ 13 ರಿಂದ 14 ಗ್ರಾಂ-ಗಳಷ್ಟು ಹೊಮೊಗ್ಲೊಬಿನ್ ಇರುತ್ತದೆ. ಹೊಮೊಗ್ಲೊಬಿನ್‌ನ ಈ ಪ್ರಮಾಣ 11 ರಿಂದ 12 ಗ್ರಾಂ ಗಳಿಗೂ ಕಡಿಮೆಯಾದಲ್ಲಿ, ಅದಕ್ಕೆ ನಾವು ರಕ್ತ ಹೀನತೆ-ಎನಿಮಿಯಾ ಅನ್ನುತ್ತೇವೆ.

ರಕ್ತ ಹೀನತೆ ಹೇಗೆ ಉಂಟಾಗುತ್ತದೆ ?

ನಮ್ಮ ದೇಹಕ್ಕೆ, ಕಬ್ಬಿಣ, ಫಾಲಿಕ್ ಆಮ್ಲ, ವಿಟಮಿನ್-ಬಿ-12 ಮತ್ತು ವಿಟಮಿನ್-ಸಿ ಅಂಶಹ ಪೋಷಕ ದ್ರವ್ಯಗಳ ಅಗತ್ಯವಿದೆ. ಈ ಪೋಷಕ ದ್ರವ್ಯಗಳಿಂದಾಗಿಯೇ ನಮ್ಮ ರಕ್ತ ಸ್ವಸ್ಥವಾಗಿರುತ್ತದೆ. ನಮಗೆ ಅಗತ್ಯವಾದ ಈ ಪೋಷಕ ದ್ರವ್ಯಗಳನ್ನು, ನಾವು ನಮ್ಮ ಆಹಾರದಿಂದ ಪಡೆಯ ಬಹುದಾಗಿದೆ. ನಾವು ತಿನ್ನುವ ಪದಾರ್ಥಗಳಲ್ಲಿ ನಮಗೆ ಈ ಪೌಷ್ಟಿಕಾಂಶಗಳು ದೊರೆಯದಿದ್ದಲ್ಲಿ, ಅದರಲ್ಲೂ ವಿಶೇಷವಾಗಿ ಕಬ್ಬಿಣಾಂಶ ದೊರೆಯದಿದ್ದಲ್ಲಿ, ಅದು ರಕ್ತ ಹೀನತೆಗ ಮಾರ್ಗವಾಗುತ್ತದೆ.

ರಕ್ತ ಹೀನತೆ ಯಾರಿಗೆ ಆಗುತ್ತದೆ ?

ಭಾರತದ ಜನರಲ್ಲಿ ಅನೇಕರಿಗೆ ರಕ್ತ ಹೀನತೆ ಇದೆ. ಗರ್ಭಿಣಿಯರು ಮತ್ತು ಇನ್ನೂ ಶಾಲೆಗೆ ಹೋಗದೆ ಇರುವ ಮಕ್ಕಳಲ್ಲಿ ರಕ್ತ ಹೀನತೆ ಇರುವುದು ತೀರ ಸಹಜವಾಗಿದೆ. ಗರ್ಭಿಣಿಯರಿಗೆ ಮತ್ತು ಶಾಲೆಗೆ ಹೋಗದೆ ಇರುವ ಚಿಕ್ಕಮಕ್ಕಳಿಗೆ ಕಬ್ಬಿಣಾಂಶದ ಅಗತ್ಯ ಬಹಳವಾಗಿದೆ. (ಪುರುಷರಿಗಿಂತ ಮಹಿಳೆಯರಲ್ಲಿ ರಕ್ತ ಹೀನತೆ ತಲೆದೋರುವುದು ತೀರ ಸಹಜವಾಗಿದೆ—ಏಕೆ)

ಪುರುಷರಿಗಿಂತ, ಮಹಿಳೆಯರಿಗೆ ಹೆಚ್ಚಿನ ಕಬ್ಬಿಣಾಂಶದ ಅಗತ್ಯವಿದೆ. ಮುಟ್ಟಿನ ಸಮಯದಲ್ಲಿ, ಮಹಿಳೆಯರು ಹೆಚ್ಚಿನ ಪ್ರಮಾಣದಲ್ಲಿ ಕಬಿಣಾಂಶವನ್ನು ಕಳೆದುಕೊಳ್ಳುವುದೇ ಇದಕ್ಕೆ ಕಾರಣವಾಗಿದೆ.

ರಕ್ತ ಹೀನತೆಗೆ ಕಾರಣವಾದ ಸಾಧಾರಣ ಅಂಶಗಳಾವುವು ?

ನಾವು ಹಸಿರು ತರಕಾರಿಯಂತಹ ಪುಷ್ಟಿಕರರಾದ ಆಹಾರವನ್ನು ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ತಿನ್ನದೇ ಇದ್ದಲ್ಲಿ, ಅದರಿಂದ ನಮಗೆ ರಕ್ತ ಹೀನತೆ ಉಂಟಾಗಬಹುದು. ಹಸಿರು ತರಕಾರಿ ಮತ್ತು ಎಲೆಪಲ್ಯಗಳು ಅಗ್ಗವಾಗಿದ್ದು ಹೆಚ್ಚು ಪುಷ್ಟಿಕರವಾಗಿವೆ. ಆದಾಗ್ಯೂ ಅನೇಕ ಜನರು ಇವುಗಳನ್ನು ತಿನ್ನುವುದಿಲ್ಲ. ಬಹುಶಃ ಈ ಜನರಿಗೆ ರಕ್ತ ಹೀನತೆಯ ಬಗ್ಗೆ ಏನೇನೂ ತಿಳಿಯದು.

ಮಲೇರಿಯಾದಿಂದ ಅಥವಾ ಕೊಕ್ಕೆ ಹುಳು (Hook Worm) ಹುಳವಿನಿಂದ ನಾವು ಪೀಡಿತರಾಗಿದ್ದಲ್ಲಿ, ನಮಗೆ ರಕ್ತ ಹೀನತೆ ತಲೆದೋರ ಬಹುದು.

ಮಹಿಳೆಯರು ಮೇಲಿಂದ ಮೇಲೆ ಗರ್ಭ ತಳೆದು, ಅನೇಕ ಮಕ್ಕಳನ್ನು ಹೆತ್ತಲ್ಲಿ, ಅವರಿಂದಲೂ ಸಹ ರಕ್ತ ಹೀನತೆ ಉಂಟಾಗುತ್ತದೆ. ಇದಕ್ಕೆ ಮುಖ್ಯವಾದ ಎರಡು ಕಾರಣಗಳಿವೆ.

1. ಹೆರಿಗೆಯ ಸಮಯದಲ್ಲಿ ಬಹಳಷ್ಟು ರಕ್ತಹೋಗುತ್ತದೆ. ಅದರ ಜೊತೆಗೆ ಸಾಕಷ್ಟು ಪ್ರಮಾಣದಲ್ಲಿ ದೇಹದಲ್ಲಿನ ಕಬ್ಬಿಣಾಂಶವೂ ಹೋಗುತ್ತದೆ.
2. ಸಂಸಾರ ದೊಡ್ಡದಾವಂತೆಲ್ಲಾ ಬೆಳೆಯುವ ಮಕ್ಕಳಿಗೆ ಆಹಾರ ಒದಗಿಸುವಲ್ಲಿ, ತಾಯಿ ಹೆಚ್ಚಿನ ಆಹಾರ ಉಳಿಯಲಿಕ್ಕಿಲ್ಲ.

ರಕ್ತ ಹೀನತೆಯನ್ನು ಹೇಗೆ ಗುರುತಿಸಬಹುದು ?

ಇಲ್ಲಿ ಕೊಡಲಾಗಿರುವ ಲಕ್ಷಣಗಳಲ್ಲಿ ಯಾವುದಾದರೂ ಆಗಿದ್ದಲ್ಲಿ, ಅದು ರಕ್ತ ಹೀನತೆಯು ಆಗಿರಬಹುದು.

—ನೀವು ಬಹು ಬೇಗನೆ ಆಯಾಸಗೊಳ್ಳುತ್ತಿರಿ —ಏನನ್ನೆ ಆಗಲಿ ತಿನ್ನಲು ನಿಮಗೆ ಮನಸ್ಸಾಗದು

—ನಿತ್ಯಕ್ಕಿಂತ ಸ್ವಲ್ಪ ಹೆಚ್ಚಿನ ಕೆಲಸಮಾಡಿದಾಗ ಉಸಿರುಗಟ್ಟುತ್ತದೆ

—ತಲೆಸುತ್ತುವುದು —ಮುಖ ಬಿಳಿಚಿಕೊಂಡಿರುವುದು,

—ದೈಮೇಲೆ, ಅದರಲೂ ವಿಶೇಷವಾಗಿ, ಕೈಯಗೆಣ್ಣುಗಳು, ಉಗುರುಗಳು ಮತ್ತು ಮುಖದ ಸುತ್ತಲೂ ರಕ್ತಹಪ್ಪಾಗಟ್ಟಿದಂತಾಗಿ ಬಿಳುಕಾಗಿರುತ್ತದೆ.

ತೀವ್ರ ರಕ್ತಹೀನತೆಯ ಸಂಕೇತ ಅಥವಾ ಚಿಹ್ನೆಗಳು :

—ನಿಮ್ಮ ನಾಲಿಗೆ ಸಾಪಾಗಿ, ಬಿಳಿಚಿಕೊಂಡು ಸಪ್ಪೆಯಾಹೋಗಿರುವಂತೆ ಕಾಣ ತೊಡಗುತ್ತದೆ.

ರಕ್ತ ಹೀನತೆಯಿಂದ ನಮ್ಮನ್ನು ನಾವು ರಕ್ಷಿಸಿಕೊಳ್ಳುವುದು ಹೇಗೆ ?

ರಕ್ತ ಹೀನತೆಯನ್ನು ತಡೆಗಟ್ಟಲು, ನಾವು ಕಬ್ಬಿಣಾಂಶವುಳ್ಳ ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ಆದಷ್ಟು ಹೆಚ್ಚಿಗೆ ತಿನ್ನಬೇಕು. ಇಡಿಯಾವ ಆಹಾರ ಧಾನ್ಯಗಳು, ಬೇಳೆಕಾಳುಗಳು, ಹಸುರು ತರಕಾರಿ ಮತ್ತು ಎಲೆಪಲ್ಯಗಳು, ದ್ರಾಕ್ಷಿ, ಅಂಜೀರ ಮುಂತಾದ ಒಣಗಿಸಿದ ಹಣ್ಣುಗಳು, ಮಾಂಸ ಮೊಟ್ಟೆ ಹಾಗೂ ಯಕೃತ್ತು ಇವುಗಳಲ್ಲಿ ಕಬ್ಬಿಣಾಂಶ ವಿರುತ್ತದೆ.

ಕ್ಷಯರೋಗದ ವಿಚಾರವಾಗಿ ತಿಳಿದಿರಬೇಕಾದ

ಕೆಲವು ಮುಖ್ಯ ಅಂಶಗಳು

1. ಕ್ಷಯ ರೋಗವು ಒಬ್ಬರಿಂದೊಬ್ಬರಿಗೆ ಹರಡುವ ರೋಗ, ವಂಶಪಾರಂಪರ್ಯವಾಗಿ ಬರುವುದಿಲ್ಲ.

2. ಇದು, ಕ್ಷಯರೋಗ ಕ್ರಿಮಿಗಳಿಂದ ಉಂಟಾಗುತ್ತದೆ.

3. ಕ್ಷಯ ರೋಗಿಗಳು ಸಿಕ್ಕಿದಕಡೆ ಉಗುಳುವುದರಿಂದ ಅದರಲ್ಲಿರುವ ಕ್ರಿಮಿಗಳು ಒಬ್ಬರಿಂದ ಒಬ್ಬರಿಗೆ ರೋಗವು ಹರಡುತ್ತದೆ.

4. ಕ್ಷೆಯರೋಗದ ಚಿಕಿತ್ಸೆಯು ದೀರ್ಘಕಾಲವಾದುದು. ಕನಿಷ್ಪ ಪಕ್ಷ ಒಂದು ವರ್ಷ ನಿರಂತರವಾಗಿ ನಡೆಯಬೇಕು.

5. ಅನೇಕ ರೋಗಿಗಳು ಸ್ವಲ್ಪ ಗುಣ ಕಂಡಕೂಡಲೆ ಚಿಕಿತ್ಸೆಯನ್ನು ಗೊತ್ತಾದ ಕಾಲಕ್ಕಿಂತ ಮೊದಲೇ ನಿಲ್ಲಿಸುತ್ತಾರೆ.

6. ಗೃಹ ಚಿಕಿತ್ಸೆಯಿಂದ ಖಾಯಿಲೆಯವರ ಸಂಪರ್ಕ ಹೊಂದುವ ಇತರರಿಗೆ ಯಾವ ಅಪಾಯವು ಇಲ್ಲ.

7. ರೋಗಿಗಳು ಚಿಕಿತ್ಸೆ ಪಡೆಯುತ್ತಿರುವಾಗ ತಮ್ಮ ದಿನಚರಿ ಕೆಲಸಗಳನ್ನು ಮಾಡಿಕೊಳ್ಳಬಹುದು.

8. ನವೀನ ಔಷಧಿಗಳು ಪ್ರಬಲವಾಗಿರುವುದರಿಂದ ರೋಗಿಗಳಿಗೆ ಹೆಚ್ಚಿನ ಊಟ, ತಿಂಡಿ, ಮೊಟ್ಟೆಗಳು ಮತ್ತು ಹಣ್ಣು ಮುಂತಾದುವುಗಳು ಅವಶ್ಯಕತೆಯಿಲ್ಲ.

9. ಖಾಯಿಲೆಯನ್ನು ಎಷ್ಟು ಜಾಗ್ರತೆ ಕಂಡು ಹಿಡಿದರೆ ಅಷ್ಟು ಬೇಗ ವಾಸಿಯಾಗುತ್ತದೆ. ಕೆಮ್ಮು, ಎದೆನೋವು, ಸಂಜೆಬರುವಜ್ವರ, ತೂಕ ಕಡಿಮೆಯಾಗುವಿಕೆ, ಹಸಿವೇ ಇಲ್ಲದಿರುವುದು ಮತ್ತು ಕಾರಣವಿಲ್ಲದೆ ಆಯಾಸವಾಗುವಿಕೆ ಇವೆಲ್ಲ ಈ ಖಾಯಿಲೆಯ ಲಕ್ಷಣಗಳು. ರಕ್ತ ಮಿಶ್ರಿತಕಫ ಇದ್ದಲ್ಲಿ ಕೂಡಲೇ ವೈದ್ಯರ ಸಲಹೆ ಅಗತ್ಯ.

10. ಸೂಕ್ಷ್ಮ ದರ್ಶಕ ಯಂತ್ರದಿಂದ ರೋಗಿಯ ಉಗಳನ್ನು ಪರೀಕ್ಷೆ ಮಾಡುವುದರಿಂದ ಈ ರೋಗವನ್ನು ಖಚಿತ ಪಡಿಸಬಹುದು.

—ಹೆಚ್ಚಿನ ವಿಷಯಗಳಿಗೆ, ದಯವಿಟ್ಟು ಈ ಕಳಕಂಡಲ್ಲಿ ವಿಚಾರಿಸಿರಿ—

ಕರ್ನಾಟಕ ಆರೋಗ್ಯ ಸ್ವಯಂಸೇವಾ ಸಂಸ್ಥೆ

VOLUNTARY HEALTH ASSOCIATION OF KARNATAKA

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Profile of Tuberculosis – An Army Experience

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ABSTRACT

With the advent of HIV infection an increased awareness has arisen on its effect on the incidence of various diseases. In the Indian context an increased incidence of Tuberculosis has been expected. The Army is a controlled relatively healthy constituent of the general population. It hence provides an ideal sample for gauging any dramatic change in incidence. The present paper covers the secular trend of the disease from the days of independence and highlights the differing rates in the stratum of society within the Army. With increased awareness and improvement in diagnostic facilities an increased incidence of the disease has been noticed. However a prospective study to further study various features of the disease as well its correlation if any with HIV is necessary. The paper also touches upon manpower wastage and age profile of Tuberculosis in the Army, which is an important concern to them.

INTRODUCTION

Tuberculosis control is considered to be the most effective health intervention in developing countries[1]. Despite rapid advances in the fields of investigation and treatment of this dreaded disease, it continues to be a scourge in our country[2,3]. Control of the tuberculosis has been hampered by the potential of the large reservoir of infection in this country.

During World War I, tuberculosis played a large role in the Indian Armed Forces with a number of individuals being evacuated from the theatre of war due to the disease. The Indian troops had an incidence far in excess of British troops[4].

In the Armed forces the control of tuberculosis has been taken up in earnest for arresting the spread and also as a means of decreasing the wastage of trained manpower. Hence it was the decided to study the secular trends of tuberculosis since independence, its impact on manpower wastage and further elaborate on the age distribution of the infected population.

MATERIAL AND METHODS

All cases of tuberculosis are admitted to hospital in the Armed forces and given the multidrug regimen. No outdoor treatment of cases is carried out.

Data in respect of all Army personal admitted to all military hospitals was collected. Secondary data was also collected and analysed on post independence period from previous annual health reports of the Army. For the purpose of calculation of rates only

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'fresh admissions were considered and cases admitted for review, release on medical grounds etc. were ignored.

Data of pulmonary tuberculosis (being the single largest form of tuberculosis) were analysed for the past decade.

The average bed days spent in hospital by service personnel were calculated, on the basis of total duration of stay in hospital during year 1993.

The data received from hospitals was also screened for invalidments (i.e. release from service on medical grounds) and mortalities in the past one decade.

A study was also carried out of the age distribution of tuberculosis cases in the year 1993. The denominator in this case was the population size in the various age groups.

RESULTS AND DISCUSSION

From available data it is evident that tuberculosis has not declined in this country[2]. However, due to the mode of recruiting only fit individuals in the army, higher doctor-patient ratio and rigorous implementation of control measures the disease incidence in the Army is much lower than in the country as a whole.

The incidence of tuberculosis in the army has not altered significantly in the 45 years since independence (Fig.-I). This compares favourably with reports of some other workers who have not found any change in the incidence in the country[2]. The increase in incidence is in conformity with the study carried out be Styblo et al[6] which shows an increased incidence of tuberculosis in the entire South-East Asian region in the years 1985-89:

The trend in tuberculosis has not been similar in officers and non-officers (Ors). The rate in officers is much less than that of Ors. The general tendency is for the rate to fluctuate in a narrow spectrum between 0.6 - 1.1 since 1972. Prior to 1972, the rate varied from 0.3 - 0.7/1000. The sudden rise since 1972 could be due to better diagnostic facilities, increased reporting and awarness in the population that the disease is amenable to complete cure. Retrospective epidemiological studies in the matter to pinpoint the reason for the increased incidence require to be carried out.

Pulmonary tuberculosis is the main form of tuberculosis in troops. The rate in last decade has varied between 0.2 - 0.7 in case of officers and 0.7 - 1.5/1000 for non-officers, representing approximately 50 to 60% of all cases of tuberculosis (Table 1).

TABLE 1—TREND OF TB (PULMONARY)

YEAR	OFFICERS	*JCOs/OR	TOTAL
1985	0.75	1.37	1.36
1986	0.24	0.68	0.68
1987	0.26	0.94	0.92
1988	0.51	0.97	0.95
1989	0.53	1.08	1.07
1990	0.41	1.29	1.26
1991	0.51	1.39	1.36
1992	0.78	1.58	1.56
1993	0.73	1.35	1.33

*Junior Commissioned Officer & Other Ranks

The rate of hospitalisation among the non-officers varied from 1.2 - 2.4/1000/ No specific trend was noticed in the incidence. The 1992 incidence of 2.42/1000 for non-officers and 2.41/1000 for all personnels reflects the highest incidence since independence. However it is not a significant increase as compared to the previous few years. A gradual increase has taken place since 1989 onwards from 1.62 in 1989 to 2.41 in 1992.

The increase in tuberculosis has been linked in the West with an increase in the HIV positive population[6-9]. The number of cases with such an association have been estimated to be 10% of the tuberculosis cases[10]. Estimates for the SEARO region have been put at 6% of the cases detected in the year[11].

1992 has seen the highest tuberculosis incidence in the army since independence (2.41/1000). However, whether the present increase in tuberculosis in the Army could be due to better diagnostic facilities or is due to HIV infection is purely a matter for conjecture as HIV testing of all TB cases was not being carried out earlier. Such a study carried out at Grant Medical college and JJ Group of Hospitals revealed a prevalence of 5.1%[12,13]. Studies at Haffkine Institute have shown that 37% of HIV positive cases present with Tuberculosis while 5.3% of AIDS deaths were due to TB[14]. A more detailed prospective study into the matter would hence be definitely a meaningful exercise.

Manpower wastage due to hospitalisation was calculated and the average mandays spent in hospital was 204.37. Though figures for mandays spent for the disease in civil hospitals in the country are not readily available. The high manpower wastage is due to the general policy in the Armed Forces to give 6 months hospitalised treatment for service personnel prior to sending individuals to the unit.

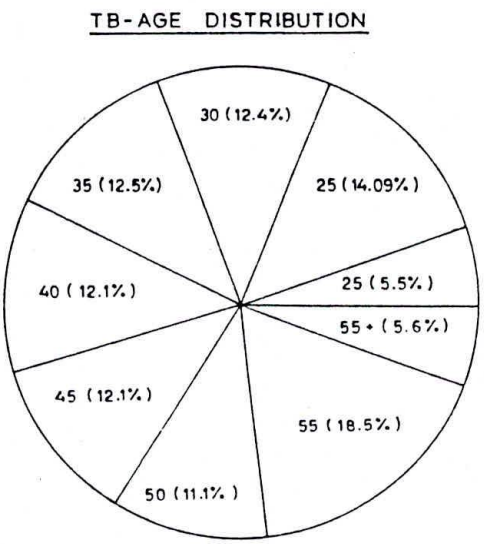
Further loss to manpower occurs in the disease due to invalidments (individuals released from service on medical grounds) and mortalities (Table 2). A reflection of the efficacy of therapy is the decrease in the incidence of invalidments after 1989. The mortality due to the disease (complicated forms of tuberculosis, TB meningitis, miliary tuberculosis) has not exceeded 0.01/1000 in the past decade while it has been below 0.005 in the past 3 years. (Table-2). Both these features reflect an improvement in the control of the disease.

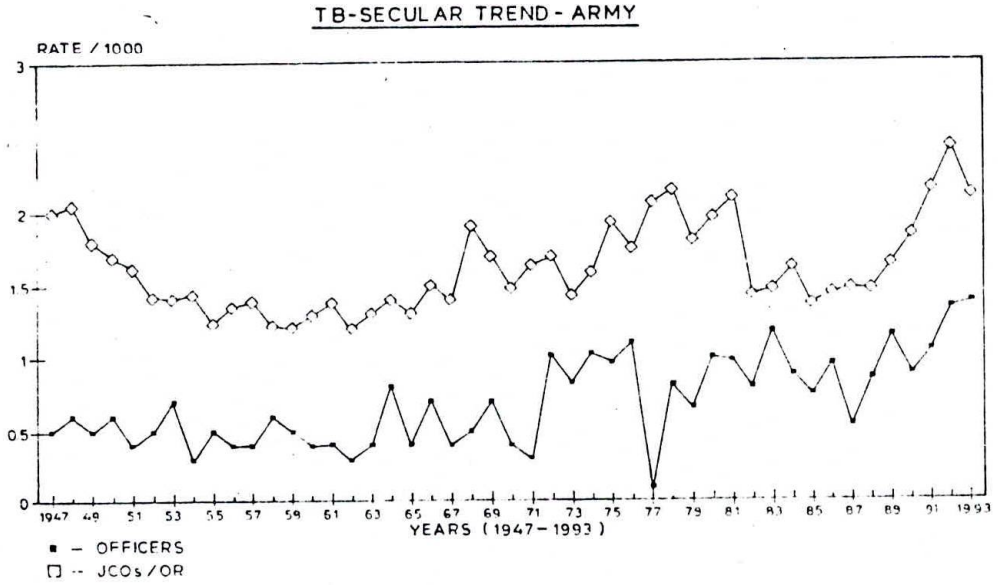
TABLE 2—INVALIDMENT/MORTALITY-TB CASES

YEAR	OFFICERS		JCOs/OR	TOTAL
1985	*INVLD	-	0.41	0.39
	**MORT	-	0.01	0.01
1986	INVLD	0.03	0.34	0.33
	MORT	-	0.01	0.01
1987	INVLD	-	0.24	0.23
	MORT	-	0.01	0.01
1988	INVLD	0.03	0.16	0.15
	MORT	0.00	0.00	0.01
1989	INVLD	0.03	0.12	0.12
	MORT	0.00	0.00	0.00
1990	INVLD	0.03	0.14	0.14
	MORT	-	0.00	0.00
1991	INVLD	0.05	0.14	0.14
	MORT	-	0.00	0.00
1992	INVLD	-	0.15	0.15
	MORT	-	0.01	0.01
1993	INVLD	-	0.13	0.14
	MORT	-	0.01	0.01

* INVLD - Invalidments (Discharge from service due to medical grounds)
** MORT - MORTALITIES

Sometime there has been a gradual shift in the age groups involved in tuberculosis from the younger group to the older age groups. The present study shows that in the armed forces there is a steady incidence of tuberculosis from 20-25 years. (Fig.-2). A dip in incidence in the group below 20 years and above 55 years may be due to the population of this group being relatively very small. The findings are consistent with the general trend of the disease world over[11].





Despite a large amount of effort and resources being poured into the National Tuberculosis Control Programme, no major dent has been made in the incidence of the disease in the country. Due to the high doctor patient ratio and meticulous control measures in Armed Forces it was expected that there would be decline of tuberculosis in the forces. However the same has not taken place.

The rate of tuberculosis in 1991 has been the highest since independence which is cause for concern keeping in view the onslaught of AIDS in the country and the likelihood of further increase in the disease. Increased control measures/strategies require to be designed and implemented so as to curtail the disease at this stage.

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DIAGNOSIS AND TREATMENT OF TUBERCULOSIS

Under the revised national tuberculosis control programme, emphasis is placed on (1) sputum diagnosis of tuberculosis; (2) short course chemotherapy; (3) direct observation treatment (DOT).

SPUTUM DIAGNOSIS

Any chest symptomatic is made to undergo sputum examination. The criteria for sputum examination being cough for more than 3 weeks with or without fever, loss of weight, night sweats. Three samples of sputum are examined as follows: **1st sample** on reporting at the health facility; **2nd one** being an overnight sample; **3rd sample** when the patient comes with 2nd sample. All the three samples are stained by Ziehl Neelsen stain and examined for AFB. If two out of three smears are found to be positive, the patient is put on anti-tuberculosis drugs. If one smear out of the three is positive, the patient is referred for X-ray examination and if X-ray is suggestive of tuberculosis, the patients is treated with anti-tuberculosis drugs. If negative for all the three sputum examinations and the patient has symptoms, he is sent for X-ray examination after a course of antibiotics.

SHORT COURSE CHEMOTHERAPY

For this purpose, patients with tuberculosis are classified into three categories:

Category I - under this category: (a) new cases of pulmonary tuberculosis - AFB with two smear positives out of three (patient who has never taken anti-tuberculosis drugs for more than one month); (b) newly diagnosed smear negative seriously ill patients & severe forms of tuberculosis, eg., meningitis etc,

Recommended regimen - Treatment is for a period of 6 months consisting of 2 months intensive phase and 4 months continuation phase. During the intensive phase, 4 drugs are given on 3 fixed days of the week (i.e., Monday, Wednesday and Friday or Tuesday, Thursday and Saturday) under direct observation therapy (DOT) for a period of 2 months. At the end of two months, 2 smears are examined. If the smears are negative, continuation phase is started. If the smear is positive, intensive phase is continued for 1 more month. At the end of 3 months, 2 smears are examined again, irrespective of whether the smears are negative or positive, continuation phase is started.

At the end of 2 months of intensive phase, 2 smears are taken for sputum negative seriously ill cases and examined. If found positive, the patient is put on category II treatment.

The drugs given are: Isoniazid, Rifampicin, Pyrazinamide and Ethambutol.

Dosage: For adults - INH - 600 mg; Pyrazinamide - 1500 mg; Rifampicin - 450 mg; Ethambutol - 1200 mg - thrice weekly.

Continuation phase - $4(HR)_3$; Isoniazid & Rifampicin given thrice a week for the next four months.

HR - INH - 600 mg and Rifampicin - 450 mg - thrice weekly. Blister packs for 1 week is given to the patient.

Sputum at 5th month is done. If it is positive, the patient is categorised as failure and category II treatment or retreatment is started.

Category II or retreatment regimen : The following patients are put on Categofy II treatment: (1) patients who have received ATB drugs for more than one month; (2) patients who have remained smear positive after 5 months of Category I treatment; or (3) those patients with EP and smear negative pulmonary who have become smear positive at the end of 2 months; (4) those patients who have become smear positive after being declared cured (relapse).

These patients require fully supervised treatment for 3 months. Drug regimen:

INH	-	600 mg	thrice weekly for 2 months
Rifampicin	-	450 mg	
Pyrazinamide	-	1500 mg	
Ethambutol	-	1200 mg	
Streptomycin	-	0.75 g	
INH	-	600 mg	Thrice weekly for one month
Rifampicin	-	450 mg	
Pyrazinamide	-	1500 mg	
Ethambutol	-	1200 mg	

Sputum examination is done at the end of 3 months. If it remains positive, 4 drugs are continued for 1 more month. If it is positive, the patient is sent for culture and sensitivity. If the smear is negative, continuation phase is started.

Continuation phase - 3 oral drugs, viz., INH - 600 mg; Rifampicin - 450 mg and Ethambutol - 1200 mg : thrice weekly for 5 months.

Category III - This category consists of: (1) AFB smear negative new cases of pulmonary tuberculosis, i.e., radiologically positive; (2) Extra-pulmonary tuberculosis.

This group is classified as a low priority group. Treatment consists of:

INH - 600 mg; Rifampicin - 450 mg; Pyrazinamide - 1500 mg : thrice weekly for 2 months.

Continuation phase - INH - 600 mg; Rifampicin - 450 mg - thrice weekly for 4 months.

SIDE EFFECTS OF ATB:

INH - major side effect are: jaundice occurs in 0.5%. If it occurs, stop treatment. Refer the case to hospital.

Rifampicin - : Major side effects: Hepatitis ^ It is rare but can occur in alcoholics, hepatic disease. Discontinue drugs. Occasionally respiratory distress and haemoptysis can occur. Discontinue drugs and hospitalise.

Minor side effects: (1) Fever, malaise - more common in intensive therapy; (2) skin rash; (3) gastritis.

Pyrazinamide : Arthralgia.

Thioacetazone : Hepatitis, cutaneous reaction - may be exfoliative dermatitis or Stevens Johnson Syndrome. Medication should be immediately stopped and thioacetazone should never be given again.

Ethambutol - may produce impairement of vision and occular toxicity. Should never be given to children below 6 years.

Streptomycin - main side effects are: vestibular damage.

Hypersensitivity - occurs occasionally and consists of fever, head ache, vomiting and erythematous rash. Discontinue drug and admit the patient.

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OCTOBER 1983

RURAL NUTRITION EDUCATION: A FUTILE EFFORT ?

Padma Umapathy*

It is a well-known fact that malnutrition is a public health problem in our country and affects the vulnerable section of population comprising pregnant and lactating women, and children. Causative factors include poverty, large family size, ignorance, unhygienic conditions, and superstitious beliefs and customs. These form a vicious cycle. Now, for a nutritionist or extension worker the question arises-where to break this cycle and enter? In other words, what should be given priority? What should a programme to control and prevent malnutrition contain? Recent experiences of the Post-graduate Department of Home Science, University of Mysore in this area are worth sharing.

A training programme for students coupled with a service component to improve the nutritional and health status of a village community was started in Hejjige in December 1980. A clinic was established and visits were made to the village twice a week. The programme had the following components :

(1) A base line survey was conducted to assess the nutritional status of pre-school children;

(2) Nutritional rehabilitation through supplementary feeding and an intensive nutrition education programme were carried out by the faculty members. Ready-to-mix food-supplement using locally available food grains was prepared and diets of two children suffering from PEM was supplemented with it;

(3) In the case of moderate and mild cases of malnutrition, the concept of providing additional food was imparted through nutrition education;

(4) Villagers were also taught about treatment of diarrhoea with oral rehydration solution;

(5) Efforts were also made to improve the economic level of a few families through income generating activities.

Outcome of the programme

One of the two severely malnourished children receiving the supplement recovered and showed significant improvement within six months. However, the mother failed to continue to feed the child on her own. In the case of other child, the mother could not be motivated.

Of the 34 families which received nutrition education for five months, only six mothers prepared the mix once or twice. Reasons for this disappointing outcome were several.

(a) Lack of resources for preparing sufficient quantities for all the children.

(b) Non-acceptance by the child since it was not shared by other family members.

(c) Lack of time or energy on the part of the mother to prepare the mix, or illness of the mother.

(d) The time of introduction of the supplement coinciding with occurences such as diarrhoea, cough or cold.

(e) The child refusing other foods and demanding only the mix.

(f) Monotony in the case of a few children.

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However, many were willing to accept the food supplements as long as they were supplied. After a gap of about four months, one visit was paid to observe any possible residual impact of our efforts. It was disheartening to see that not even a single family was practicing what we had preached about nutrition. The children who had been either fully or partially rehabilitated were moving in the reverse gear. It was surprising to note that successful rehabilitation of a severe form of PEM had no impact either on the family or on the others in the village. With this response to an intensive approach, one cannot but wonder about the benefits of nutritional rehabilitation when introduced at the PHC level with the existing set-up. It was obvious that the people of Hejjige had missed the curative medical service given by us. Otherwise, the programme had made not the slightest dent in their lives.

In the present context of low standards of living, nutrition education and rehabilitation programmes without improvement in the purchasing power of the families make little sense. Although food is a basic necessity of life, poor people are probably more concerned about their overall survival and day-to-day existence. Until and unless there is a rise from the present-day rock bottom level of living to a certain minimum standard, nutrition education of the type which has so far been attempted will remain a futile exercise.

Cholera Vaccine: Inappropriate Aid?

A brief report in a recent issue of the **New Scientist** focusses on the massive amounts of inappropriate aid that arrives in disaster areas. During the '70s this aid included items such as expired drugs, tins of pork curry sent to Muslim areas, expensive X-ray equipment in areas where no one could operate them, and so on. But, according to the director of the International Disaster Research Institute, London, a more serious case of inappropriate aid was the practice of vaccinating flood victims against cholera. He says that cholera vaccines are usually a waste of time and resources because the population is usually dispersed, already immune and is likely to encounter new risks, such as hepatitis, because of the injection. Moreover, studies have apparently shown that flooding actually decreases the incidence of cholera.

Reporting of Adverse Drug Reactions in Britain

In Britain, the Committee on Safety of Medicines has been trying to keep track of adverse drug reactions for 19 years. Now, reports New Scientist, a working party enquiring into the system has found that only one in ten adverse drug reactions are reported by doctors despite measures to facilitate the reporting. The working party was set up when the Committee came in for heavy criticism for delaying the withdrawal of an arthritis drug in spite of the adverse reactions to it having been reported. The working party, however, rejected the idea of allowing patients to make their own reports or of making it mandatory for doctors to report adverse drug reactions.

HEALTH "CARE" VS. THE STRUGGLE FOR LIFE

Mira Sadgopal

(Part II)

Numerous groups and individuals are making attempts to join with others, to challenge the might of the establishment. The outlook of all at this point is at best, partial. Again, the problems of tuberculosis can serve as a useful reference point for illustration. Action is occurring at national, regional and local levels. We will mention a few of these efforts known to us which we consider significant.

The Voluntary Health Association of India (VHAI) is at present carrying out a countrywide investigation, with the help of a number of local and regional groups, of the widely reported shortage of first-line anti-TB drugs in the market and in the Government TB treatment centres. This effort has arisen from a couple of workshops on issues related to rational drug therapy organized in 1982 in joint collaboration with the Medico Friend Circle. During the workshop held in Jaipur in August, evidence from within the pharmaceutical industry was presented by spokesmen

of the Federation of Medical Representatives' Associations of India (affiliated to the All-India Chemical and Pharmaceutical Employees Federation, a non-party trade union organisation) to show that the large multinational drug companies are manipulating the supply of anti-TB drugs by producing essential first-line drugs far below their licenced capacities and promoting the newer second-line drugs which are at present imported from abroad. A number of field groups, including members of the Medico Friend Circle, members of the State Voluntary Health Associations, and local units of the Federation of Medical Representatives are collecting data to assess the magnitude of the problem and whether, as many suspect, the incidence of TB among the people is on the increase.

The first weapon against the establishment is information. A second can be formed from a "network of socially conscious health workers" (quoting from VHAI's appeal for cooperation in collecting field data on TB drugs and incidence). The ultimate weapon is a conscious movement within the masses.

As in many parts of the world, we see in India today, various attempts being made in the direction of building a conscious peoples' movement. Only thus will it be possible to really challenge the establishment on issues of health care and more important, to gather the necessary power and democratic perspective for evolving a real scientific alternative which rests on social justice. At present these initiatives are small and fragmented, particularly in the sphere of health action. Therefore they are weak in comparison to the total strength of the establishment. However, the experience steadily being built up and the link with other democratic developments is significant.

On the regional and national level is the surprising example of the Federation of Medical Representatives' Associations of India, a healthy, growing non-party-affiliated trade union organisation with a vision of society which is somehow startlingly free from the blindfold of narrow economism. This group's role in collecting vital information about the TB drug situation has already been mentioned. Some of its regional units are particularly active.

Another regional example is that of two other non-party organizations in the seven districts of the Chhatisgarh region of eastern Madhya Pradesh - the Chhatisgarh Mine workers Union (CMU) and the Chhattisgarh Mukti Morcha (CMM). The CMM, an organisation drawing strength from agricultural labour is constructing a peoples' hospital and both organisations launched a joint movement in 1981 which they call "Struggle for Health". At present, understanding of health issues is crude: primarily a realisation of what is grossly wrong and a struggle against blatant injustice. Slowly and painfully these two organisations are struggling to overcome their own inadequacies, faulty habits and traditional beliefs to build up a viable and just health care alternative.

At the local level in areas where there is no established mass organization, small activities and micro-initiatives are being carried out which begin to challenge parts of the health establishment. This has been the case in our own group's work. In the form of a series of three block-level "Youth Leadership Training Camps" sponsored by the Nehru Yuvak Kendra (Government of India) of Hoshangabad, we organized groups of literate youth to study the social aspects of the problem of tuberculosis by moving among the people and listening to men and women with the disease tell their stories. The campers compared the people's experience with the provisions of the National TB Control Programme and analysed reasons for the discrepancies. They organized a diagnosis camp, poster exhibition and cultural programme and a public question-and-answer meeting in the presence of the government doctor and the district TB Control authorities. Many contradictions arose which could not be resolved.

At the village level, we initiated an interesting experiment with the women of the labouring class. The male villagers of one large village had formed a labourers' union about eight months previously. One day, knowing that I am a doctor, a woman named Bhagwati suffering from untreated advanced TB dragged her emaciated frame to my door. She related a story of neglect and desperation. Her husband was an inactive member of the union, although she was not even aware of the existence of the union. Her husband Kaliram had failed to take her to the government hospital for diagnosis and she insisted that the elders in her family wanted her to die. We brought up the case in the union meeting, but were shocked to find total apathy towards her plight. The only concern was that her husband, who failed to attend meetings, was a scoundrel and a coward and not worth any attention at all. It appeared as if his wife was only

an appendage of him. Up until that time, no women had been involved in the union meetings. We decided to see how the women would react to this woman's problem.

Approached individually and in small groups, the women's response on hearing that TB is curable and the treatment provided for through the Government PHC was spontaneous. They decided to hold a meeting of their own to build up pressure for her treatment. This they did. In the meeting I agreed to act in a supervisory capacity to see that the treatment given through the PHC was correct and was properly understood. Kaliram took his wife to the PHC and the treatment was started. At the time I was working there voluntarily on a once-a-week basis, so I was able to intervene to some extent. We trained a local person to inject Streptomycin and, on my responsibility, a month's supply was issued from the PHC.

The initial phase of treatment was stormy. Bhagwati had high fever and severe lung damage. We held an emergency meeting one night to help the family, now alarmed, to decide whether to take her to the Government TB Hospital at Chhindwara. Four women related stories of their relatives who had gone to the TB Hospital. In three cases, the victims had died anyway. The fourth person, alive and well, had gone there twenty years before when the hospital was run by a mission. Nowadays the hospital is ridden with corruption at all levels and over-crowded so that the expense is great. It was pointed out that the modern treatment would be no different from that she was getting at home from the PHC. So it was decided that the wisest course was to continue to take care of her at home.

In the first ten days, one or two women began to visit her daily along with me, turn by turn. This was a hurdle for them, as Bhagwati is a Harijan and, although all the women were poor, they were nearly all non-Harijans-tribals. Muslims and low-caste Hindus who were used to strictly abiding by the code of untouchability when relating to Harijans. They had never set food on the **aangan** of Bhagwati's hut, and they had not seen her about the village for several months. It was and unforgettable sight when one woman, seeing her shrunken form on the cot, irresistably lifted aside her veil, with which she had covered her face in shame, and exclaimed, "Oh, my sister, what has happened to you!"

The women were so excited at the first two meetings that they decided to meet frequently. At their next meeting, the women who had already visited the house described Bhagwati's condition and observed that there were obstacles to her treatment at home. Her mother-in-law was being nasty and uncooperative, refusing to give her food and continuously commenting that she would be better dead. The rest of the family was demoralised and the house was messy. I told them that it was a problem for me as a doctor to keep on giving necessary advice to improve diet and hygiene which had gone unheeded for a week. They decided to control the mother-in-law and had a lively discussion about a proper diet for a TB patient and about fixing up Bhagwati's surroundings to make the place liveable and hygienic. The next day one woman tackled the feisty old mother-in-law and convinced her to draw a truce in the battle with her daughter-in-law until Bhagwati would be fit to fight back again. Another woman sat on the edge of the cot explaining to her husband and eldest daughter what she could be fed, how to arrange that part of the hut, and how to dispose of infected sputum.

The heat was sweltering. The next day we were surprised to find that Kaliram, a bamboo worker, had woven a large overhead fan and attached a long grass rope to it. The small children were kept at a safe distance pulling the rope to and fro in turns, singing songs to the rhythm of the fan. The house was tidy and clean. The sick woman's fever was much less. She was smiling. Her mother-in-law was grumbling, but about other things, and in masked good humour. The family had got the taste of self-respect through social concern.

Recovery was steady for some time thereafter. At the end of one month, Bhagwati was anxious to get her sputum re-examined because she wanted to be able to hold her four-year-old son on her lap, and she wanted to sit-in at the women's weekly meeting. She had lost her one-year-old daughter a year previously, probably because of having infected her with TB. To collect her sputum, she scrubbed a Streptomycin vial thrice with soap and boiled it in water (so as not to kill any bacilli!) and waited for the bus on the road from eight in the morning. The eight o'clock bus did not come. The eleven o'clock bus did not come. At 11.15 she began walking in the scortching sun barefoot. The PHC was seven kms. away, and she was afraid it would close, so she nearly ran the whole distance. One hour later, she reached the PHC to find that it had closed at 12 o'clock.

LETTERS TO THE EDITOR

Health for All?

Dear Friend,

Dr. David Nabarro's critique of the Primary Health Care Approach (June and July issues of the Bulletin) echoes the experience of many health care workers and also raises relevant questions. But, although it throws light on the difficulties of implementing the solutions proposed by the Primary Health Care (PHC) movement, some of the basic assumptions of the movement are left unquestioned. Should we not also question the content and nature of the problem of health care as stated by the PHC movement?

For instance, the main cause of ill health among the world's 'least healthy populations' is seen as their exposure to large numbers which in turn, is a consequence of living in 'contaminated' environments. It is also acknowledged that people living in such conditions are likely to be undernourished, to lack fuel to 'sterilise foods they prepare' and cannot obtain enough water to keep themselves clean. Thus the problem of ill-health becomes confined to factors which are either 'removable' or 'alterable' without in anyway altering the dynamic forces that trap people in the ill-health maze. The PHC approach is therefore to direct efforts at protecting the population from pathogens (immunisation programmes etc.) and at altering health behaviour of the people to suit pre-determined goals, through health education. Although the article recognises the limitations of such health education, it does not quite come to grips with the reasons why its benefits are uncertain.

Specific components of social behaviour cannot be modified without changing social relations and the existing power balances. Dr. Nabarro recognises this when he points out that the implementation of PHC activities inevitably involves conflict and that the concerned literature usually ignores the financial, political and other barriers to improving people's health. Nor does it provide health workers with appropriate direction in how to deal with conflicts. This results in the confusing medical professionals' when arriving at 'community' solutions to health problems. Dr. Nabarro's suggestion for resolving this dilemma is to delimit the goal of health for all to 'medical care for all'. But even this slogan will not really take the health professionals out of situations where he has to face the tension inherent in a social system based on exploitation and oppression.

The international organisations' call to achieve health for all is hardly a polemic. It is more in the nature of a trite, but emotive and populist slogan. As such, is it any wonder that it has dissolved into platitudes? Health for all cannot be achieved through collective action from technicians and administrators together with political backing, but through the generation of alternative social and political forces.

Amar Jesani, Padma Prakash
Bombay

More on Aspirin

Dear Friend,

I entirely agree that Aspirin is still the cheapest and the best analgesic and anti-inflammatory agent, but a word of caution is necessary against its common use in our country.

The incidence of hyperacidity and peptic ulcer is quite high in our country, partly because of dietary habits (spices, rice, macca), partly because of addictions (tobacco, alcohol), and because of 'hurries and worries' of fast life. In all such cases a single dose of Aspirin may prove fatal by causing haemorrhage or perforation. It is, therefore, important to exclude the presence of hyperacidity and peptic ulcer before prescribing this so-called cheap and versatile remedy. It is being said that with the use of microfined Aspirin the chances of such complications are minimal, but the fact remains that Aspirin is a potent gastric irritant.

Dr. Nagendra Nath Nagar
Dahod

X MFC ANNUAL MEET

The **X MFC Annual Meet** will take place at January-end, 1984. The first two days will be devoted to a discussion on the theme: "Why alternative medical education is necessary". The third day will be reserved for the Annual General Body Meeting of the Medico-Friend Circle. Those interested in attending this Meet are requested to reserve the last five days of January 1984 for this. Details of the Meet will be announced in the November issue of the Bulletin.

- Anant Phadke

Views and opinions expressed in the bulletin are those of the authors and not necessarily of the organisation.
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She waited until it reopened at 4.30 p.m. and proudly offered the vial of sputum to the compounder-technician. He grabbed the vial and threw it on the ground shouting, "We won't do your sputum test seventeen times. Bring it after three months!". Then she asked for her month's supply of drugs, only to be told that the doctor had gone and she would have to come the next morning.

Bhagwati returned home exhausted, downcast, but amazed at herself that she had been able to make the journey. Next day, she had fever, but she was determined to go back to get her medicines. Kaliram accompanied her. He decided in addition, to take her to the next town and get her first X-ray done and the sputum test repeated privately. When they faced the PHC doctor, they had to tolerate his sarcastic comment that they had "become big people now". All the drugs were given, but no amount was recorded on the card. In the next town, they paid Rs.5/- for the sputum exam and Rs.24/- for an X-ray. The sputum test was negative. The X-ray showed cavitation, but signs of active healing.

Probably because of the heavy exertion, Bhagwati was not well for about two weeks, but again began to pick up. The following month she went to a wedding and took her vials of Streptomycin and pills along with her, getting them injected by an available doctor. In the fourth month she started work again. She is a traditional **dai** as are all the women of her caste. An orphan, she had started her midwifery career at the age of seven, as she described to me later. In the same month, some other villagers reported to me that she was catching fish in the river with her nephew.

In the fifth month, Kaliram discovered that Bhagwati had brought back only white tablets from the PHC. Streptomycin had been discontinued, but he knew that anti-TB drugs were necessary, and she had been receiving both Isoniazid (white-coloured) and Thiacetazone (yellow-coloured) in the form of combined light-yellow coloured tablets. He took the pills back the doctor the next day complaining squarely that she had been given "only one" anti-TB drug by mistake. He didn't flinch when the doctor's cold gaze hit him, and after a moment's hesitation, the compounder was called and told to exchange the white tablets for the familiar light-yellow ones.

And so her treatment will go on, maybe without serious lapse until she is totally cured. Kaliram now attends union meetings when he can manage it. Bhagwati attends the women's meetings. He farms his small piece of land, and plays music at weddings. They make bamboo baskets. She delivers babies. They are people of courage, like the others. In the meetings they don't talk about TB, but of the struggle to survive and thrive against the forces of the establishment.

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SEPTEMBER, 1983

HEALTH "CARE" VS. THE STRUGGLE FOR LIFE

Mira Sadgopal*

(January 1983)
Part - I

India's people, and the world's people, are faced with a gigantic health "care" establishment. It is far from being a vacuum, a situation of "neglect" as most politicians and planners would have us believe, or sometime themselves believe. Like a huge and ungainly bureaucracy, it is both organised and unorganised. Its various parts are linked with each other in both gross and subtle ways; equally, the parts function in contradiction with each other. Some of the parts of the establishment succeed in holding away in certain spheres by virtue of historical advantage and the forces that back them at the moment. Any group claiming to explore "alternatives" must understand human health, and likewise any other sphere of human welfare (like education, economic development, legal justice, etc.) in this perspective. The individual man, woman or child is powerless and thus always prone to being sucked, duped or dragged into the establishment system.

India provides a magnificent panorama of such a health care establishment. Most obviously, we have in this country a giant multi-tiered Government-operated public health infrastructure, the bottom levels of which are organised into something called the "primary health care" system. It is topped by a spread of state hospitals and national medical institutes as well as various large central public health agencies. Ultimately, this government system is empowered through finance by international organisations and agencies like the WHO, UNICEF, DANIDA, etc.

Second in consequence is the vast body of "qualified" Private Practitioners which, although it is less organised and partially thrives on its own disorganisation, also exhibits a hierarchy of influence and power largely corresponding to the proximity of its parts to the cities and the drug industries. It includes graduates of "allopathic" medicine as well as graduates of the ayurvedic colleges, although most of the latter depend on the use of modern allopathic medicines. The minimum requirement for organisation to promote and protect the interests of their members as a class is fulfilled by the Indian Medical Association.

Taking third place in visibility, although it exerts the most pervasive and devastating influence, is the huge drug industry complex. There is a polarisation within this group between competing indigenous and multinational companies which is unequal, so that indigenous industry either succumbs or adopts policies in tune with the multinationals. The multinational drug industry profoundly controls policy and practice within the Government health system as well as the behaviour of Private Practitioners by plying central government committees and deploying a large army of medical representatives.

Fourth is a large group on the fringe of the health establishment power structure, loudly names "Quacks" by the Private Practitioners. It is a very interesting group without any real political power or legal sanction which thrives on the contradictions of the

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establishment, the extreme powerlessness of the masses and the total culture of mystification which maintains this. This group finds its niche in the rural areas and the lacunae of the towns.

A fifth group exists in the twilight beyond the fringe, often indistinguishable from the masses but merging into the category known as "quacks". They cannot really be called part of the establishment, but they are quite often the first, last, and sometimes the only recourse of the poor. These are the village **dais**, the bonesetters, the **guinas, ojhas** and **bhagats** (faith healers and magicians). They are traditional, indivisable from the belief system of the masses. The larger health care establishment has an ambivalent attitude towards this section - it is largely ignored or ridiculed. Recognising their hold over the people, some members, such as the **dais**, are sought to be co-opted by government training into the primary health system.

Also according to establishment values, organised health services are operated to a greater or lesser extent by large public and private industries and by the central government for its employees. These are all subject to the same pressures of the health care culture which bear on society in general and are only partially modified by local or specific political conditions. For practical purposes, we may add to this category the attempts of a number of voluntary agencies to provide proper and uniform health services in project areas.

Seeing the larger interconnecting structure of the health establishment in this way gives us an intellectual idea of its magnitude, but what does it mean for the common man and woman in India?

For a start, we can listen to the stories of hundreds upon thousands of men and women suffering from tuberculosis in our cities, towns and villages. Over and over again we can see a plot thus exposed in stark nakedness, as each tells of the struggle to get treated and cured by any possible means.

For instance, a villager who gins cotton has noticed a gradual loss of weight and energy and may be a cough for several months. But so many of the poor are already exhausted and emaciated by life - they find the line between relative health and disease is imperceptively crossed - and they think it is only "weakness". When work becomes impossible they seek quick help from private practitioners, knowing it will cost, but anxious to get well and back to work. They hope to get by with a strength-giving injection, a few pills may be, and a bottle of life-giving tonic which the doctor will prescribe. So a couple of chickens and some grain is sold to raise money.

The doctor well recognises the story and the appearance. He suspects it is tuberculosis. He knows the capacity of the poor- they will pay for the belief that they will get well, and as long as that belief can be sustained, they will keep on paying the same doctor. He also knows that this disease, if properly managed, has a good chance of continuing without cure for several years before the patient dies. Furthermore, the widespread attitude that TB is incurable, supported by the vast majority of cases which eventually end in death, and the doctor's own observation that patients cannot sustain regular treatment does not lead him to nurture any professional interest in obtaining a cure. Therefore, neither is he interested in proving the diagnosis. A private practitioner will avoid telling that he is treating a man for TB as long as possible. Otherwise he is sure to lose his patient to another doctor. Likewise, sending him for sputum test or X-ray, which may be available through the nearest government hospital, would be giving him away, or privately done would use up available funds. He is not interested in prognosis either - it will be sufficient to see that the man gets temporary relief and is kept fluctuating within a safe margin between cure and death, with an occasional dramatic rescue from death's clutches, for as long as possible.

What does the doctor's treatment consist of, aside from its psychological content? **First** on the list is Streptomycin injections, one daily if possible, which is more likely impossible if the patient lives far away. (He may be given tablets of Isoniazid in various proprietary preparations in place of streptomycin, in which case he is certain to be sent off with a couple of impressive on-the-spot injections, such as liver extract and red-coloured vitamin B12.) **Next**, he will be prescribed ethambutol tablets (under one of the marketed brand names), a second-line drug for TB which is comparatively expensive but which is being promoted by multinational companies through their medical representatives as a first-line drug. **Third**, a corticosteroid hormone like betamethazone (again, under numerous brand names) will

be routinely given or prescribed by most private practitioners at the start of anti-TB treatment, as it is expected to bring about rapid relief from symptoms and a specific false sense of physical well-being which may be the major factor in hooking the patient. **Fourth** will be a large bottle of mineral and vitamin tonic which also ironically contains something to stimulate the appetite of the person who is basically dying of hunger anyway. **Fifth,** a syrup will be added to suppress the cough.

The expense of the first week of such treatment works out as follows (approximately):

1.	Inj. SM @ Rs. 3.00/day x 7	21.00
2.	Tab. Ethambutol 1 twice/day @ Rs. 2.50/day x 7	17.50
3.	Tab. Betamethazone 1 thrice/ day x 7 = 21 tablets	8.00
4.	Vita-mineral tonic - single large bottle	20.00
5.	Cough syrup - single bottle	8.00
		74.50

The doctor's initial fee will vary, but he will also take a daily fee for injecting streptomycin. If he is a good dramatist and psychologist, and the family is obviously prepared to pay, he may set up an intravenous drip and charge heavily.

Quite often, the person does not have enough cash to buy some of the medicines. Typically, the tonics and non-TB medicines will be bought and the anti-TB medicines will be partially or totally dropped from the list. (A survey done by Veena Shatrughna has shown that many doctors write the tonics and less necessary medicines first, perhaps to oblige the drug companies, and the specific curative medicine last.).

How long is this to go on? We have found that a doctor tells the patient initially that his treatment may take a varying period between two weeks to three months. He may decide to further prepare a mental frame by stating that the man is lucky that the doctor has caught the "disease" at this stage because, although he doesn't have TB yet, "There is a chance of it turning into TB!"

Even if a man has collected enough funds for the initial treatment, he may not be able to follow up. After a varying number of visits to the doctor, and especially after a marked improvement, he stops going - he may go back to work. He also meanwhile consults a gunia of his community about wording off the risks of getting TB, and after certain divination the gunia advises him to carry out certain rituals and sacrifice, which are usually done.

After some time, he again loses weight, and his cough worsens. He thinks about returning to the doctor. The doctor's mention of TB has scared him, and he is ambivalent. He may do one of three things: he may go to another private doctor or a quack, he may go to the government doctor, or he may return to the same doctor after all. If he goes to another doctor, he goes with a blank slate - he doesn't mention that he has seen another doctor, or flatly denies previous treatment. Hence, a second version of his first experience is likely to unfold.

A streak of realism may hit him. He may realise that the chance he has TB is high now, and decide to see the government doctor. At least he may get a clear answer even if he doesn't have faith in the government treatment.

The government doctor is a strange kind of super human. He is invested with the power to treat when he pleases at the Government's expense. (He also carries out a respectable private practice in his home at the Government's expense.) A patient approaches him in fear and trembling. Diagnosis for purposes of initiating government treatment is obtained through sputum exam or X-ray, whichever is feasible. Anti TB treatment is started on the doctor's orders. He tells the patient he has TB, or he says, "There is a chance of it turning into TB!" depending on the role he wishes to play in the drama with the Patient - Government Doctor or Private Practitioner. Sometimes he adopts a dual role, issuing government drugs from the Primary Health Centre for seeing him privately at home, too.

Government rules for the treatment of new cases of TB are clear and rational, the full treatment of eighteen months provided for under the National Tuberculosis Control Programme. After positive sputum examination, treatment is started. Streptomycin injections are to be given daily for one month, then on alternate days for two months more. (An abbreviated schedule which is medically

acceptable is 'daily x 15 days, then alternate days x 2 weeks, then twice weekly x 2 months, again totalling 3 months.) Daily Isoniazid (INH) tablets are also given.

After three months, sputum examination is to be repeated (if the patient is still coughing up sputum). There should be no more tuberculosis bacilli detectable in the sputum. Then, if not before, an X-ray screening is called for if feasible from the nearest TB X-ray facility. The reduction in the extent of lung damage is thus monitored every six months until six months have passed since disappearance from the X-ray of the signs of damage, when treatment may be officially discontinued.

If progress is satisfactory, Streptomycin injections are to be replaced after three months by another drug, usually Thiacetazone (THZ) but it might be Para-Amino Salicylic Acid (PAS). The PHCs dispense Isoniazid and Thiacetazone in combined INH/THZ tablets to be consumed daily for the total remaining period of treatment. To ensure that a patient keeps up regular treatment, he is supposed to be called every month on a particular date three days before the drugs with him are due to finish. In case he does not turn up within a few days, a printed postcard reminder is to be sent to him. If he does not respond to three such reminders (and he has not died), he is known as a "defaulter".

But what really happens to the ordinary patient, or to our villager friend who gins cotton ?

There are innumerable obstacles in the way that ensure failure of treatment or "default". We can list these, as follows :

1. Problems of Diagnosis

a) sputum exam: technician not available, or refuses
b) x-ray/screening facility distant, expensive, out of order, or x-ray plates not available.

2. Failure of Communication to Patient by Doctor

a) intention, or lack of intention of doctor to inform
b) patient's fear
c) contradictions in the belief system in society about disease
d) doctor's impatience
e) mystification of doctor's role
f) poor relations/faulty communication between PHC staff

3. Problems of Drug supply and Regular Issue.

a) genuine short supply to PHC from District HQ
b) siphoning off of TB drugs into the market
c) siphoning off of TB drugs into private practice
d) incomplete issue of drugs
e) doctor's failure to indent (maladministration)

4. Problems of Medicine Cost from the Market when unavailable through government supply

a) high/rising prices of essential first-line drugs, especially Streptomycin injections
b) shortage of all first-line drugs in the market due to gross under-production.
c) increase in market supply of expensive second-line anti-TB drugs like ethambutol, rifampicin

5. Unnecessary Medicine Cost on Vitamin and Mineral Injections and Tonics and costly Cough Mixtures

a) brainwashing of doctors by medical representatives
b) overproduction beyond licenced capacity of tonics, etc., by large and multinational drug companies
c) mystification among the masses about tonics and the desperation for quick life-giving cures

6. Problems of Local Arrangement to Inject Streptomycin

a) unavailability of doctor/health worker to inject
b) fee for injection daily
c) PHC may refuse to issue injections to patient to take home

7. Problems of Transport

a) distance
b) cost in time, energy, fare
c) irregular public transport services

8. The Social Milieu at Home

a) poverty - poor shelter, starvation

b) demoralisation
c) sex-bias in case of women, especially when childless or without living male offspring
d) belief in magic and lack of scientific concept of disease

9. Conditions of workplace and Occupation

a) economic exploitation
b) noxious physical conditions, like inhalation of cotton fibre and poor ventilation, etc.
c) lack of safety standards
d) lack of alternatives

10. Specific Malpractices by PHC Staff and Doctor

a) Private practice
b) misinformation or non-information of patient
c) failure to record (incomplete) issue of drugs
d) neglect of monitoring schedule
e) failure to maintain treatment card
f) failure to contact defaulters by postcard.

Now, it is sufficient to say that the average poor man of India who gets TB today is likely to face **every single one** of these obstacles, except 8(c) as he is not a woman. Inevitably, he becomes a **defaulter**, or he dies, or more likely both. Are there really **any** alternatives ?

(to be continued)

ANTIBIOTICS IN DEVELOPING COUNTRIES

In 1977, the WHO provided a list of 210 essential drugs, to help developing countries choose a limited number of drugs that are inexpensive but of high quality. Though such lists have been in use in Scandinavian countries, the drug industry was highly critical of the WHO list. A survey studied marketing of antibiotics in Central America and was published in Lancet (Jan 3, 1981).

In Mexico, 430 brands of antibiotics were marketed, of which 180 were combinations. In comparison, Sweden has 90 brands with only 2 combinations.

The stated reasons for use of combinations are that they have a broader spectrum of action and that antibiotics reinforce each other or that they will be effective even if resistance against one occurs.

A second type of combination is antibiotics with enzymes, claimed to improve uptake by inflammed tissues. Some preparations for gastrointestinal infections contain Kaolin and/or pectin. A third combination is antibiotic with a mucolytic and/or cough suppressant. 'Bisolvon Eritromicina' with bromhexine is said to increase immunoglobulin A. Antibiotics are claimed to be effective against influenza and viruses. A preparation meant for infants contained streptomycin, tetracycline with enzymes.

The Survey shows that in each country of Central America, not less than 200 brands of antibiotics are marketed. The investigators say "how can doctors in these circumstances become familiar with the essential properties of important drugs. A reduction in the number of drugs might improve antibiotic use in clinical practice".

[Do Bulletin readers have any such information for India? - ED]

NATUROPATHS IN THE USA

(Extract from Pediatrics 68:407, 1981)

Despite the availability of a highly developed, formal medical care system, many Americans place substantial reliance on folk medicines and unorthodox practitioners. We often encountered families who indicated that a naturopath was a major source of their health care.

Schools of naturopathy reached a peak around 1950 and declined by 1960. The fortunes of naturopathy took a dramatic upturn in the 1970s, along with the increasing popularity of natural foods, organic gardening, and "holistic medicine". Today's naturopathic colleges require 3 or 4 years of undergraduate study for admission with a basic premedicine background. The graduate is expected to be skilled at performing minor surgery, and assisting in all phases of obstetrical care for natural child birth and home deliveries.

Fasting-from days to weeks-is recommended for many ailments, including arthritis and sinusitis. The symptomatic treatment of fever is thought to interfere with natural

curative processes. The efforts of naturopaths are therefore directed toward strengthening the individual's resistance to disease. Through optimal nutrition and hygienic practices, the need for vaccinations could be totally obviated. Several practitioners also expressed the belief that injecting antigens was an abnormal form of exposure, an invasion of the patient's defenses, and therefore potentially harmful. True exposure to some of the infectious diseases was often considered the preferred method of obtaining long term immunity. "The inoculations are not known to give life-time protection, whereas actually contracting the disease does. In the old days, they used to have a 'measles party' in order to deliberately expose children. I would like to see the Public Health Department make this kind of exposure available".

Such approaches were also defended on egalitarian grounds. "The vaccine route was chosen because of the medical orientation, essentially a pinnacle type hierarchical system with a very clear authority figure and people subservient to the authority. Injections are only available on a prescription basis. When we teach people to live well, to eat properly that doesn't require a pinnacle-type structure.

Homeopathic remedies are an important component of many of the naturopaths' interventions. While defending homeopathy as efficacious, many naturopaths acknowledged the placebo effect of these remedies.

The emphasis by naturopaths on patient teaching, individualized care, and 'natural' remedies, and their aversion to scientific medicine have become increasingly valued by medical care consumers. Because many ailments are minor and self-limited, and many naturopathic remedies are without obvious harm, encounters with naturopathic practitioners are often benign, if not clearly beneficial. In the case of childhood infectious diseases, however, immunizations can be life saving. Specifically, immunization programs are preventative, and their efficay involves stimulating the body's natural defense mechanisms.

LETTER TO EDITOR

Dear Friend,

Medical Ethics and Practice

Medical Ethica has become the talk of the day both inside and outside the medical community. A large section of people are frustrated with the treatment they get from hospitals, medically and otherwise. Private treatment is expensive and even the middle class is neither able to afford the specialist nor his prescription. The common man is becoming more and more sceptical about the professional integrity of medical men. On the other hand, medical men of eminence and professional integrity are also very much puzzled as to why such a curse has fallen upon such a noble profession. People in power also lose no opportunity to accuse us of erosion of values, perhaps to shirk their own responsibilities.

While confronting different adverse conditions in our profession, doctors are also thrown into an ethical dilemma. Circumstances force doctors to compromise with medical ethics every now and then.

Why at all such an ethical crisis today? What has gone wrong with our system? What are the real factors behind all these maladies? How are we going to establish the divine image we had once upon a time ?

We have come to a stage where thorough re-evaluation and redefining of ethical values, to suit the present day problems of our system, has become absolutely essential.

Medical ethics involves seeing that patients get proper and adequate treatment. Looking back, we find that the emphasis of traditional ethical codes was on the responsibility of doctor towards his patient. But with the progress of science, particularly medical science and society, the effectiveness of health services is primarily decided by how best the medical system is organised, though responsibilities of the doctor towards the patient continue to remain fundamental. In modern days, when medical science is capable of eliminating certain diseases altogether and can prevent the occurrence of many others it is not only the individual doctor's competence, but mainly the effectiveness of the medical policy and its implementation over a social plane that ensures the health of the society. Hence, maintenance of medical ethics has become more of Governmental responsibility.

Moreover, institutionalisation of medicine,

specialisation, team (or) group practice etc., are the outcome of progress of medical science and practice. Hence under conditions of institutionalised medical care, ethical responsibilities also rests on the institution and is shared by other medical personnel, like nurses, assistants, technicians, etc. These developments have opened up new ethical questions which cannot be solved by traditional codes of medical ethics.

Is the erosion of medical ethics, accidental and isolated or is it a reflection of the political, economic, social and cultural crisis that has engulfed our country? Is our ethical dilemma due to our own individual vacillations or is it due to the contradiction between personal and social interests, between backward conditions and scientific advance? What is going to be our attitude towards these grave problems facing our community? Is it going to be one of coming to over-simplified conclusions, superficial judgement and ill-motivated, escapist accusations of people in power? Or are we going to analyse the problems in the overall context of the medical system and strive to evolve proper medical policies and their effective implementation, thereby evolving a new code of medical ethics, that will suit present day conditions ?

We invite you to give your valuable suggestions and opinions.

Medical Action Forum
Madras

WHY SOYA BEAN ?

K. T. Acharya

During the current year, nearly 8 to 9 lakh hectares appear to be under soya bean cultivation mainly in Madhya Pradesh, with a yield expectation of perhaps 6 lakh tonnes of soya beans. These figures are expected to double in the next three years (M.P. Mansingka, Chairman, Soyabean Processors Association of India; quoted in **The Hindu,** September 29, 1982).

What has led to these rapid and remarkable developments in what is after all an unfamiliar crop? One is the support price offered by the government to the soya bean, which ensures a profitable return to the farmer. There is no such attraction for the groundnut, our major oilseed crop, which continues to languish. It is stated that the profit per hectare of soya considerably exceeds that derived from the groundnut **(India Today,** September 30, 1982 p. 127). Industrialists are well content too. Processing soya yields about 16 to 18 percent oil, and any edible oil today fetches an excellent return because of desperate shortages and high oil prices. The oilcake which results is an excellent protein-rich cattlefeed with a well-established international demand. The high lysine level of 6.2 percent is exceptional among oilcakes, though it is well to remember that many common **dhals** (bengal, gram, masoor, tuvar and mung) have even higher levels. There is no worrisome problem of aflatoxin contamination. All of it is exported, earlier largely to Southeast Asia and to the Gulf countries, and more recently to European countries as well (Dattu Hegde, **Economic Times,** August 19, 1981). Apart from earning foreign exchange to the tune of some Rs. 80 to 100 crores, there are such attractions to individual producers as export entitlements.

But there is another side to this success story. For long it was convenient to argue that soya beans were being additionally grown on land that would otherwise lie fallow during the Kharif season, thus ensuring sufficient soil moisture for the following rabi wheat crop. Growing soya, a leguminous crop, on such land was said to fertilise the land, while shedding of its leaves helped to conserve needed moisture. Today, however it would appear that two-thirds of the land under soya in Madhya Pradesh was what once used to raise jowar, millets, several lentils, and groundnut **(India Today** September 30, 1982, p.127). All these are foods that can be directly cooked and consumed by common people, which is not true of the soya bean.

Undoubtedly soya oilcake is edible. It is now exported, but even were it to be used for humans in India, this would necessarily be in processed foods that will not reach everyone as will jowar, millets or pulses. The value of processed foods in India is just two percent that of total foodstuffs. The oil yield of the soyabean is small, just 16 to 18 percent, against 40 to 45 percent for all groundnut. So unless the yields of the soyabean are 2.5 to 3 times that of the groundnut, there is little advantage to the oil economy (A.C. Chhatrapati, **Economic and Political Weekly,** 1980, 15 No. 37, Sept. 13, 155.7). In practice,

The National Tuberculosis Programme

— What our experts say

sociological basis

"Even with the present extremely limited and inadequate facilities available for the diagnosis and treatment of the disease, over half of the sputum positive persons and over one third of the persons with radiologically active disease have actually sought assistance at government medical institutions motivated by their symptoms. The provision of elementary diagnostic facilities, such as a district referral x-ray unit and staining and microscopy facilities at primary health centres, and the distribution on a domiciliary/ambulatory basis, of suitable chemotherapeutic drugs would make it possible to treat a sizeable number of cases. The cost and problems of organising such a tuberculosis programme would be almost negligible in comparison with those involved in providing a system based on sanatorium treatment of similar magnitude or in combing the whole country with hundreds and hundreds of mobile x-ray units."

— *Banerji and Anderson,* 1963.

epidemiological dimensions

(i) Prevalence: This is about 40% in all age groups rising from about 2% in the youngest age group to about 70% at age 35. Thereafter it remains almost constant.

(ii) Incidence of infection is highest in individuals between the ages of 5 and 20 years.

(iii) Risk of infection is about 2-4% per annum.

(iv) X-ray confirmed disease is about 2% among total population aged 10 years and more and of these about 20% are bacillary.

(v) Age/sex difference: The prevalence and incidence are higher as age advances and again higher among males than among females, male to female ratio varying from 3:1 to 5:1.

(vi) Time trends: The trend of tuberculosis appears to be almost constant over the years except in some cities where better services for diagnosis and treatment have been available for some time.

(vii) Distribution: Tuberculosis infection as well as disease are more or less uniformly distributed in urban, semi-urban and rural areas. Thus the vast majority of pulmonary tuberculosis cases are to be found in rural and semi urban areas, where more than 80% of the country's population lives.

— *DVJ Baily,* 1983

Organizational plan

Tuberculosis diagnosis facilities are made available in far flung rural health institutions (HIS). Treatment of the diagnosed cases is organised by the village guide or the multi-purpose workers of a PHC sub-centre or by the treatment organiser at the health institution.

A district tuberculosis centre (DTC) supports the tuberculosis work at health institutions by training personnel at HIS, providing referral diagnostic and treatment (including hospitalization) support, by having a district wide information system and by providing drugs and other supplies to HIS.

The Directorate General of Health Services and the National Tuberculosis Institute, Bangalore are at the apex, with facilities for a national information system, training of key workers and monitoring, evaluation and research."

— *D. Banerji,* 1984

evalution

"There are deficiencies in equipment, manpower and there is human apathy. DGHS reports on diagnosis and treatment activities are totally false.

Microscopes are there in many centres but these are not used or are out of order. A large number of cases are diagnosed without sputum examination. Periodic examination of sputum of patients under treatment is not carried out regularly with the result the estimates of patients completing treatment or sputum conversion rates of initially bacillary cases are liable to be inexact . . . . .

. . . . . Reports are received on sputum examination from centres where no smear is examined . . . . In many States the staff sanctioned for DTC is less than the minimum laid down under DTP . . . . Full quota of NTI trained key personnel were in position in only two of 10 districts visited . . . .

There is general lack of interest or even awareness of responsibilitues by the doctors working in peripheral health institutions (PHI) in connection with TB work . . . PHI doctors do not send all patients with suggestive symptoms to the laboratory for collection and examination of sputum even if a microscope is available and microscopist is in position . . . . . NTP manual meant for PHIs is not available in any PHI.

Some cooperative patients go on taking the treatment for over 2-3 years. In any case it seems treatment is always stopped by the patient rather than by the doctor whatever its duration . . . . .

The position regarding drugs were satisfactory. No centre experienced shortage of drugs except streptomycin and PAS.

There is also a craze for using second line drugs by the profession.

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July–August, 1996

The Revised National Tuberculosis Programme

Sham Ashtekar

I am no TB expert but have been associated with the programme as a medical officer at a Primary Health Center and then in a municipal corporation, plus as a student of community medicine. This article is a product of my brief interaction with a section of the central TB programme community, as a resource person for reviewing the training modules. I had an access to the technical documents they had produced and had a thorough discussion on many points that nagged me.

When I joined a PHC as a medical officer in '78, the TB programme was entrenched in the PHCs also, but not as much as the leprosy programme. The latter gave an impression of a neat job with purpose and dedication which its father Dr R N Wardekar at Wardha had so carefully built and nursed for a disease that far outweighed TB both in stigma and the deprivations of the sufferers. While in a PHC I could not help feeling rather helpless while treating some fifty odd patients we had on our list, the difficulties they had to undergo and the problems of compliance.

We now run a small private nursing home in a remote Maharashtra township and have occasional TB patients in our private clinic. The usual image is that of a man or woman in the mid years of their lives, suddenly realising that they have a dreaded disease inside them and that they have one more mean fight on their hands apart from their uphill struggles to earn a living. Even now we feel helpless to see TB patients referred to PHC-OPDs being fleeced for anything like a hundred rupees on the pretext of a saline infusion, before they can get their monthly medicines. Most often the clinically obvious TB fails to pass the ill performed and 'insensitive' sputum tests and patients have another round of cheating from waiting bazaar doctors.

A new realisation came to me in our private clinic about problem of childhood tuberculosis. Just because it is not infective to others the whole issue of childhood TB is swept under the carpet and children suffer silently over long months— at times subclinical and at times a faintly recognisable illness. First of all the problem is hardly on the mind of rural medical community. Then all kinds of fake trials are offered and the family is already hooked on to the doctor. The frustrated family opts out of the game and finds another doctor mostly of the same type.

Frustrated with the tuberculosis programme over these two decades, I had started feeling that the situation is unlikely to improve and there has to be something better, may be some social organisation can take up the issue, organise TB patients in the Block and offer honest services at affordable costs. I was just toying with this idea when this opportunity for interaction with the revised programme presented itself.

In mfc I first came across the sputum vs X-ray debate in a big way. Due to very low sensitivity (failing to detect

as many cases as there are) sputum test, I had developed a bias for X-ray diagnosis in TB. This got corrected in due measure .

Though TB is essentially a social problem rather than a medical problem I have hardly come across anyone who pooh poohs its medical management. But deep within me I have nursed a feeling that TB seems to be an issue far beyond our current and projected medical services. This has thrown up a number of dilemmas that I will refer to later in this discussion. Let us now see the TB problem in cold statistics.

1. The Planners Perspective of the TB

TB, predominantly affecting the underprivileged classes, is estimated to infect around 50 % of the population. India has an estimated 14 million cases of TB of which 3-5 million are highly infectious. Half a million die every year due to this dreaded disease. Every year about 1. 5 million new cases are detected, of which 25 percent are sputum positive (hence infectious) and others are diagnosed radiologically. The document also states that almost equal number of cases are detected by non Govt doctors. Further, HIV is going to compound the problem. Already 60 per cent of HIV positive people have active TB . In the general population, around 3 per cent are harbouring the disease—confirmed either radiologically or by sputum test in both Govt and non Govt establishments. India has the highest incidence of TB cases .

At the subcenter level it is estimated that there are around 75 cases in a 5000 population. Thus in a village of 1000 population there are around 15 individuals with active disease. This includes about 3-5 sputum positive and others diagnosed otherwise. For a 30, 000 population under a PHC there are 400-500 TB patients to treat if all were to report and avail of the services.

There is bound to be a lot of variation and there may be (and are) clusters where the prevalence of active cases is of the order of 200 in a subcenter population.

I believe that non pulmonary TB is not counted in this, which is practically outside the serious concern of Revised National Tuberculosis Programme (RNTCP) and in any case its incidence must recede with BCG being universal. Size of pediatric tuberculosis is also largely unknown but what is known is that about 10% of the infected children have a possibility (risk) of developing actual illness anytime during their life.

2. The Revised National Tuberculosis Programme (RNTCP)

Government of India was feeling the heat of the failing programme with an added risk of HIV taking it to a rather high scale. With Joint help from WHO and some other agencies like the World Bank and Overseas Development Agency of UK, a new programme has been chalked out and is already in the pilot phase.

The main thrusts of this programme are:

– Effectively treat as many cases of TB as do report to the health staff and health centers.

– No active case finding is advocated, but effective management — diagnosis and regular short course chemothearpy — should attract more patients .

– Short Course Chemotherapy (SCC) with 3-5 anti TB drugs given intermittently every week, is the main plank.

– DOT (Directly Observed Therapy) in the intensive phase will ensure compliance and regularity. The pills in the blister pack will be swallowed in the presence of the health worker three times every week for two months. This will rapidly make the patient non infective .

– Then follows the continuation phase wherein the patients will collect weekly medicines, of which she/he will swallow one dose in the presence of the health worker.

– A strong unit for RNTCP will be created for every one lakh population –this is the sub district unit and will take care of sputum collection, microscopy and getting X-rays done for sputum negative cases with the help of district TB units that already exist. The Supervisors placed at the sub district unit will ensure about sending the patients back to village health staff with drugs and case cards. This card will carry the regimen and duration of therapy.

– The cutting edge of the RNTCP will be the health workers trained and supported and equipped to carry out DOT and continuation phase therapy.

– A strong point of this programme is simplification of TB therapy to a standard and uniform pattern. There are three categories of patients as follows: a) New sputum

positive cases and seriously ill sputum negative cases, b) Re-treatment candidates to be started on fresh treatment regimen and c) Non sputum positive cases and non pulmonary cases.

All these categories will be offered intensive phase DOT therapy and continuation phase treatment by Health Workers. The details and differences depend upon the results of sputum tests at the end of the intensive DOT in case of first category and if other categories show sputum positivity at later stage.

3. Positive Trends

Some of the initiatives are welcome. For instance, standardizing the treatment regimens on sound citeria is a very pertinent thing.

I have read some criticsm of the DOT approach making it look like an assault on the privacy of people and reducing patients to helpless swallowers of drugs at the hands of health workers. But technically, this is a substantial strategy in a country which has failed to take care of the spread of TB due to social determinants of TB being untamed. Here are seeds of a debate on ethicality of such approaches but this I will take up later.

With RNTCP, it is the first time that we are ever thinking of doing the TB programme some justice as a vertical programme, something that happened in Leprosy long ago, a good back up and committed and well trained cadre of health workers.

This is also an attempt to reap the benefit of an improved technical solution to a national problem that TB is.

The creation of subdistrict units will take the programme nearer the community, practically at every taluka center, and decentralise the function of district units.

This is the first time the health workers are being roped in for serious TB work, the involvement earlier was just in the policy not actualised. This programme will now take the whole treatment outfit down to atleast subcenter staff.

RNTCP also makes most of the sputum test by taking three samples instead of one, and this is a sound epidemiological strategy. Just one sample was not good enough and two more of the same increase the sensitivity of the test in a big way.

Active case finding has been a penchant of all vertical programmes so far, and there is not very great success in any except the leprosy programme that is attributable to this element. This active search also needs so much time and energy which are hard to come by in the already 'overburdened' health workers. The RNTCP has rather chosen to concentrate on doing a good job of case management. This should win most of the caseload to the programme in the long run.

4. Seeds of Failure

Despite good intentions and some well prepared plan, I could see the cracks in the programme that were also perceived by some others but there was an air of non-chalance about it. Let us see the problems one by one.

1. The programme is well knit upto the sub district unit level, as happens with so many vertical programmes but goes limp at the village level. This is because there is no general village level health cadre that can take care of such an ambitious and technically involved programme. PHC Sub center *(Swasthya Upkendra or Swasthya Ikai)* with its ANM and male health worker are the last people to be doing it to the villagers. Obviously they operate at the 5000 population cluster level and so cannot be called as village level functionaries barring the village where they happen to stay.

2. I explicitly asked whether any other health personnel like AWWs, Dais, erstwhile CHWs etc are to be involved in the programme. After some hesitation though, there was a clear 'no' from the gathering that discussed RNTCP that day; may be somebody has different ideas up there that we do not know of.

3. A part of the group underplayed the prevalence problem and was inclined to estimate that for a 1000 population, there are only about 2-3 cases to be treated by HWs. I wondered whether they were talking of sputum positive cases alone. It turned out that they felt that all said and done there are not many more cases than this in actual practice and the estimates given by the official documents were 'theoretical'. I stated that should all TB patients decide to come for treatment, there can be around 15 cases (75 cases in 5000 population) seeking treatment and this could distort their time calculations in a big way.

4. For various reasons, some genuine and some not, half

of the subcenter staff is not staying at the headquarter village. They make it to the subcenter by a morning bus which reach at about 9-10 am and leave by bus at about 4-5 pm. This leaves the patients little choice outside their working hours. In the social profile of TB patients, sufferers are mainly the working men and women who do most of the breadwinning for the family. This is something that will keep them out of the DOT programme. The Dot programme is possible only where health staff are staying in the villages.

5. The DOT programme insists on patients swallowing medicines in their presence and keep a watch for some time on the attendant risks. Every patient is going to turn up every other day for 2-3 months and thereafter once every week for 4 to 5 months. This means, that out of the 75 odd patients targeted in the RNTCP, about 10-15 must be at the subcenter every other day. This, if it works as originally designed, is a substantial involvement for the health workers in terms of time and clinical responsibility. In the existing job profile, FP, immunisations, ANC etc are major priorities apart from other work that arises from time to time, like malaria epidemics. TB is going to occupy 4th or 5th position in the priorities list of HWs. Does this match with the RNTCP requirements ? This is an uneasy question.

6. The peripheral staff, HWs, are not supposed to collect sputum samples in this programme; this is left to the subdistrict units. So all the patients will have to queue up before these units . Further, the requirement of three samples (spot sample on visit, overnight sample the next day and a spot sample on that day after a few hours) is quite demanding. It requires overnight stay and expenses for the patient and attendant plus the inconveniences. This sounds unrealistic and may be compromised because of obvious difficulties.

7 . All anti TB drugs in this programme have both minor and major side effects. Leaving the minor problems alone, there are things like hepatitis/jaundice, respiratory collapse syndrome, renal failure etc as adverse effects. They are rare in a village size work over years, but cases are bound to occur in every block and district given the scale of operation. Health staff in the villages are already at their wit's end coping with a number of things like meeting targets in FP and the like. The medical training they get is not enough to tackle these problems. There are neither immunities for such kind of work. People may not express anguish or burn public property in retaliation for mishaps, but will turn to private practitioners for TB treatment. Already, many of them are with them. This is an area (of adverse drug reactions) that needs much more attention than is presently given.

8. The problem of coverage and access is going to remain since it is going to be difficult (and uneconomic) for 60-70 per cent of the patients in the villages other than the subcenter villages to make it so frequently and regularly to the subcenter for collecting drugs . This involves travel time and travel costs. This might prove to be the undoing of an ambitious programme. If the RNTCP evolves some mechanism to raise a treatment depot in every revenue village this factor can be taken care of. But how does one do it without raising a full scale TB cadre ? I feel this is an impasse since we have already destroyed our Village Health Worker programme.

9. At many places there are no subcenter buildings and health workers conduct business at a rented room from somebody's house. This is where families are staying with children. For a regular activity of some patients with productive cough bringing out infective material in a home kind of set up is unsound and unkind. This brings us back to the infrastructure problem. Let us not sleep over this problem since great care and safety is expected even at microscopy centers. This fear of infection was also brought up in the group by head of a TB hospital.

10. A large chunk of TB patients is with the private practitioners, of all degrees and motives. The rigour expected in the RNTCP is going to be missing from this area. While RNTCP will be busy within its portion of the statistics, half of the infectivity and morbidity will be at the receiving end of weird and outdated regimens. The RNTCP should take stock of this and build bridges to co-opt this sector in the rational treatment of TB. This element is missing even from the documents.

11. I gather an impression that even this new programme is going to pay only lip service to the non sputum negative patients since all calculations proceeded from 2-3 cases per 1000 population. The group, at least part of it, was uneasy at the prospect of having to treat the non sputum negative case load. I wondered whether they were attempting to telescope the new programme into the frame of the bygone programme and only saw an opportunity in the new funds for the programme?

My dilemmas

Uptill now I was thick and snug about State's responsibilty of treating each and every case of TB, positive or negative, young or old. In the group I met there was an obvious thrust only on sputum positive cases being converted to negative ones. This appears cynical on one hand but also speaks of pragmatism of just stopping the spread, treating any other cases that came their way on humanitarian grounds. I cannot take a position on this unless State's role in health care is defined. Is the State responsible for treating every TB case that is thrown up ? What about other illnesses like peptic ulcers or middle ear deafness ? Is TB important because it infects others or because it imposes suffering on every individual it strikes ? Further, in a society and nation that has failed to solve its fundamental problems of development (which are precisely the determinants of TB) is it possible to allocate funds on every morbidity that surfaces; and this when there are so many of them ? Although there is a scope for reallocation of State funds so that some of the health needs are answered, it may not solve all the problems that are there. New health challenges need more funds and hence more foreign aid. We are willy nilly designing programmes that are operated on direct and indirect foreign aid. Whose health programme is this that we are so fiercely dogmatic about ? India is a pauper nation that is still fighting shy of world trade but foreign aid is no matter and we lap up every programme thus designed that comes our way. Are we solving the TB problem or creating new survival pastures for the babu-raj that has failed to deliver in the five decades ? We, the poeple of India, do need the health care programme but the *Maibaap Sarkar* may run out of steam if one goes on inventing programmes on borrowed funds.

Salient Features of Treatment and Follow Up Schedules for Tuberculosis : Revised National Tuberculosis Programme

Category of Tuberculosis Illness	Short Course Chemotherapy		Total Treatment Period	Follow Up
	Intensive Phase (IP)*	Continuation Phase (CP)**		
Category I : New Sputum Positive Cases and seriously ill sputum negative cases	2 months (RHZE)3 Add one months of RHZE if sputum tests positive at two months and then start CP	4 months (RH)3	6 months if sputum becomes negative at two months	Test sputum @ at the end of 2, 4 & 6 months. If the first test is still positive, add one month to IP
Category II : Re-treatment of old case	2 months (SHRZE)3 + 1 month (RHZE)3	5 months (RHE)3	8 months	Test sputum at 3 months first, then after 2 & then 3 months***
Category III Non-serious sputum negative cases and extra pulmonary cases	2 months (RHZ)3	4 months (RH)3	6 months	Sputum test after 2 and then 4 months****

* All treatment in IP Should be directly observed.
** Direct observation once a week/fortnight when patients report for drug collection
*** If sputum still tests positive for AFB in the final test, the case is treated further as a chronic case
**** If final sputum shows bacteria, the patient is then treated as category II thereafter.
@ all sputum tests need three samples : spot-overnight-spot.
Figures after parentheses denote frequency of administration every week; thus 3 means three days in a week.

nence pads, the hospital reduced waste output, and reduced the load on the laundry by using less bed linen (19).

Other writers have suggested that disposable surgical drapes and gowns should be targeted for elimination, because reusable fabrics have been improved by technological advances to be equal to disposables in comfort, liquid repellence, and infection rate.

Tieszen has suggested that eliminating disposable linens and paper products can help reduce surgical waste by up to 93 percent in mass (20).

Gilden et.al. made the following recommendations for waste reduction indisposables usage:

* Eliminate the use of egg-crate mattresses. These are generally used to prevent pressure ulcerations, but are not sufficient protection against the sores at points of bony protrusions. Pressure-reducing mattresses in the wards where pressure sores are a concern eliminate the need for the egg-crate pads. Although most of these pads go home with the patient, they wind up in the landfill eventually.

* Hard plastic suction bottles are unnecessary. Frequently hard plastic suction bottles are used as a disposable item by OR staff. The usage of a lightweight plastic liner can substantially reduce the amount of waste generated.

* Suture removal kits can be eliminated. A reusable stainless steel hook "stitch cutter" makes the kits obsolete.

Recycling

Much of the remaining solid wastes can be diverted from the waste stream by recycling. Like disposables reduction, recycling will not have a direct effect on PCDD and PCDF emissions from an incinerator or only non-infectious waste is being recycled. However, the discipline required by a recycling program may help improve the waste segregation process that has such an important, direct impact on the PCDD and PCDF output from the incinerator.

The Tieszen study from JAMA has suggested that, along with the reduction of disposables usage, an effective recycling program can help reduce surgical waste by up to 93 percent in mass. (21).

Recycling is the area where the largest reductions of waste volume can be achieved. Much hospital waste consists of office paper, waste paper, and cardboard. Large amounts of this paper and cardboard can inadvertently find their way into the incinerator. By recycling white paper, computer paper, and cardboard boxes, a 385-bed teaching hospital in Portland, Oregon, saved $12,000 per year from its waste disposal costs. Additionally, recycling newspaper, glass, aluminium, and cardboard can save another 100 per ton of waste generated (22).

The recycling of plastics can pose a difficult problem. Because there are so many different types of plastic, high-quality plastic product that are made from recycled plastic must come from material that has been meticulously sorted. High Density Polyethylene (HDPE) cannot be mixed with styrene, and vice versa (23). One solution to this problem would be to find new uses for plastic items, so that they do not have to be re-manufactured into a new item.

A hospital in Burlington, Vermont, began a program in 1992 called MedCycle that separates pre-op plastics (no patient contact) into blue recycling bins. The pilot program used volunteers to separate the plastics, and discovered that the savings in disposal costs could pay for the use of employee time (24).

A simpler program is offered by the Stericycle Corporation, which offers an infectious waste treatment process other than incineration. This program uses plastics recovered from both infectious and non-infectious waste to make recovery bins and sharps containers. The recovery bins are used to collect the plastic, and the sharps containers are used to protect hospital workers and waste handlers from needle-stick injuries. Additionally, the company, along with Baxter International, is working on a way to manufacture medical products from recycled plastics from infectious waste (25).

Waste Segregation

In August 1987, the Centres for Disease Control (CDC) recommended the adoption of "Universal Precautions" to protect health care workers from infection by the HIV virus and other blood-borne pathogens. In essence, the universal precautions protocol states that all patients are to be treated by health care workers as if they were infectious. Consequently, hospital workers use many more items designed for barrier protection, such as examination gloves. Also, any instrument that has come

into contact with a patient's blood or body fluid, such as syringes or hypodermic needles, must not be used on another patient. Other items, such as surgical instruments, must be sterilized before being re-used.

The assumption that a patient is infected has generated a second assumption that all medical waste generated by a patient is infectious. Based on this assumption many hospitals treat almost everything as "infectious waste". This assumption is not valid. The Universal Precautions principle and the OSHA blood-borne pathogens standard are intended to protect hospital workers, and do not address infectious waste.

Part of the problem is that there is no uniform definition of "infectious waste". The EPA has been reluctant to come up with a definition, and so "infectious waste" is defined by the states, sometimes in vague terms. In general, the following is considered infectious waste: microbiology laboratory waste, used sharps and needles, bulk blood, pathological waste (body parts or tissue), and items stained with blood (26). It has been estimated that a strict adherence to that list, which has been recommended by the CDC, can reduce the amount of infectious waste generated by each patient by up to two pounds per day.

Another problem is that landfills may reject waste because it looks "medical" and is therefore assumed to be infectious. An incident where a landfill operator rejected a load that contained tubing from the hospital pharmacy's intravenous fluids lab, which was not "infectious waste", seems to be common (27). The entire load on non-infectious waste was incinerated, Another incident reported in the same article recounted a situation where a hospital was slapped with a $10,000 fine when blood-contaminated plastic was found in its regular trash. The fine was dropped when the hospital showed that the plastic had been used to wrap a side of beef. This obstacle can best be overcome by keeping waste haulers well informed of waste-segregation policy, and allowing them to voice their concerns about these issues.

The single greatest problem in waste segregation is not that staff may assume that too many things are infectious, but that they won't care. There is a very ingrained mentality among health care workers that it does not matter whether regular trash gets mixed with infectious waste, as long as no infectious waste gets mixed with the regular trash. Consequently, red bag containers, which are supposed to be only for infectius waste, are used as common trash barrels. Photographs taken at a major Eastern teaching hospital graphically illustrate the problem. The pictures shows an "infectious" soda glass, "infectious" magazines, and "infectious" lunch wrappers. This problem appears to be the unfortunate rule of infectious waste segregation, rather than the exception.

Overcoming this problem can be very difficult. Health care providers may feel that they have enough things to worry about as it is. Once trash is placed in a red bag, it must be considered infectious, and treated accordingly. Usually, that means a trip to the incinerator, when it can contribute to the toxic emissions associated with incineration. Hospitals have a very strong economic incentive to prevent trash from being mixed with infectious waste. Treatment and disposal of infectious waste can cost as much as 20 times the cost of trash disposal, and so poor waste segregation can cost even a very small hospital tens of thousands of dollars per year.

Finding the opportunities for source reduction, recycling, and improved segregation

An article that appeared in the November 1992 issue of Hospital Material Management Quarterly outlines a formalized approach to identifying opportunities for source reduction or recycling. The article, "Total Quality Management (TQM) and Statistical Quality Control: Practical Applications to Waste Stream Management," urges hospital administrators to apply the principles of TQM, made famous by Japanese manufacturing, to hospitals (28).

TQM, in manufacturing, utlizes all personnel (management and labor) to find process solutions to eliminate defects in the product. The opposite of TQM in manufacturing is visual inspection and quality control, where labor time is spent separating defective products, rather than simply trying to identify the source of the problem, and fixing it. In recent years, some corporations have begun to view industrial wastes and emissions as a "product defect", and have used TQM to begin eliminating that defect by designing it out of the production process. This article urges hospital administrators to view their product as "healthful community", and the generation of hospital wastes as a "product defect", and to apply the principles of TQM to reduce the source of the defect.

A basic principle in TQM is that different sections of the work force be able to communicate easily. TQM generally relies on problem-solving "teams" made up of workers from each sector of the operation. This allows the team to benefit from all of the different perspectives of people

The elimination of the dioxin hazard due to the incineration of medical waste depends on the elimination of incineration and similar technologies as an available option. Additionally, these programs will have a positive impact on the solid waste production of the hospital, and enable substantial financial savings in waste management budgets.

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●

Dear Friend,

The series—Clinical Re-appraisal, by Yogesh Jain and colleagues, is quite good. The questions each of the articles seek to answer are quite relevant, clinically and epidemiologically. The answers are precise, backed up with references. The second article (worm infestation mfcb 228-9) however, is not as good as the first one on upper respiratory tract infections in children.

I have a couple of questions to ask. But before that let me make a couple of comments :

* Pinworm infestation (E vermicularis) has not been included at all. Why ? It is a common worm infestation. But does not have the lung-phase as in the case of other worms, and hence does not cause allergic cough etc. Is this the reason for its deletion in the article ? Heavy infestation of pinworms must be treated and hence this worm should have been included in this article.

* Safety status of use of anti-helminthics in pregnancy should have been mentioned.

My queries are :

1. The authors state that a single dose of mebendazole (500mg) is as effective as 100 mg twice a day for three days. Will they give some more details of any study to back up this statement ? Is it equally safe to give this single does of 500 mg ? The recent recommendations of "Medical Letter" reprinted in BODHI (Dec 95–Feb 96 issue) does not mention this single dose therapy with mebendazole.

2. The authors state that piperazine is the drug of choice in case of intestinal obstruction due to worms. Why?

3. Hookworm infestation is found only in certain pockets (at least in Maharashtra) whereas roundworms are found everywhere. Why ?

Anant Phadke,
Pune.

* * *

We read the comments by Anant Phadke with interest. The questions are relevant and we offer the following answers :

* Pinworm infestation is common but other than pruritis, has not been shown to be associated with significant morbidity like malnutrition, anaemia or

contd. on page 15.

CONTENTS

The Medico Friend Circle (MFC) is an all India group of socially conscious individuals from diverse backgrounds, who come together because of a common concern about the health problems in the country. MFC is trying to critically analyse the existing health care system which is highly medicalized and to evolve an appropriate approach towards developing a system of health care which is humane and which can meet the needs of the vast majority of the population in our country. About half of the MFC members are doctors, mostly allopathic, and the rest from other fields. Loosely knit and informal as a national organization, the group has been meeting annually for more than twenty years.

The Medico Friend Circle Bulletin, now in its twenty first year of publication, is the official publication of the MFC. Both the organization and the Bulletin are funded solely through membership/subscription fees and individual donations. For more details write to the convenor.

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108 medico friend circle bulletin

DECEMBER 1984

Discussing Tuberculosis Control – Why?

— Anant Phadke, Pune

(In the coming XIth Annual Meet of the Medico Friend Circle at Bangalore, we would be discussing various issues concerning tuberculosis control in India. The question is so vast that it is impossible to have any useful discussion unless we define the focus of the discussion. In my view, the purpose of discussing any issue in mfc needs to be clearly thought of and agreed upon. In this note, I would argue what in my view would be the appropriate purpose of the discussion at the mfc annual meet. This note would inevitably involve a discussion on the role of mfc.)

Role of discussion at the annual meet

Let me first quickly put forth a consensus that we had reached about the general role of the discussion at the annual meet. It was thought that there is a definite section within medicos and non-medicos in India who already have a perspective similar to that of mfc or who could come to mfc, if there is adequate contact and dialogue. Different individuals in this section are more interested in specific aspects of the health system in India. If mfc takes up various issues in different meetings, then those individuals with specific interests in these subjects would come closer to mfc and may join us. Secondly such discussions would help us, the mfc members, to enrich our knowledge and perspective of the health problems in India through well planned discussions with the help of resource persons outside mfc; and mfc in turn would hopefully make some impact on the new participants during the course of these discussions. Fine enought But all this does not specify what specific kind of knowledge we want to gain and generate through these discussions; whether and in what way would the discussions be different from the discussions in the academic or established circles of community health.

Specificity of mfc

To answer this question, let us go back to the origins of mfc, the kind of discussions we have had so far and the debate on 'mfc — which way to go' carried through the pages of the bulletin and reprinted in our anthology — HEALTH CARE WHICH WAY TO GO? I would also like to remind readers of the Centenary issue of the mfc bulletin No. 100-101 (May-June 1984) where the contributors had taken a somewhat critical overview of what the mfc has achieved, not achieved and what challenges we face today. It is not possible to go through the history of mfc in this note. I would only point out two specific characteristics of mfc which are reflected in all these writings. One, its concern for Social Revolution. At least the core members of mfc have been very concerned about this and hence the articles in mfc bulletin have been quite critical about the existing health system and the debate 'mfc which way to go?" was centered around how mfc could contribute to fundamental socio-economic-political (S-E-P as Abhay Bang had put it then) change. The second characteristic has been the critical and questioning attitude of mfc members:

— critical of new 'solutions'/strategies put forward by the establishment and the community health enthusiasts (this critical outlook partly reflects the grass root village level at which many mfc members work)

— critical (admittedly to a lesser extent) about mfc's achievement and

— of late, critical about the existing prescriptions of community medicine.

INSIDE

False and genuine limitations

My plea is, let us be more conscious about our specific character and shape our discussions in the coming annual meet accordingly. What does this mean concretely? For example, let us look critically at the argument that 'since India is a poor country Inj. streptomycin should be reserved only for sputum positive cases and only the two drug regimen of Isonex plus thiacetazone be given to sputrum negative cases.' We should question this argument and ask 'Is Indian economy so backward today that it cannot really afford to give streptomycin to all the cases of tuberculosis?' Today, the existing system squanders resources on useless activities and keeps a smaller share than what is possible and necessary for health work. Even within health, resource utilisation is in favour of the medical establishment and the well-to-do. In the case of drug production, for example, out of a total of about Rs. 1200 crores of drugs used annually in India, it is estimated that only about Rs. 350 crores of drugs are essential and rational. The rest, though they yield higher profits for drug companies, are useless and irrational. If these resources are utilised properly why can't all those who need antitubercular treatment get proper treatment? Is Indian economy really so backward that radiographic facilities cannot be extended more to help the diagnosis of tuberculosis and other conditions? Why should mfc accept the false limitations imposed by the existing system and try to work out solutions within these false limitations?

We all know very well that India is both economically and socially backward and even after a social revolution resources are not going to develop at such a rate as to make all desirable facilities available in the immediate future. We would, therefore, have to work out solutions within the constraints of limited resources. But over and above these real constraints, the existing system has imposed its own constraints like — malutilisation of resources for the benefit of a few; bureaucratic callousness of doctors and other health personnel; curative oriented training; corruption and commercialization in medical practice; political interference by vested interests etc., etc. All these together make it almost impossible for a scientific strategy to be successfully implemented. In these circumstances should we try to suggest methods of improving the existing state of affairs a little more by accepting all the false limitations of this system?

Towards a better medical and social system

Instead of falling into their trap under the name of 'Practical difficulties', and suggesting improvements to those who are neither particularly willing nor capable of improving the existing state of affairs (remember what happened to the reports of numerous expert committees) why not expose them? Why not concentrate on evolving a people oriented scientific strategy in our own projects and other activities? Such an approach would reject false limitations and try to work within genuine limitations. Firstly which are false limitations and which are genuine ones is something that needs to be worked out concretely and is in a way a matter of judgement also, but to be sure, there is such a difference. Secondly the established value system does not completely disappear in such project work and the problem of poverty, social and educational backwardness, bureaucracy etc., etc., would continue to affect health work in such a project, though in a mitigated and different form. But the direction of where we want to go would be clear.

A question may be posed: What is the point in trying to create ideal islands of project work when tney are going to remain islands, when the strategy is not going to be generalized?' Firstly I am not talking about 'ideal' situations which have no basis in today's reality. One is talking about rejecting only false limitations. Now it is true that even this cannot be generalised within this system (obviously!) and our alternative can only flower in a different, better social system. That is why mfc members should work within the context of and with the cooperation of social movements; forces which are really aiming at a different and better society. This is how we as medicos can help the social revolution which was the original and is the specific inspiration of mfc. Instead of working within the existing system and hence helping it, legitimising it, why not work outside or on the system and help those social movements which are aiming at changing the system itself?

There is a practical advantage in working with such social movements. If a project work is undertaken in an area where such a broad movement towards fundamental social change is taking place. people's participation, one of the most important requirements of good community health work (and which is generally lacking in many projects run mainly on the basis of funds) can become a reality and the entire atmosphere is quite different from the usual one of apathy, lack of faith, lack of commitment and too much bureaucracy. In such places, one can concentrate on the real problems of health work and also obtain people's cooperation and participation, required to solve them. I have deliberately used the general terms social revolution and social movements, because concretely which are such movements is something which individual members have to decide on their own. Ideologically and politically mfc is not very homogenous and different individuals have different opinions. But one thing is certain, all of us want a fundamental socio-economic change even if the exact character of this change is a matter of debate. My plea is that when we discuss the problem of tuberculosis or any other problem, let us discuss it with a view to the social revolution that alone would be able to create conditions for a healthy society and a healthy medical system.

Tall talk?

It may be thought all this is high flown, tall talk' there is no point in planning for a future society today when we do not know when and whether it would come about.' Yes, in a way, it is tall talk. Was not

aiming at freedom from British rule tall talk in the 1930's? Were not Mao and his comrades utopian when they were aiming at a new society in the 1930's? The Freedom Movement in India was aiming at total political independence on the one hand but at the same time demanded certain reforms within the system. Likewise we can and should ask for certain changes in the existing medical system to partly alleviate the sufferings of the people. Our discussion should also be geared to find out such points of action. This is quite different from allowing our discussions to be limited by the framework/problems created by the existing system.

Innovations, ideas, created, practised by such radical health work may also be used in a diluted, distorted form by the existing system (for example, the concept of community health worker). But it is a different matter to aim at, limit oneself (consciously or otherwise), to changes in the existing system. If somebody says that you are evolving strategies which cannot be generalised and hence your work is useless, we should stand up boldly and say that yes, our work, ideas are useless for the existing system but as the movement for social revolution grows the success and influence of our ideas would also grow.

There may be an objection that 'all this tall talk leaves no scope for those who cannot devote themselves to such project work'. There is a misunderstanding involved in this argument about project work. Project work does not necessarily mean village level project work. Alternatives are to be planned and tried out at all levels, wherever possible. A movement geared to analyse and expose the existing medical system, alternative experiments in production and distribution of rational, low cost drugs, in medical/health education . . . etc., are all project work in this sense. Concretely, in the case of tuberculosis control, it is not necessary that everybody from the group has to devote themselves to a rural project in order for the group to analyse the existing strategy of the tuberculosis control programme and to try to evolve an alternative. There are a number of other small and big tasks involved in this work: for example, gathering information, analysing it, disseminating information, organization . . . etc., in which different individuals can contribute differently. Independence was not won by full time political activists alone, it was the product of the collective efforts of millions of ordinary people contributing their individual, small mite.

"We already possess all the necessary weapons to wipe out TB. All we need to defeat the disease, now and forever, are the financial resources and the political will."

World Health — 1982

The coming annual meet

Concretely speaking, in the discussion on tuberculosis during the coming annual meet, my suggestion is that we should concentrate on: (a) *forging an outline of a fundamental critique of the existing state of affairs in tuberculosis control in India;* (b) *identifying measures which should be demanded from the government to alleviate some acute problems;* (c) *evolving an outline of an alternative strategy of tuberculosis control.* This would involve:

1. Understanding the theoretical basis and the evolution of the National Tuberculosis Programme. Finding out whether the strategy has accepted and internalised the false limitations imposed by the system;
2. Sharing our knowledge and experience of how this programme works in the field and why;
3. Identifying and analysing the genuine technical and social problems involved in the control of tuberculosis in a backward country like India;
4. Learning from the experiences of other countries and formulating an outline of an alternative and the role of mfc in it.

(We are awaiting comments before we finalise the session by session plan of the meet. These must reach us by the 31st of December. The final plan will appear is January 1985 issue — Editor/convenor).

Annual Meet 1985

Dates: 27-29 January 1985

Venue: Indian Social Institute, Benson Town, Bangalore-560 046.

Theme: *TB and its control*

Boarding and Lodging: Rs. 15/- per day.
Registration: Rs. 20/-

Background papers: Rs. 10/- (Send in advance)
For further details, return bookings and other queries write to MFC office at Bangalore.

Under the Lens

— Health and Medicine

The third anthology of original articles of mfc bulletins (52 to 95) will be available for sale by the end of January at a price of Rs. 15/-.

The first anthology (In search of a Diagnosis) and the second anthology (Health Care which way to go) are also being reprinted. The price will be Rs. 12/- and Rs. 15/ respectively. The three volume set will be available for Rs. 42/-

A *pre-publication offer* of the three volume set for Rs. 35/- is available to all those who send the order and amount by money order/demand draft before 25th of January 1985 to the mfc office at Bangalore.

The National Tuberculosis Programme

— What our experts say

sociological basis

"Even with the present extremely limited and inadequate facilities available for the diagnosis and treatment of the disease, over half of the sputum positive persons and over one third of the persons with radiologically active disease have actually sought assistance at government medical institutions motivated by their symptoms. The provision of elementary diagnostic facilities, such as a district referral x-ray unit and staining and microscopy facilities at primary health centres, and the distribution on a domiciliary/ambulatory basis, of suitable chemotherapeutic drugs would make it possible to treat a sizeable number of cases. The cost and problems of organising such a tuberculosis programme would be almost negligible in comparison with those involved in providing a system based on sanatorium treatment of similar magnitude or in combing the whole country with hundreds and hundreds of mobile x-ray units."

— *Banerji and Anderson,* 1963.

epidemiological dimensions

(i) Prevalence: This is about 40% in all age groups rising from about 2% in the youngest age group to about 70% at age 35. Thereafter it remains almost constant.

(ii) Incidence of infection is highest in individuals between the ages of 5 and 20 years.

(iii) Risk of infection is about 2-4% per annum.

(iv) X-ray confirmed disease is about 2% among total population aged 10 years and more and of these about 20% are bacillary.

(v) Age/sex difference: The prevalence and incidence are higher as age advances and again higher among males than among females, male to female ratio varying from 3:1 to 5:1.

(vi) Time trends: The trend of tuberculosis appears to be almost constant over the years except in some cities where better services for diagnosis and treatment have been available for some time.

(vii) Distribution: Tuberculosis infection as well as disease are more or less uniformly distributed in urban, semi-urban and rural areas. Thus the vast majority of pulmonary tuberculosis cases are to be found in rural and semi urban areas, where more than 80% of the country's population lives.

— *DVJ Baily,* 1983

Organizational plan

Tuberculosis diagnosis facilities are made available in far flung rural health institutions (HIS). Treatment of the diagnosed cases is organised by the village guide or the multi-purpose workers of a PHC sub-centre or by the treatment organiser at the health institution.

A district tuberculosis centre (DTC) supports the tuberculosis work at health institutions by training personnel at HIS, providing referral diagnostic and treatment (including hospitalization) support, by having a district wide information system and by providing drugs and other supplies to HIS.

The Directorate General of Health Services and the National Tuberculosis Institute, Bangalore are at the apex, with facilities for a national information system, training of key workers and monitoring, evaluation and research."

— *D. Banerji,* 1984

evalution

"There are deficiencies in equipment, manpower and there is human apathy. DGHS reports on diagnosis and treatment activities are totally false.

Microscopes are there in many centres but these are not used or are out of order. A large number of cases are diagnosed without sputum examination. Periodic examination of sputum of patients under treatment is not carried out regularly with the result the estimates of patients completing treatment or sputum conversion rates of initially bacillary cases are liable to be inexact . . . . .

. . . . . Reports are received on sputum examination from centres where no smear is examined . . . . In many States the staff sanctioned for DTC is less than the minimum laid down under DTP . . . . Full quota of NTI trained key personnel were in position in only two of 10 districts visited . . . .

There is general lack of interest or even awareness of responsibilitues by the doctors working in peripheral health institutions (PHI) in connection with TB work . . . PHI doctors do not send all patients with suggestive symptoms to the laboratory for collection and examination of sputum even if a microscope is available and microscopist is in position . . . . . NTP manual meant for PHIs is not available in any PHI.

Some cooperative patients go on taking the treatment for over 2-3 years. In any case it seems treatment is always stopped by the patient rather than by the doctor whatever its duration . . . . .

The position regarding drugs were satisfactory. No centre experienced shortage of drugs except streptomycin and PAS.

There is also a craze for using second line drugs by the profession.

The condition about TB disease in children in the country is apalling. There is overdiagnosis and over treatment which needs attention . . . . . There are no arrangements for BCG vaccination in any PHIs . . . . . Practically all DTCs experienced difficulty in procuring adequate quantities of miniature x-ray films, shortage in laboratory reagents, printed cards . . . . .

— *Review of NTP*
ICMR Expert Committee, 1975

Anti—TB drugs

- The production of First-line anti-TB drugs is showing a downward trend inspite of the increase in the number of TB patients.
- Production of INH for tuberculosis is only one third of the minimal requirement. On the other hand tonics and vitamins are produced in wasteful abundance.
- Irrational combinations of streptomycin continue to be produced, pushed and widely misused for trivial problems inspite of the known dangers of emerging primary resistance of TB bacilli to streptomycin.
- With government programmes unable to rearh even half of the TB patients people suffering from this disease are being forced to buy drugs at costs which keep rising.
- Of the 52% of the infectious TB cases who seek medical help for their symptoms of their own accord, 90% of them come away with cough syrups, tonics and even steroids with their diagnosis missed and the problem untreated.
- There is great ignorance about drugs, dosages, drug regimes, duration of treatment among qualified as well as unqualified medical personnel treating TB cases. This is resulting in increasing drug defaulting and drug resistance.
- Uncontrollable sales and misuse of potent second line drugs often in sub-therapeutic doses and in irrational combinations by authorised and unauthorised agents is not merely an ethical problem but is turning the already difficult problem of resistance into an insolvable one.

— *Mira Shiva, VHAI,* 1983

political economy

"That India has taken the initiative to formulate a felt need based NTP in 1962 and that it suffered from grievous weaknesses in its implementation because of diversion of efforts towards such high technology areas as cancer and cardio-vascular diseases to meet the needs of the privileged classes, reflects the nature of interplay of social and economic forces within the country. As NTP was specially designed to "sink or sail" with the general health services. neglect of the health services of the masses because of pre-occupation with the high technology health services of the classes, led to neglect of NTP. There is thus an element of success in the failure of NTP: by its failure, it has pointed out the failures within the entire system of the health services of the country."

D. Banerji, 1984

The ultimate solution

Environment is a Fundamental Factor in the ecological triad of tuberculosis. Socio-economic conditions can alter the epidemiological situation powerfully, for good or bad, over a decade or two. Since BCG vaccination has no influence on the naturally infected population and chemotherapy merely eliminates some cases but cannot present cases from occuring, a tuberculosis control programme has a low potential for influencing the epidemic curve over a short period. So far, no reported study has successfully demonstrated the prime influence of anti-tuberculosis programmes in controlling the disease, *without a concomitant marked improvement in the standard of living of "the people".*

— *D, R. Nagpaul,* 1978

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The 'MARD' Strike – A View Point

-- Sanjay Nagral, Bombay

The twenty-eight day long strike by resident doctors, interns and medical students all over Maharashtra to protest against the opening of three capitation fee based medical colleges ended a few months ago. The withdrawal of the strike on just a no-victimisation assurance was regarded by many as total surrender. Two of the capitation fee medical colleges have already opened since then and plans have been announced for many more. In that sense the strike was a failure. It was, however, unique in many senses. For example, it was the first time that the M A R D (Maharashtra Association of Resident Doctors) was going on an indefinite strike for an issue other than pay rise. It is important to analyse the various aspects of the strike not just because there is a lot of ground for criticism but more importantly to make us better equipped to react to such struggles in the future. As the interns' representative on the central committee of MARD and on the negotiating team, I had the opportunity to have a close look at the events during the strike, and in this article, I shall try to analyse some of them in the light of its failure.

First of all a few facts about the strike. On the twenty second of June a one day token strike was observed by resident doctors, interns and medical students all over Maharashtra as a mark of protest against the government's decision to permit the opening of three capitation based colleges at Karhad, Satara and Pravaranagar in the State. A delegation of the MARD was literally dismissed by the Chief Minister who refused even to discuss the issue. A decision was then taken to launch an indefinite strike from the tenth of July, the call for which was given by the MARD. The strike action by around 4500 residents was joined right from the start by around 1500 internees and later by around 8000 medical students. It lasted for 28 days and was withdrawn on the 6th of August with just a no-victimisation assurance from the government.

The origin of many of the drawbacks of the strike and of its eventual failure lay in the fact that the leadership of the MARD never understood or analysed the politics behind the opening of capitation colleges. The government's arguments in favour are too nonsensical and ridiculous to merit discussion. The fact remains that this was and is a political move by the government to satisfy the powerful sugar barons (and their children), earn quick cash and at the same time build a pseudo 'pro-rural poor' image. The desperate haste with which some of these colleges were started, flouting all routine norms, the panic on the government's part after the court case was filed, showed that the government had a lot at stake in these institutions. The crude effort to break the strike by offering personal bribes and favours to some of the leaders, proved this even more. And if the MARD leadership hoped that the government would revoke the decision (which meant displeasing people with the clout and money) in response to the protest of a small section of the medical community they were hoping for too much.

Political moves have to be fought politically and by political forces. And with the present strength of the ruling classes and their parties and their total grip over the various state agencies, agitations many a times are likely to end up wresting concessions of varying degrees rather than changing decisions. It was with this undesstanding that some of us from K.E.M. MARD were proposing the idea of negotiating with the government over the percentage of seats to be kept on genuine open merit basis. In fact at one stage, the government was ready to do so. What was dismissed as a 'compromise' was in fact a tactical move keeping the reality of the situation in mind.

A protest against capitation fees means a protest against the right of the government to make education a privilege of the rich and the moneyed. But when a government is a puppet in the hands of the capitalists, landlords and merchant class, it ultimately implies a clash with the strength of the ruling classes. This will necessarily have to involve large sections of the masses, for whom even simple medical education is a dream, for it to succeed. It was these political realities that the MARD leadership failed to grasp. Although the strike did teach quite a few lessons in cunning, ruling class politics, by and large the attitude of the leadership remained immature and at times even opportunist. And not in a few instances was this not due to innocence but a genuine desire for fast popularity and personal gains.

To begin with, was the total lack of preparation and ground work for such a big struggle. Many assumed that just residents striking work and paralysing public hospitals would bring the government down to its knees. That in the past, the demand was always a small pay rise, was totally forgotten. Then, there was the total lack of effort (except by some sections) to involve the medical fraternity as well as other sections in the struggle. It was not surprising that many senior doctors and their organisations although generously offering a lot of sympathy refused to join the strike. Most of them are so well entrenched in the profession and have so readily accepted to be a part of a corrupt and wretched medical system that to take such a step would be to invite the wrath of the very government to whose tune they dance. The classical example was of the IMA many of whose office bearers although openly supporting the strike refused to criticise the health minister or take action against her as a president elect

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Dear Friend. . .

In the last few months we have often been asked about mfc's stand on the MARD strike. This has been easy enough to answer, because as far as we know mfc has no opinion on the issue. But this has generated other questions which we would like to verbalise here.

In the last year there have been at least three long drawn out actions by doctors (West Bengal, Orissa and Maharashtra). Their demands were not only for better pay and working conditions but for better health care, adequate facilities and drugs; and in Maharashtra, specifically, against the opening of capitation fee medical colleges. Why have these actions never been discussed in the mfc?

Part of the reason is of course that those of us who could have raised the issue, haven't. But this reluctance itself tells a story. In fact, until the question of mfc's standpoint was persistently asked, we had subconsciously thought of these issues as peripheral to mfc's main objectives and interests. But are they?

mfc's avowed concern is with the health care-system and the practice of medicine. As we read it, mfc has always interpreted it as wholly discarding the hospital-based established system of health care and seeking alternatives in the delivery of such care. Logically then, issues such as better working conditions of doctors, or better quality of health care through the existing systems appear to fall outside mfc concerns. What is here ignored is that the existing system will not be replaced now or for some time, and it is in fact being enlarged. So issues of the hospital as workplace, and those concerning the quality of health care become relevant, current and even burning issues. And the MARD strike took up, ironically enough, issues very much in the realm of mfc's major concern — medical education. (For the moment it is sufficient to consider only doctors' agitations, mainly because mfc despite its statements to the contrary, unfortunately tends to be very much medico-oriented.)

We do not think it is a sufficient argument to state that there was not enough information to either discuss or assess the issue or even raise it in the bulletin. The West Bengal strike had ended just before the CINI Meet and the MARD strike has received more press coverage than any other previous strike, perhaps.

All this makes one wonder: Is mfc's professed role of 'thought-current' leading to a lot of fence-sitting? Are we perhaps so preoccupied with long term change that we are missing opportunities of making our considerable presence felt where it would matter? Are we in fact, become so profoundly involved with seeking limited alternatives that we are opting out of mainstream issues?

Many friends from mfc have been involved with providing workable and successful alternatives at the local level in various ways. But isn't it necessary to make these activities of 'model building' at a local area an integal part of all the struggles for better health and for changes in the existing health care system? Only such a perspective can make us more sensitive to the struggles of people within the health care system.

Secondly, the last few years have seen various groups in the country take up health issues in their own areas of work (eg., women's movement, and to a lesser extent, trade unions and the anti-nuclear movement). What has been mfc's involvement and contribution to these movements? Is it not time that we became more than a 'thought-current'?

May we suggest that some of these issues as well as the questions raised in Anant's article (100-1) be taken up at the GB Meet in January?

Yours sincerely,

Padma Prakash & Amar Jesani

Since I am more than aware of the deep concern that mfc has for health issues, I would like to make a few points here:

1. There is a dire need to pursue criticism of existing medical education and suggest alternatives. There needs to be more follow up of another issue-that of RMPs and ayurvedic and homeopathic practitioners using allopathic drugs and vice versa. Both these issues are inter-related.
2. The mfc members need to increasingly respond to important issues like the resident doctors strike in July-August 1984 and the mill workers strike in Bombay.
3. A group of young doctors tried to educate the general public regarding the politics underlying capitation fee medical colleges by way of writing letters to capitalist press and also directly addressing workers' meetings. The same group of doctors had conducted free medical OPD for striking mill workers and made it a point to discuss politics and economics with workers. This was definitely an eye opener in many ways for the young doctors also. They could more than understand the problems of the working class and realised the lack of relevance of present day medical education to the social problems.
4. The same group of doctors also made several visits to the blind school and made themselves available for reading progressive literature, story books, curricular books for the blind students.
5. These doctors visited certain working class localities in the suburbs of Bombay, conducted free OPDs and also started circulating libraries constituting progressive literature.
6. In conclusion, all the issues related to health being our primary concern, we must keep live contact with working class activities, schools, colleges and various other institutions, wherever we can work. mfc members should

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Editorial note

In January we meet to explore the various dimensions of the problem of Tuberculosis and TB control within the context of Indian social reality.

Why are we discussing Tuberculosis and its control? Binayaks paper in mfcb 105 highlighted some problems and issues. Anant Phadke's lead paper in this issue goes into this question in greater detail within the overall perspective of the medico friend circle. Warning us of the false limitations that the existing socio-political system thrusts on us, in our attempts to evolve alternative and more people-oriented strategies he outlines the various areas we could/should discuss during the meet.

Some excerpts from reports/papers by various experts in the country gives additional background to the situation of Tuberculosis and its control in the country. The readers are reminded of the reading list and the check list questions in mfcb 107-supplement. Hope these will stimulate your preparation for the meet?

The Annual Meet is also an opportunity to critically evaluate mfc's role and direction. Apart from Anants paper, the report on MARD strike and the dear friends letters raise many relevant issues which could well be the starting point for such an exercise in introspection.

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of the IMA. There is no doubt, however, that if the senior doctors had joined the strike, the impact would have been much greater because of the total paralysis of even the skeleton emergency services that would have ensued.

Excessive faith and hope was placed by many in the legal system to give a favourable decision. The counsel for MARD bared it all very early when he bluntly told us that the case against capitation colleges was strong only as far as the 'standard of education' part was concerned. That this legal system does not consider 'capitation' as illegal and unconstitutional was apparent in the court's verdict also. In fact this 'standard of education' ploy was used time and again by the government during the negotiations to trap us into discussing something irrelevant. The minister would go to extreme lengths to point out how the standards were being maintained and some of the MARD leaders would very obligingly deviate from the issue of capitation.

Mention must be made here of the role of the KEM unit of MARD, for here a definite attempt was made to broaden the base of the struggle. The mass contact programme, street plays, public meetings and parallel out patient departments, were all efforts to take the issue to the public Meetings of trade unions and student organisations were held to chalk out a more broad plan of action. It would be appropriate to mention that very few trade unions responded to the invitation and those who attended showed extreme lethargy to take any concrete action. Thus, what was an excellent opportunity for the working class movement to fight for a genuine issue was lost. The gherao of an ENT Surgeon from Bombay was deliberately planned to prove that members of the profession who associated themselves with these colleges should be exposed and attacked.

Two of the colleges have since then opened with a lot of fan fare. Many more are being proposed. These will start sprouting up with regular frequency, closely competing with engineering institutions. The fight therefore will have to be a prolonged one. Organizations like the MARD cannot and should not fight such struggles alone. This is the work of mass organisations, trade unions and working class parties. Science movements and organisations like the medico friend circle must take up such issues. Always keeping in mind however that it is the symptoms of a wretched and rotting economic structure that are being manifest, time and again. It should also be borne in mind that non-capitation 'open merit' education although apparently giving equality of opportunity is heavily loaded in favour of the rich and the moneyed. This is especially true of higher education. This is not very surprising since it is the moneyed who rule. Capitation fees is just a more vulgar and crude form of a degrading but crumbling system. The only way to put a permanent stop to such terrible obscenity is to strike at the roots of the disease. Such struggles however have to be fought and if fought with the right perspective can contribute a lot in this direction.

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not remain away from any socio-political struggle because it strengthens capitalists. Atleast mfc members can act as conscience keepers for existing political parties if mfc cannot and is not able to function as a political party.

— *Shriniwas Kashalikar, Bombay*

Views and opinions expressed in the bulletin are those of the authors and not necessarily of the organisation.

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MARCH 1985

TB AND SOCIETY

Preamble

It is the first time in the last eleven years since our inception that mfc has taken up a single disease entity for discussion at the annual meet. The disease selected—Tuberculosis—was particularly relevant because of many reasons:

i. To begin with there is greater understanding today of the multifactorial aetiology of the disease where social factors more than biological are known to have a significant impact on incidence, prevalence, spread, diagnosis, management and control;

ii. Secondly unlike most of the national programmes in India the NTP has developed on crucial sociological perspectives derived from relevant field studies;

iii. In its approach in terms of integration with general health services, choice of appropriate investigative technology, alternatives in chemotherapy and other aspects it has shown a greater people/patient sensitivity than most other programmes and a significant shift from the dependence on the industrial aspects of medical care;

iv. Inspite of these salient features the case finding and case holding performance is far from satisfactory and these have become a matter of great concern for TB programme organisers and decision makers;

v. The ICMR/ICSSR Report while analysing the drug situation in the country has highlighted the shocking state of availability of anti-tuberculosis drugs ('one third of minimal requirement') when vitamins, tonics, health restoratives and digestives are being produced in "wasteful abundance";

vi. By its inclusion in the 20 point programme the government has endorsed its relative importance in the health scene of the country though whether this step is part of a 'populist rhetoric' or a national commitment towards control of the problem, only time will tell.

It is in this context that the mfc decision to relook at the whole situation of the TB problem and its control in India as an exercise for 1984-85 is significant.

Scope and Focus

The meet of over 110 friends from various diverse backgrounds (ref mfcb 110 Feb 1985) with its intensive small and large group discussions highlighted that the subject was too large and too important to be tackled in 16 hours of discussion and that rather than expecting a meaningful critique of NTP to emerge from so diverse a group — what would really be more realistic would be to accept the annual meet discussions as the initiating of a process of critical analysis. This would be followed up by further study, small group work and field evaluation through 1985 from which would hopefully emerge an mfc perspective on the problem. This sense of realism was forced on the group after the first session on "Expectations of the Meet" in which participants were asked to raise issues and questions for discussion.

Expectations of the Meet

The exercise identified a phenomenal range of problems far beyond the scope of the meet:

1. Need to understand the organisational structure and implementation of NTP and the deviations from ideal in the actual field situations.

2. Need to identify issues on which we should put pressure on policy makers.

3. Need to discuss the range of non-pulmonary tuberculosis and how it is viewed by the NTP.

4. Need to discuss childhood TB and how it is viewed by NTP.

5. Need to study how NTP actually operates at the PHC level and what are the components of the services actually available at the community (village) level.

6. How do non-allopathic systems view TB as a problem?

INSIDE

1. Broadly speaking TB control programmes should ensure the following three crucial features:

(a) A link with socio-economic and developmental activity

(b) A stress on health education and awareness building at all levels

(c) A commitment to community participation in the decision making process and project evaluation.

It was felt that many of us who are working in the field have already a sufficient rapport with the community and the above could be integrated primarily by sensitising ourselves to these issues.

Ensuring the above principles, certain specific recommendations were made for practical implementation during: A. Case Finding/Case Holding; B. Drug Regimes; C. Training of Workers.

A. Case Finding/Case Holding

1. There is need to have a rough estimate of how many TB patients ought to be in the area and work towards identifying at least that number.

2. Involve health personnel at all levels in the programme and also all the cadres of the governmental health service be they MPWs, CHWs and Dais. Local indigenous practitioners and traditional healers should also be involved.

3. School health check ups could be done as an additional focus for case finding as in leprosy. School teachers and high school students should be involved in general awareness building.

4. People's organisations like organisations of the rural poor, workers, trade unions and other formal and informal groups in the community should be sensitised to the problem and involved.

5. Malnutrition surveys and mantoux testing could be adjuncts to case finding specially for childhood. TB.

6. Patients who are on regular treatment or have been cured should be actively involved.

7. The family of patients should be involved in a positive way in the programe. Once they are sensitised to the problem in a positive way (rather than feeling a fear or social stigma) they can be helpful in making the community aware and also bringing patients from other neighbouring families for treatment.

8. The socio economic difficulties of patients should be assessed and transportation fare and other small compensation for wage loss etc., should be provided.

B. Drug Regimes

There are several regimes which have been recommended and are available in the existing literature and also promoted by the NTI. Certain basic principles to be followed before selecting the appropriate regimen are:

1. Technical — an intensive phase of two bacteriocidal drugs and one bacteriostatic drug followed by a maintenance phase of a bacteriocidal and a bacteriostatic drug.

2. The time period of each phase and the spacing of the drugs depend on factors such as — a. accessibility to clinic and health centre;

b. infrastructure available; c. cost; d. availability of drugs; e. stage of disease—serious and non-serious patients; and f. knowledge of patient compliance.

Many regimes taking these factors into account are already recommended from which a selection can be made.

3. While the regime is being dispensed it is essential to ensure: a. psychological reassurance of the patient; b. maintenance of a satisfactory doctor-patient relationship; and c. tactful information to the patient to increase his ability to identify toxic effects.

4. The use of supportive therapy such as cough mixtures etc., should be done in a rational way taking care not to overuse/misuse supplementary medication.

C. Training of Workers

1. First the present knowledge/myths/perceptions existing in the particular area should be studied;

2. The people should be taken into confidence about the programme envisaged by the team and their participation in decision making ensured.

3. Grass-root workers at village level to be involved in the programme should be selected by the community. The selection should be based among other things on personal motivation and stamina.

4. The training of grass root workers or CHVs should be undertaken in appropriate size of the group (10-15).

5. The content of the training should include cause of disease; symptoms; case holding; side effects of drugs and their management; and motivation of patients.

6. The training should be theoretical along with practical field training. The methodology should include.

a. use of available aids, modifying them to make them more relevant and meaningful to the local area; b. involve the patient and get him to talk about his symptoms/difficulties etc., c. reinforce the learning by continous on-the-job training; d. older CHVs to be involved in training newer ones; e. use simple laymen language and avoid technical jargon; f. concentrate on training to communicate effectively with patients and the community.

7. Periodic evaluations of the training programme should be undertaken eliciting feedback from the CHVs.

8. Similarly an effective supportive supervision plan and a system of continuing education in which problems faced in the field are constantly identified and discussed, should be included.

9. The CHVs should be trained to increase community awareness of the existing NTP and the availability of effective treatment as a right so that

demands for more regular drug supply and more effective government health centre services can be generated. In the absence of such a commitment the programme of NGOs will become ends by themselves duplicating the efforts of government and supporting their inefficiency. In the long run since voluntary agencies cannot build up parallel structures to government health services, the catalyst nature and the 'awareness of rights' generation nature of non-governmental voluntary effort should be promoted.

Mona Daswani, Bombay

Sub-group Report

Para-professional training and community awareness in TB

1. The objectives of health education of the community should be to promote an understanding of the medico-technological aspects of TB, the socio-economic-political aspects, the rights and responsibilities of the patients and people, the common beliefs and superstitions and demystification of all aspects of the TB control programme.

2. The responsibility of providing this education and awareness is the joint responsibility of government and non-governmental agencies. However, it seems that one of the main reasons why health education has not been given top priority in the NTP is because of the field reality that the existing services (even if they are geared up) cannot cope with the increased demands of TB patients, if awareness becomes widespread. There seems to be no other reason why even after decades of NTP, there is still no rationally formulated and researched communication strategy. TB Associations have played their role but their efforts seem to lack continuity, technical competence or creativity and are predominantly urban based.

3. Health education efforts should creatively and competently involve all sections of the community not only as recipients of awareness building efforts but also as promotors of further awareness. While focussing on all sections particular interest should be taken of policy makers, politicians and community leaders including the functionaries of the gram panchayat.

4. Improving the communication skills of all categories of health workers from doctors all the way to the community health workers should be an important part of the strategy. At present this is one of the most neglected areas in the existing curricula.

5. The science syllabus of schools does not equip children with practical knowledge of common diseases in India or for that matter for healthy living. There is considerable scope for incorporating knowledge about TB in the science teaching of schools. Schools could also become a focus of creative involvement of school teachers and children in health promotion.

6. There are a sizeable section of private practitioners of non-allopathic systems who should be involved in awareness building. They should be involved not only in management of TB as a clinical problem but as effective educators of their patients in the preventive/promotive aspects of TB.

CHW training: There was a general feeling that the existing governmental CHW training programmes gave low priority and emphasis to TB control. The lesson plans were limited and not integrated with the rest of the training but given separately at DTCs and PHCs.

From the experience of participants who were involved in health projects in which training of CHWs was being undertaken there emerged the need to include certain innovative methods of training to make the CHWs more effective in the field: These included:— (i) participation of senior CHWs in training; (ii) learning through doing; (iii) decentralised and localised training; (iv) participatory methods; (v) use of locally developed or regionally adapted AV aids and so on.

The group suggested that we in the mfc should undertake to:

A. Review all available educational materials and AV aids on Tuberculosis available from governmental and non-governmental sources and check whether the points included in (1) above are present and whether the social focus as identified in discussions exist.

(Anant Phadke agreed to study the TB Association Pamphlets for a start).

B. Review all available training manuals of health workers (CHWs, MPWs, HAs) for the importance given, content, and focus of teaching of tuberculosis.

(Marie D'Souza and Minaxi Shukla agreed to undertake this exercise).

Based on the above two studies recommendations can be made to policy makers, programme organisers and health educationists in the country.

Narendra Gupta,
Prayas.

Sub-group Report

Tuberculosis in Medical Education

The group focussed upon the problem of producing a socially useful doctor in connection with tuberculosis, and the hurdles in the present medical education system that have to be overcome in this direction. The group itself was a small one and represented five medical colleges only.

Preamble

1. The basic structure of present day medical colleges and medical curriculum, propagates a certain value system, which is predominantly exploitatory in nature;

2. We believe that propagating the attitudes currently plaguing the medical system is a general process, which involves the attitudes and practices of faculty members, the expectations of our families and society, and the 'traditional' role of a doctor

3. That medical education is incomplete in itself, unless the social dimension of disease is stres-

sed upon. It is for this reason, that many of our senior colleagues (even those from NTI) believe in purely technical or medical intervention for TB control.

4. Priority of medical education as it stands today, is directed towards the question of where is the lesion? or what is the lesion? rather than how was it caused and why? Our medical education does not stimulate an average student to ask and seek answers to social questions.

5. That trying to produce primary care doctors in tertiary care centres is a major drawback in itself.

Specific issues

1. We felt that the topic of TB as a disease is dealt with in a fragmented way, and is dealt with by several departments in a medical college. It is for this reason that the dynamic nature of TB as a disease is ill understood, and problems in TB control not even perceived. Some of us even passed MBBS with the notion that TB meningitis is a different disease from pulmonary TB and so on.

2. Specialised departments involved in TB education cater to their own fields (perhaps a part of the bigger problem of medical education in a large set up). Attitudes of the faculty members are built along the same plane. It is for this reason, that physicians in the medicine departments absolve themselves of the responsibility to teach about the social aspects of TB.

3. Clinical medicine is glorified, while preventive aspects are looked down upon. Our system is disease oriented and not health oriented. We look at cavities and not at patients!

4. "Germ theory" of causation of disease is propagated and medical intervention only is stressed during undergraduate teaching. Even PSM departments which undertake instructions in sociological aspects of disease, have a narrow view of the disease process. Most recommend medical interventions as a solution quite like their own colleagues in clinical departments. Those that go a step further, preach 'better housing, more ventilation and more food' without understanding the deeper social aspect of TB.

Social action is almost never undertaken. Even development projects which encourage income generation schemes and other such social schemes suppress a more basic question of unemployment in society and so on.

5. Clinical teaching overemphasises that tuberculosis is a common problem and only classical cases are shown to an undergraduate. This propagates the myth that being a common disease, it is easy to diagnose and manage TB. Realities of TB control are never dealt with or discussed so that an average medical student at the end of his final year never recognizes any problems concerning tuberculosis.

6. There are dictums laid down by clinicians who teach that investigations are essential to make a diagnosis. While this is largely true in places where facilities are available, it introduces a value system into the teaching that unless one's clinical judgement is backed up by labs, one is practising 'poor medicine'.

In fact, making a confident clinical diagnosis with limited facilities available, is 'good medicine'.

7. Emphasis is once again laid out on one therapeutic regimen (ie., SM/INH/TA) for all TB patients. The concept of suiting TB treatment to a particular patient's background is not even touched upon. eg., A labourer who can attend a TB clinic twice a week may be offered a different treatment regimen compared to another who can attend daily for SM injections. It is surprising that in spite of the fact that much of the research work on alternative regimens of chemotherapy emanate from India most of these well accepted findings hardly find a place in medical education in the country.

Limitations of the discussion

We in our group were not able to touch upon the following topics as regards medical education in tuberculosis.

1. Research in tuberculosis and research priority identification. Whether research and intervention of a purely technological nature as is currently practised by the NTI should be pursued or other issues regarding socio-economic-political factors be raised as well. Lack of research in communication and education strategies which is a major lacunae, also could not be discussed.

2. Continuing education of doctors about tuberculosis; whose responsibility it is; and the form of the continuing education programme. The group suggest that in light of the discussion a comprehensive integrated model of teaching of tuberculosis should be drawn up which can be tried out within the existing constraints of the medical curriculum in India. As a preliminary process to this effort a much wider feed back from members in or of different medical colleges should be obtained on their own experiences of TB training in their education. This exercise would establish a continuing link with the annual meet theme of 1984 and probably could also be featured in the Anthology of medical education under preparation.

(Ravi Narayan, Vineet Nayyar, and Srinivas Kashalikar agreed to follow up on this along with other members).

Vineet Nayyar,
Vellore

An Appeal

Thousands of innocent Tamils have been rendered homeless and jobless by the recent atrocities and genocidal acts in Srilanka. Assistance is particularly required in the fields of food supplies, medical supplies, clothing and so on. A group called MUST—Medical Unit for the Service of Tamils—been formed in January 1985. They have requested us to put an appeal in the bulletin. All contributions and support may please be sent to MUST, 144 Choolaimedu High Road, Madras 600094, India.

All India Drug Action Network

Report of The All-India Meeting on 30th & 31st Jan. 1985

The AIDAN meeting was planned immediately after the MFC meet. About a dozen groups from different parts of the country had sent their representatives. First half of 30th January was spent in reporting of what different groups have done during last 6 months. It was nice to know that things are moving forward on the Drug-Action front in different parts of the country. Special mention must be made of some of the activities:

People in the Drug Action Movement

The Drug Action Forum of West-Bengal is quite active. It had organized a protest-March to the U. S. Consulate at Calcutta against the decision of the American Congress to allow, under certain conditions, the export of those drugs which have been banned in the U. S. The March was very well attended. They have brought out a pamphlet in Bengali with the title—"Are medicines meant for the people or are people meant for medicines?" This got a very good response. A calendar to spread this message has also been prepared and is being sold. A convention was organized in Calcutta on 20th January and was attended by 400 delegates representing various organizations working in the people's Science and Health movements. The convention adopted demands like: removal of useless, unscientific, harmful drugs; ban the banned drugs, reduce drug-prices, abolish brand names...etc.

The **KSSP** had organized a campaign on oral rehydration and irrational anti-diarrhoeals in 600 rural units of KSSP. The KSSP is planning a state-wide and then a nation-wide seminar on the drug-industry —"A decade after the Hathi Committee."

The Arogya Dakshata Mandal has setup a few "diarrhoea-centres" in Pune city slums where slum-dwellers are taught the importance of oral rehydration through demonstration. They are also publishing a two-volume book on Rational Drug Therapy.

The Catholic Hospital Association of India (CHAI) held a two-day workshop on "towards a people oriented drug policy" during its 41st Annual National convention from 23rd to 26th November, 1984 at Bangalore. About 500 delegates from different parts of the country listened to the different paper-presentations about drug policy in India and went back with idea of implementing rational drug policy at least in their own hospitals.

The Lok Vidnyan Sanghatana is continuing its campaign against irrational over-the-counter drugs. The Bombay unit of LVS has made available plain aspirin, paracetamol, Chlorpheniramine maleate in a plastic packet along with a proper label, as an alternative to Aspro, Anacin, Coldarin etc.

The Drug Action Forum, Andhra Pradesh had held a convention on Rational Drug Therapy, which was attended by about 100 delegates. A special "Drug Information and communication cell" is being prepared in the 7th Five Year Plan of Andhra Pradesh and District Drug Advisory Committees are being set up to advise the authorities on the Drugs-issue.

Other groups in different areas have started activities on the drug-front and building pressure for implementing Government's "Ban-Order" was seen as an activity that would pick up in coming days.

Mira Shiva reported that one political party-CPI-ML (Santosh Rana Group) has taken this ban order as an action-plan and they had approached AIDAN for relevant background papers. They have decided to launch in different cities in India, hunger strike until death, to pressurize the Government to implement its own ban-order. This news caused a lot of flutter and all of us would be keenly interested to know what happens to this action-plan, and its impact.

Steering Committee Report

Dr. Mira Shiva, the co-ordinator, reported amongst other things about the recommendations of the Steering— Committee set up by the National Drug Development Council. These recommendations have recommended a smaller span of price-control on the drugs than what exists today. Only 95 drugs and their formulations will be under price-control if these recommendations are accepted. The mark up for the drugs from this priority list is also sought to be increased.

This will lead to a rise in prices of all drugs— both the price-controlled drugs and the decontrolled drugs. This Steering Committee Report does not say anything about irrational drug preparations in the market. Coming a decade after the Hathi Committee Report, this report is retrograde in character and all of us must oppose it. It is likely to come before the Parliament in the coming session.

Mira Shiva had convened an emergency meeting of the Co-ordination Committee of AIDAN in Delhi on 26th. November to discuss this report and to give our response to it in a meeting convened on 29th November by the Ministry of Chemicals and Fertilizers to discuss the "New Drug Policy." A note containing our criticism of these recommendations and our positive suggestions was prepared and Mira Shiva conveyed this to the officials during the meeting on 29th November.

Action-Plan:

1. Action-plan in the coming few months would concentrate on forcing the Government to

implement its own order banning 18 categories of drugs. Mira Shiva has prepared a list of brands belonging to these 18 categories of drugs. This list would be improved upon by rechecking it and earmarking those brands which sell the largest. This improved list would be printed in thousands and made available to doctors and Chemists through different voluntary organizations and they would be requested to stop using, selling these brands.

One specific form of action-plan was suggested during the discussion—After making available, the list of brands belonging to those 18 categories of drugs banned by the Govt, the action-group would go round the city in a Morcha and would request doctors to throw away the samples of medicines bearing these brands into a "Zoli." Chemists would also be requested to throw away some medicines as a token and to return the rest of their stock to the drug-companies. This "Zoli" containing these "banned brands" would be publicly burnt at a prominent place in the city.

2. A short summary of A I D A N's criticism of the Steering Committee recommendations would be published and different groups should give adequate publicity to this criticism in their respective areas. These recommendations are quite likely to be kept before the parliament in the coming session in the form of a New Drug Policy. It is necessary to raise our voice at that time and compel the Government to desist from taking this retrograde step. A summary of the Steering Committee Recommendations and our criticism of it would be available with Mira Shiva, Co-ordinator, AIDAN, C-14; Community Centre, S.D.A. New Delhi-110016.

3. Court cases:

a) E. P. Forte—

Delhi Science Forum has agreed to launch a fresh case in the Supreme Court about E. P. forte.

b) Depo-Provera—

Dr. C. L. Zaveri, a gynaecologist from Bombay has filed a case in Bombay-High Court against the Drug-Controller of India for not allowing him to import Inj. Depo Provera. Considering the importance of this case, Women's Centre of Bombay and Medico-Friend-Circle, have with the help of the Lawyer's Collective in Bombay, applied in the Bombay High-Court to be allowed as co-petitioners on the side of the Government of India. It may be recalled that the Board of Inquiry set up by F.D.A., U.S.A. has recently given its verdict ruling out the use of Depo-Provera as a contraceptive in general use. This notorious contraceptive is, however, sought to be imported in India.

A broad-front of different women's groups and Science-groups is being formed to oppose the introduction of injectable contraceptives in India. Material about the hazards of these drugs would be circulated and a public-campaign would be launched against its introduction.

Besides these co-ordinated efforts, there would be local initiatives and its hoped that in 1985, the Drug—Action—work would strike deeper, wider roots and would create a much stronger public opinion against the irrationalities in the drug-situation in India.

—Anant Phadke, Pune

URGENT

We need urgently contributions and donations to support mfc's studies/investigations in Bhopal and publication of our team's reports for professional and public awareness (cheques/DDs in favour of 'medico friend circle—Bhopal Fund')
We are counting on you!

FORM IV

(See Rule 8)

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TB & WOMEN

TB is the leading single infectious cause of female deaths in the world. **TB kills over one million women every year,** accounting for more than 2,700 women dying of TB each day. As TB kills more women each year than all causes of maternal mortality combined, TB also deserves a place on the women's health agenda.

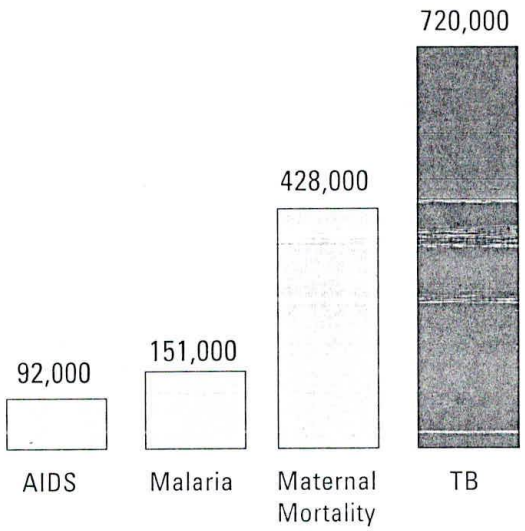
Women in their reproductive years have a higher risk of developing active TB than men of the same age. The hormonal and nutritional stresses of pregnancy might weaken a woman's immune system, increasing her susceptibility to developing TB in the post partum period. The majority of women who become sick with TB do so in their most productive years of life, those in which they raise children and perform other work: in the labour force, in the household, or in the fields.

When this lethal disease takes its toll on women, their family members are also threatened by TB germs coughed into the household air. Because women have such close contact with their children, a mother sick with TB poses a real threat to her kids. It is common for mothers unwittingly to infect their children with TB before dying of the disease themselves.

The HIV/TB co-epidemic is also assailing women worldwide. The rise of HIV infection among women, especially in the developing countries, has contributed to the development of many more TB cases and deaths. For example, largely as a result of the AIDS epidemic, two New York City public hospitals reported seeing twice as many pregnant women with TB in 1991-1992 as had been seen in the previous six years combined.

It is estimated that of the approximately six million women sick with TB at any given time, **at least a third die because they are undiagnosed or receiving poor treatment.** There are a number of reasons for this neglect, but money, time, and transportation present the most significant barriers. Women often find it more difficult than men to access health care services, because transport time and costs are greater for women when viewed in light of their dual responsibilities at work and at home. Also, some women have limited access to money, living in households where men control the purse strings and women are viewed as little more than property. Some women try to ignore their TB symptoms because they fear rejection or stigmatization from friends and family. Others simply lack basic information about diseases and their bodies.

TB Is a Leading Killer of Women



Mortality in Women and Girls Over Age 5. *Source: WHO, "The global burden of disease in 1990" in* Global Comparative Assessments in the Health Sector. *Geneva, 1994*

For example, Sarina, from Osh, Kyrgyzstan, is a 45 year-old single mother of three who has TB. She wants to get help, to cure herself and to protect her children, but has run up against the barrier of cost. "Under the Soviet system, health care was free," she says. "Now we have so little money and I cannot pay for these medicines."

Laxmi, a woman who lives near the Indian city of Patna, faces other difficulties. It takes her three hours to get to the free clinic to pick up her medicines, and another three hours to return home again. Some days, the clinic does not have the correct medicines. Time and time again, Laxmi's treatment is interrupted. She has been repeating this common cycle for years, and her illness is worsening.

These impediments to treatment make clear the importance of curing women by using the DOTS strategy. DOTS allows women to be treated successfully and affordably near their homes, thus eliminating expensive, time-consuming trips which can make effective treatment impossible.

TB deaths among women have major implications for child survival, economic productivity, and family welfare. Those who care about empowering women and saving their lives must recognize the enormous impact that TB is having on women worldwide, and must act to effect change.

Announcement — XI mfc annual meet 1985

Date 27-29 January 1985

Venue

Indian Social Institute, Benson Town
Bangalore 560046

Programme

The first two days will be devoted to a discussion on the theme 'TB AND SOCIETY'. One day will be reserved for the annual general body meeting.

Preparation and background

1. A list of questions in this issue highlight the important areas which will be covered in the discussion. Further questions are welcome.
2. The December 1984 issue of the bulletin (mfcb 108) will be a special issue devoted to TB.
3. Background papers on key areas are being prepared (refer mfcb 106 — report on Sevagram meet). This will be sent out by mid-December. (All those who are interested please send Rs. 10/- by MO).

Those who want to send any written comments on any of the papers are welcome to do so. We shall circulate such comments if received before 10th January 1985.

(There will be no reading of papers at the meet-only small group and plenary discussions).

Boarding & Lodging

Room/dormitory type accommodation will be available. Simple meals will be provided. Charges will be kept to a minimum. Further details about the arrangements will be sent out to the participants later.

Travel arrangements and registration

Participants will have to pay for their own travel as usual. For return reservation please inform the mfc office at the earliest. Late informers may not get return reservations.

Write to MFC OFFICE immediately regarding participation, travel arrangements, suggestions for the meeting and any other requests/queries regarding the annual meet.

What you can do

Here is a check list of questions and issues to stimulate your thinking as a preparation for the annual meet in January 1985. Write to us if you have more questions! The list is not exhaustive but covers the important areas identified at the Wardha Meeting.

Understanding the situation

1. What is the extent/magnitude of the TB problem in India?
2. What are the epidemiological, socio-economic, political, cultural factors responsible for the situation?
3. What is the situation of TB in the following special regions in the world and why?
   i. Developed countries;
   ii. Socialist countries
4. What is the situation of TB in the States of Kerala, Gujarat, Maharashtra, Karnataka, others and why?
5. What is the situation of TB in the following special groups and why?

   a. tribal populations; b. hill populations;
   c. refugee groups; d. factory workers;
   e. socially disadvantaged groups; f. women;
   g. children; and h. the aged

Assessing awareness

1. What is the awareness/knowledge/attitude to TB among the following groups in society?
   a. villagers; b. slum dwellers;
   c. tribals; d. factory workers & unions;
   e. teachers and students;
   f. educated elite;
   g. policy makers/administrators;
   h. media people; i. any others.
2. What is the awareness/knowledge/attitude to TB among the following medical groups in society?
   a. medical profession;
   b. nursing profession;
   c. health workers;
   d. general practitioners;
   e. non-allopathic practitioners;
   f. voluntary agencies.

Understanding Technicalities

1. Understanding the methods of investigation and case finding and management and follow up from
   i. NTP's point of view
   ii. patient's point of view;
   iii. cost factor—to health service and to patient
2. Understanding the regimes of treatment — by rationale, socio-cultural acceptance, efficacy, toxicity, patient compliance, relapse rate, resistance, cost.
3. Understanding the problem of childhood tuberculosis and extra pulmonary TB. How important? What magnitude? How usually tackled?
4. What is the status/effectiveness of BCG immunization?

Discovering bottlenecks

1. What is the dynamics of anti-tuberculosis drugs in India? Production; distribution; medical advertising; cost factor; availability; usage; professional acceptance; patient compliance.
2. What is the status of TB in medical/nursing/paramedical education?

— how is subject covered in present curricula?
— approach, emphasis and course content.
— what are the lacunae, wrong emphasis?
— what are the suggestions for change?

3. What are the existing educational/awareness building efforts in government/non-government and voluntary tuberculosis programmes? How effective?

Understanding the health system

1. How does the NTP function at the state/regional/taluk/phc level?
— what is the local experience?
— what are the problems —conceptual/technical/at field level?
2. What is the role of —
   i. general practitioners
   ii. private health system — hospitals and nursing homes
   iii. voluntary agencies
   iv. non-allopathic systems

Discovering new approaches

1. What new/alternative approaches can be used for tackling TB problem?
2. How can people's movements/trade unions/consumer groups/media be harnessed in TB Programme?
3. How can non-allopathic systems be involved?
4. What are the relevant areas of research in TB?
— technical; field practice; communication;

1. Reflect on these questions in the light of your own field experience.
2. Apply some of these questions to your own area/project/taluk/city and discover the field reality of the TB programme.
3. Interview some PHC staff, DTP staff, general practitioners, health teams of voluntary agencies in your area and get important/relevant feed back

Selected Reading

I. From the National Tuberculosis Institute, No. 8 Bellary Road Bangalore-560003.

1. Banerji, D: Public Health Perspectives in the formulation of the National Tuberculosis Programme of India, 18, 50, 1983.
2. Chandrasekhar P and Kurthkoti, AG: Tuberculosis Situation in India—Epidemiological features
3. Seetha, MA: Epidemiological Data of Tuberculosis
4. Gothi, GD: Evolution of the National Tuberculosis Programme, 18, 22, 1981.
5. Baily GVJ: The Efficacy of BCG Vaccination — A brief Report of the Chinglepet BCG Trial, 17, 108, 1980.
6. Aneja KS: Chemotherapy in National Tuberculosis Programme, 19, 58, 1982.
7. Aneja, KS: Short Course Chemotherapy — Retrospect and Prospect,
8. Some Practicable short course drug regimens for chemotherapy of tubercuosis.

II. From the Voluntary Health Association of India, C-14 Community Center, Opp. IIT Main Gate, SDA, New Delhi 110016.

1. Mira Shiva: Towards Rational TB care — A continued commitment.
2. Mira Shiva: The BCG Story
3. Banerji, D: Voluntary Agencies and India's National Tuberculosis Programme
4. Health for the Millions, Vol X No. 2, April 1984 Tuberculosis Special Issue.

We mourn the death of our Prime Minister Smt. Indira Gandhi and the hundreds of innocent lives that have been lost in the spate of violence that erupted in the past few weeks.

III. Other Sources: Indian Journal of Tuberculosis

1. Baily GVJ: Tuberculosis Control in India — Current problems and possible solutions, Vol. XXX, No. 2, April 1983, Pp. 45-56
2. National Tuberculosis Institute: An operational study of alternative methods of case finding for tuberculosis control, Vol. XXVI, No. 1, January 1979, Pp. 26-34
3. Nagpaul, DR: District Tuberculosis Control Programme in Concept and Outline, Vol. XIV, No. 4, Pp. 186-198
4. Baily GVJ: Present Status of Immunization against Tuberculosis (Review Article), Vol. XXVIII, No. 3, July 1981, Pp. 117-125.

Other Indian Journals

1. Nagpaul, DR: Tuberculosis in India — A Perspective, Vol. 71, J Ind Med Assoc., No. 2, July 16, 1978, Pp. 44-48.
2. Srikantaramu et al: An Operational Model of the District Tuberculosis Programme, Ind. J. Pub. Health, Vol. XX, No. 1, Pp. 3-8

WHO Sources

1. Banerji, D & Stig Anderson: A Sociological Study of Awareness of Symptoms among Persons with Pulmonary Tuberculosis, Bull. Wld Hlth Org., 29, 1963, Pp. 665-683
2. Stig Anderson & Banerji, D: A Sociological inquiry into an urban tuberculosis control programme in India, Bull. Wld Hlth Org. 29, 1963, Pp. 685-700
3. National Tuberculosis Institute, Bangalore: Tuberculosis in a rural population of South India: a five year epidemiological study, Bull. Wld Hlth Org, 51, 1974, Pp. 473-488.

Papers mentioned in 'III. Other Sources' are available in most of the medical college libraries. They can also be obtained from the National Tuberculosis Institute, No. 8 Bellary Road, Bangalore 560003 on request.

108 medico friend circle bulletin

DECEMBER 1984

Discussing Tuberculosis Control – Why?

— Anant Phadke, Pune

(In the coming XIth Annual Meet of the Medico Friend Circle at Bangalore, we would be discussing various issues concerning tuberculosis control in India. The question is so vast that it is impossible to have any useful discussion unless we define the focus of the discussion. In my view, the purpose of discussing any issue in mfc needs to be clearly thought of and agreed upon. In this note, I would argue what in my view would be the appropriate purpose of the discussion at the mfc annual meet. This note would inevitably involve a discussion on the role of mfc.)

Role of discussion at the annual meet

Let me first quickly put forth a consensus that we had reached about the general role of the discussion at the annual meet. It was thought that there is a definite section within medicos and non-medicos in India who already have a perspective similar to that of mfc or who could come to mfc, if there is adequate contact and dialogue. Different individuals in this section are more interested in specific aspects of the health system in India. If mfc takes up various issues in different meetings, then those individuals with specific interests in these subjects would come closer to mfc and may join us. Secondly such discussions would help us, the mfc members, to enrich our knowledge and perspective of the health problems in India through well planned discussions with the help of resource persons outside mfc; and mfc in turn would hopefully make some impact on the new participants during the course of these discussions. Fine enought But all this does not specify what specific kind of knowledge we want to gain and generate through these discussions; whether and in what way would the discussions be different from the discussions in the academic or established circles of community health.

Specificity of mfc

To answer this question, let us go back to the origins of mfc, the kind of discussions we have had so far and the debate on 'mfc — which way to go' carried through the pages of the bulletin and reprinted in our anthology — HEALTH CARE WHICH WAY TO GO? I would also like to remind readers of the Centenary issue of the mfc bulletin No. 100-101 (May-June 1984) where the contributors had taken a somewhat critical overview of what the mfc has achieved, not achieved and what challenges we face today. It is not possible to go through the history of mfc in this note. I would only point out two specific characteristics of mfc which are reflected in all these writings. One, its concern for Social Revolution. At least the core members of mfc have been very concerned about this and hence the articles in mfc bulletin have been quite critical about the existing health system and the debate 'mfc which way to go?" was centered around how mfc could contribute to fundamental socio-economic-political (S-E-P as Abhay Bang had put it then) change. The second characteristic has been the critical and questioning attitude of mfc members:

— critical of new 'solutions'/strategies put forward by the establishment and the community health enthusiasts (this critical outlook partly reflects the grass root village level at which many mfc members work)

— critical (admittedly to a lesser extent) about mfc's achievement and

— of late, critical about the existing prescriptions of community medicine.

INSIDE

The 'MARD' Strike – A View Point

-- Sanjay Nagral, Bombay

The twenty-eight day long strike by resident doctors, interns and medical students all over Maharashtra to protest against the opening of three capitation fee based medical colleges ended a few months ago. The withdrawal of the strike on just a no-victimisation assurance was regarded by many as total surrender. Two of the capitation fee medical colleges have already opened since then and plans have been announced for many more. In that sense the strike was a failure. It was, however, unique in many senses. For example, it was the first time that the M A R D (Maharashtra Association of Resident Doctors) was going on an indefinite strike for an issue other than pay rise. It is important to analyse the various aspects of the strike not just because there is a lot of ground for criticism but more importantly to make us better equipped to react to such struggles in the future. As the interns' representative on the central committee of MARD and on the negotiating team, I had the opportunity to have a close look at the events during the strike, and in this article, I shall try to analyse some of them in the light of its failure.

First of all a few facts about the strike. On the twenty second of June a one day token strike was observed by resident doctors, interns and medical students all over Maharashtra as a mark of protest against the government's decision to permit the opening of three capitation based colleges at Karhad, Satara and Pravaranagar in the State. A delegation of the MARD was literally dismissed by the Chief Minister who refused even to discuss the issue. A decision was then taken to launch an indefinite strike from the tenth of July, the call for which was given by the MARD. The strike action by around 4500 residents was joined right from the start by around 1500 internees and later by around 8000 medical students. It lasted for 28 days and was withdrawn on the 6th of August with just a no-victimisation assurance from the government.

The origin of many of the drawbacks of the strike and of its eventual failure lay in the fact that the leadership of the MARD never understood or analysed the politics behind the opening of capitation colleges. The government's arguments in favour are too nonsensical and ridiculous to merit discussion. The fact remains that this was and is a political move by the government to satisfy the powerful sugar barons (and their children), earn quick cash and at the same time build a pseudo 'pro-rural poor' image. The desperate haste with which some of these colleges were started, flouting all routine norms, the panic on the government's part after the court case was filed, showed that the government had a lot at stake in these institutions. The crude effort to break the strike by offering personal bribes and favours to some of the leaders, proved this even more. And if the MARD leadership hoped that the government would revoke the decision (which meant displeasing people with the clout and money) in response to the protest of a small section of the medical community they were hoping for too much.

Political moves have to be fought politically and by political forces. And with the present strength of the ruling classes and their parties and their total grip over the various state agencies, agitations many a times are likely to end up wresting concessions of varying degrees rather than changing decisions. It was with this understanding that some of us from K.E.M. MARD were proposing the idea of negotiating with the government over the percentage of seats to be kept on genuine open merit basis. In fact at one stage, the government was ready to do so. What was dismissed as a 'compromise' was in fact a tactical move keeping the reality of the situation in mind.

A protest against capitation fees means a protest against the right of the government to make education a privilege of the rich and the moneyed. But when a government is a puppet in the hands of the capitalists, landlords and merchant class, it ultimately implies a clash with the strength of the ruling classes. This will necessarily have to involve large sections of the masses, for whom even simple medical education is a dream, for it to succeed. It was these political realities that the MARD leadership failed to grasp. Although the strike did teach quite a few lessons in cunning, ruling class politics, by and large the attitude of the leadership remained immature and at times even opportunist. And not in a few instances was this not due to innocence but a genuine desire for fast popularity and personal gains.

To begin with, was the total lack of preparation and ground work for such a big struggle. Many assumed that just residents striking work and paralysing public hospitals would bring the government down to its knees. That in the past, the demand was always a small pay rise, was totally forgotten. Then, there was the total lack of effort (except by some sections) to involve the medical fraternity as well as other sections in the struggle. It was not surprising that many senior doctors and their organisations although generously offering a lot of sympathy refused to join the strike. Most of them are so well entrenched in the profession and have so readily accepted to be a part of a corrupt and wretched medical system that to take such a step would be to invite the wrath of the very government to whose tune they dance. The classical example was of the IMA many of whose office bearers although openly supporting the strike refused to criticise the health minister or take action against her as a president elect

(*Continued on page* 8)

Dear Friend. . .

In the last few months we have often been asked about mfc's stand on the MARD strike. This has been easy enough to answer, because as far as we know mfc has no opinion on the issue. But this has generated other questions which we would like to verbalise here.

In the last year there have been at least three long drawn out actions by doctors (West Bengal, Orissa and Maharashtra). Their demands were not only for better pay and working conditions but for better health care, adequate facilities and drugs; and in Maharashtra, specifically, against the opening of capitation fee medical colleges. Why have these actions never been discussed in the mfc?

Part of the reason is of course that those of us who could have raised the issue, haven't. But this reluctance itself tells a story. In fact, until the question of mfc's standpoint was persistently asked, we had subconsciously thought of these issues as peripheral to mfc's main objectives and interests. But are they?

mfc's avowed concern is with the health care-system and the practice of medicine. As we read it, mfc has always interpreted it as wholly discarding the hospital-based established system of health care and seeking alternatives in the delivery of such care. Logically then, issues such as better working conditions of doctors, or better quality of health care through the existing systems appear to fall outside mfc concerns. What is here ignored is that the existing system will not be replaced now or for some time, and it is in fact being enlarged. So issues of the hospital as workplace, and those concerning the quality of health care become relevant, current and even burning issues. And the MARD strike took up, ironically enough, issues very much in the realm of mfc's major concern — medical education. (For the moment it is sufficient to consider only doctors' agitations, mainly because mfc despite its statements to the contrary, unfortunately tends to be very much medico-oriented.)

We do not think it is a sufficient argument to state that there was not enough information to either discuss or assess the issue or even raise it in the bulletin. The West Bengal strike had ended just before the CINI Meet and the MARD strike has received more press coverage than any other previous strike, perhaps.

All this makes one wonder: Is mfc's professed role of 'thought-current' leading to a lot of fence-sitting? Are we perhaps so preoccupied with long term change that we are missing opportunities of making our considerable presence felt where it would matter? Are we in fact, become so profoundly involved with seeking limited alternatives that we are opting out of mainstream issues?

Many friends from mfc have been involved with providing workable and successful alternatives at the local level in various ways. But isn't it necessary to make these activities of 'model building' at a local area an integal part of all the struggles for better health and for changes in the existing health care system? Only such a perspective can make us more sensitive to the struggles of people within the health care system.

Secondly, the last few years have seen various groups in the country take up health issues in their own areas of work (eg., women's movement, and to a lesser extent, trade unions and the anti-nuclear movement). What has been mfc's involvement and contribution to these movements? Is it not time that we became more than a 'thought-current'?

May we suggest that some of these issues as well as the questions raised in Anant's article (100-1) be taken up at the GB Meet in January?

Yours sincerely,

Padma Prakash & Amar Jesani

Since I am more than aware of the deep concern that mfc has for health issues, I would like to make a few points here:

1. There is a dire need to pursue criticism of existing medical education and suggest alternatives. There needs to be more follow up of another issue-that of RMPs and ayurvedic and homeopathic practitioners using allopathic drugs and vice versa. Both these issues are inter-related.
2. The mfc members need to increasingly respond to important issues like the resident doctors strike in July-August 1984 and the mill workers strike in Bombay.
3. A group of young doctors tried to educate the general public regarding the politics underlying capitation fee medical colleges by way of writing letters to capitalist press and also directly addressing workers' meetings. The same group of doctors had conducted free medical OPD for striking mill workers and made it a point to discuss politics and economics with workers. This was definitely an eye opener in many ways for the young doctors also. They could more than understand the problems of the working class and realised the lack of relevance of present day medical education to the social problems.
4. The same group of doctors also made several visits to the blind school and made themselves available for reading progressive literature, story books, curricular books for the blind students.
5. These doctors visited certain working class localities in the suburbs of Bombay, conducted free OPDs and also started circulating libraries constituting progressive literature.
6. In conclusion, all the issues related to health being our primary concern, we must keep live contact with working class activities, schools, colleges and various other institutions, wherever we can work. mfc members should

(*Continued on page* 8)

Editorial note

In January we meet to explore the various dimensions of the problem of Tuberculosis and TB control within the context of Indian social reality.

Why are we discussing Tuberculosis and its control? Binayaks paper in mfcb 105 highlighted some problems and issues. Anant Phadke's lead paper in this issue goes into this question in greater detail within the overall perspective of the medico friend circle. Warning us of the false limitations that the existing socio-political system thrusts on us, in our attempts to evolve alternative and more people-oriented strategies he outlines the various areas we could/should discuss during the meet.

Some excerpts from reports/papers by various experts in the country gives additional background to the situation of Tuberculosis and its control in the country. The readers are reminded of the reading list and the check list questions in mfcb 107-supplement. Hope these will stimulate your preparation for the meet?

The Annual Meet is also an opportunity to critically evaluate mfc's role and direction. Apart from Anants paper, the report on MARD strike and the dear friends letters raise many relevant issues which could well be the starting point for such an exercise in introspection.

(Continued from page 6)

of the IMA. There is no doubt, however, that if the senior doctors had joined the strike, the impact would have been much greater because of the total paralysis of even the skeleton emergency services that would have ensued.

Excessive faith and hope was placed by many in the legal system to give a favourable decision. The counsel for MARD bared it all very early when he bluntly told us that the case against capitation colleges was strong only as far as the 'standard of education' part was concerned. That this legal system does not consider 'capitation' as illegal and unconstitutional was apparent in the court's verdict also. In fact this 'standard of education' ploy was used time and again by the government during the negotiations to trap us into discussing something irrelevant. The minister would go to extreme lengths to point out how the standards were being maintained and some of the MARD leaders would very obligingly deviate from the issue of capitation.

Mention must be made here of the role of the KEM unit of MARD, for here a definite attempt was made to broaden the base of the struggle. The mass contact programme, street plays, public meetings and parallel out patient departments, were all efforts to take the issue to the public Meetings of trade unions and student organisations were held to chalk out a more broad plan of action. It would be appropriate to mention that very few trade unions responded to the invitation and those who attended showed extreme lethargy to take any concrete action. Thus, what was an excellent opportunity for the working class movement to fight for a genuine issue was lost. The gherao of an ENT Surgeon from Bombay was deliberately planned to prove that members of the profession who associated themselves with these colleges should be exposed and attacked.

Two of the colleges have since then opened with a lot of fan fare. Many more are being proposed. These will start sprouting up with regular frequency, closely competing with engineering institutions. The fight therefore will have to be a prolonged one. Organizations like the MARD cannot and should not fight such struggles alone. This is the work of mass organisations, trade unions and working class parties. Science movements and organisations like the medico friend circle must take up such issues. Always keeping in mind however that it is the symptoms of a wretched and rotting economic structure that are being manifest, time and again. It should also be borne in mind that non-capitation 'open merit' education although apparently giving equality of opportunity is heavily loaded in favour of the rich and the moneyed. This is especially true of higher education. This is not very surprising since it is the moneyed who rule. Capitation fees is just a more vulgar and crude form of a degrading but crumbling system. The only way to put a permanent stop to such terrible obscenity is to strike at the roots of the disease. Such struggles however have to be fought and if fought with the right perspective can contribute a lot in this direction.

(*Continued from page* 7)

not remain away from any socio-political struggle because it strengthens capitalists. Atleast mfc members can act as conscience keepers for existing political parties if mfc cannot and is not able to function as a political party.

— *Shriniwas Kashalikar, Bombay*

Views and opinions expressed in the bulletin are those of the authors and not necessarily of the organisation.

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ಮಾರ್ಪಡಿತ ಕುಷ್ಠರೋಗ ನಿರ್ಮೂಲನಾ ಆಂದೋಳನ 1998

20-4-98 ರಿಂದ 25-4-98

ರಾಷ್ಟ್ರೀಯ ಕುಷ್ಠರೋಗ ನಿವಾರಣಾ ಕಾರ್ಯಕ್ರಮ

ಕುಷ್ಠರೋಗವು ಒಂದು ಪ್ರಾಚೀನ ಕಾಯಿಲೆ. ಈ ರೋಗವು **ಮೈಕ್ರೋಬ್ಯಾಕ್ಟೀರಿಯಂ ಲೆಪ್ರಾ ಬ್ಯಾಸಿಲೆ** ಎಂಬ ರೋಗಾಣುವಿನಿಂದ ಬರುವ ಕಾಯಿಲೆ. ಆದರೂ ಈ ರೋಗದಿಂದ ಉಂಟಾಗುವ ಅಂಗವಿಕಲತೆಯಿಂದ ಈ ರೋಗಕ್ಕೆ ಸಾಮಾಜಿಕ ಕಳಂಕ ಅಂಟಿದೆ. ಕುಷ್ಠರೋಗವು ಮುಖ್ಯವಾಗಿ ನರ ಮತ್ತು ಚರ್ಮದ ಕಾಯಿಲೆ.

ಕುಷ್ಠರೋಗದ ಪ್ರಾರಂಭಿಕ ಲಕ್ಷಣಗಳು

1. ಸ್ಪರ್ಶಜ್ಞಾನ, ನೋವು, ನವೆ ಇಲ್ಲದ ತಿಳಿ ತಾಮ್ರ ಅಥವಾ ಬಿಳುಪಾದ ಮಚ್ಚೆಗಳು
2. ಕೈಕಾಲುಗಳಲ್ಲಿ ಜೋಮು ಉಂಟಾಗುವುದು.
3. ಮುಖ ಅಥವಾ ಕಿವಿಯ ಚರ್ಮದ ಮೇಲೆ ಗಂಟುಗಳು ಕಾಣಿಸಿಕೊಳ್ಳುವುದು ಮತ್ತು ಎಣ್ಣೆ ಸವರಿರುವಂತೆ ಚರ್ಮ ಕಾಣಿಸುವುದು.

ರೋಗದ ಹರಡುವಿಕೆ

1. ಈ ರೋಗದಲ್ಲಿ ಸಾಂಸಾರ್ಗಿಕ ಹಾಗೂ ಅಸಾಂಸಾರ್ಗಿಕ ಎಂಬುದಾಗಿ 2 ವಿಧಗಳಿವೆ. ಒಟ್ಟು ರೋಗಿಗಳಲ್ಲಿ ಶೇ. 20 ರಷ್ಟಿರುವ ಸಾಂಸಾರ್ಗಿಕ ರೋಗಿಗಳಿಂದ ಈ ರೋಗ ಹರಡುತ್ತದೆ.
2. ಈ ರೋಗವು ಶ್ರೀಮಂತರು-ಬಡವರು, ಹೆಂಗಸರು-ಗಂಡಸರು, ವಿದ್ಯಾವಂತರು -ಅವಿದ್ಯಾವಂತರು, ಹಳ್ಳಿ-ಪಟ್ಟಣ ಎಂಬ ಬೇಧಭಾವವಿಲ್ಲದೆ ಯಾರಿಗಾದರೂ ಬರಬಹುದು.
3. ಈ ರೋಗವು ವಂಶಪಾರಂಪರ್ಯವಲ್ಲ.
4. ಈ ರೋಗವು ಪಾಪ-ಶಾಪಗಳಿಂದ ಬರುವುದಿಲ್ಲ.

ರೋಗವನ್ನು ತಡೆಗಟ್ಟುವ ಬಗೆ

1. ಮಚ್ಚೆಗಳನ್ನು ಗುಪ್ತವಾಗಿರಿಸದೆ ವೈದ್ಯರಿಗೆ ತೋರಿಸುವುದು.
2. ರೋಗದ ಪ್ರಾರಂಭಿಕ ಹಂತದಲ್ಲಿ ಚಿಕಿತ್ಸೆ ಪಡೆಯುವುದು.
3. ಈ ರೋಗವನ್ನು ಬಹು ಔಷಧಿ ಚಿಕಿತ್ಸೆಯಿಂದ ಸಂಪೂರ್ಣವಾಗಿ ಗುಣಪಡಿಸಬಹುದು. ಈ ಬಹು ಔಷಧಿಯು ಎಲ್ಲಾ ಸರ್ಕಾರಿ ಆಸ್ಪತ್ರೆಗಳಲ್ಲಿ ಉಚಿತವಾಗಿ ದೊರೆಯುತ್ತದೆ.
4. ಚಿಕಿತ್ಸೆಯು ಸರಳ. ಅವಧಿ ಕೇವಲ 6 ಅಥವಾ 12 ತಿಂಗಳು ಮಾತ್ರ. ಮನೆಯಲ್ಲಿಯೇ ಚಿಕಿತ್ಸೆ ಪಡೆಯಬಹುದು.
5. ಒಂದೇ ಮಚ್ಚೆ ಇದ್ದರೆ ಕೇವಲ ಒಂದು ದಿನ ಚಿಕಿತ್ಸೆ ಮಾತ್ರ.
6. ಕುಷ್ಠರೋಗಿಗಳನ್ನು ಸಮಾಜಬಾಹಿರರನ್ನಾಗಿ ಮಾಡದೆ, ಅವರನ್ನು ಇತರೆ ಸಾಮಾನ್ಯ ರೋಗಿಗಳಂತೆ ಭಾವಿಸುವುದು.
7. ಕುಷ್ಠರೋಗದ ಬಗ್ಗೆ ಸರಿಯಾದ ಮಾಹಿತಿಯನ್ನು ತಿಳಿದು ಜನಸಾಮಾನ್ಯರಿಗೆ ತಿಳಿಸುವುದು.

"ಬಹು ಔಷಧಿ ಚಿಕಿತ್ಸೆ ಪಡೆಯಿರಿ" ಕುಷ್ಠರೋಗವನ್ನು ತೊಲಗಿಸಿರಿ

ದಿನಾಂಕ **20-4-98** ರಿಂದ **25-4-98** ರವರೆಗೆ ರಾಜ್ಯಾದ್ಯಂತ ಮಾರ್ಪಡಿತ ಕುಷ್ಠರೋಗ ನಿರ್ಮೂಲನಾ ಆಂದೋಳನ ಕಾರ್ಯಕ್ರಮ ಹಮ್ಮಿಕೊಳ್ಳಲಾಗಿದೆ. ನಿಮ್ಮ ಮನೆಗೆ ಸಮೀಕ್ಷಕರು ಬಂದಾಗ ಸಹಕರಿಸಿ ಪರೀಕ್ಷಿಸಿಕೊಳ್ಳಿ, ಕುಷ್ಠರೋಗ ನಿರ್ಮೂಲನಾ ಕಾರ್ಯಕ್ರಮದಲ್ಲಿ ನೆರವಾಗಿ.

卐 ಎಶ್ವೇಶ್ ಇಂಪ್ರೆಷನ್ಸ್, ಕೆಂಗೇರಿ ಉಪನಗರ ☎8430421 卐

Combating TB

The World Health Organisation's announcement of a breakthrough in the treatment of tuberculosis is of particular significance to India, which has 15 million or a third of the world's TB patients. The new treatment will prevent at least 10 million deaths from the disease over the next decade. For years now, warning bells have been sounded on the growing incidence of TB in fatal conjunction with AIDS. With four lakh people dying of TB every year and three million HIV positive cases reported, the government has responded by seeking to implement a number of unviable strategies. One of these is the proposal to monitor the progress of individual TB patients undergoing treatment, overlooking the fact that there is a severe shortage of health workers. TB in India cannot be tackled solely as a health problem but must be treated as a symptom of a socio-economic malady. Overpopulation and unsanitary conditions are the main causes for the spread of the disease, to which the urban poor are particularly vulnerable living as they do in congested tenements lacking in basic civic amenities. The situation can only get worse in the years to come with the urban population density increasing; the past three decades have seen a phenomenal growth rate of 360 per cent. To make matters worse, there is a growing incidence of multi-drug resistant TB. The health authorities are still in the dark as to the best combination of drugs to counter this new killer strain of the disease. The theory that patients put themselves at risk by not completing the full course of treatment is valid. But in many cases, victims of the disease have no access whatsoever to any form of treatment because of the prohibitive cost coupled with a non-existent public health care system.

No magical remedies or new strategies are required to halt the onslaught of the virulent strains of communicable diseases that are killing or incapacitating people today. What has to be overcome is the unconscionable apathy of the health authorities who act only in reaction after a full blown epidemic has broken out. The national disease surveillance and response system set up with much fanfare has failed to break the vicious cycle of morbidity and mortality. No new prescriptions are needed; we already know the answers; shift the accent from curative to preventive health care and make efforts to create a cleaner environment in which disease cannot thrive. This cannot be done unless civic amenities are strengthened and a great deal more than the current niggardly six per cent of the GDP is allocated to health. Photo opportunistic politicians taking to the streets with brooms every now and again or administering polio drops to babies make a mockery of the grievous health threats that the country faces. The 'health for all by 2000' slogan so casually tossed about has become totally meaningless today. The primary health centres which are meant to be at the vanguard of the initiative are so ill-equipped or so inaccessible that they have ceased to matter. In such a situation, it may be a while before the WHO breakthrough has an impact here.

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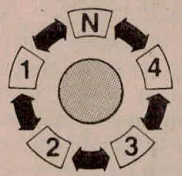

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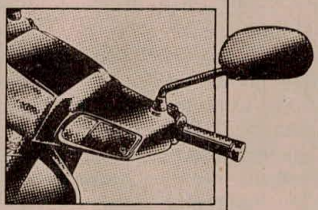

Unique 'City Clutch'.
Your right hand wouldn't know that the left is doing nothing.

for travel expenses; and to OXFAM and the Leeds Philosophical and Literary Society for grants.

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Book Review

A Family Guide to HIV and AIDS in India. Clive Wing, Shankar Chowdhury. Popular Prakashan, Bombay, 1994, *81 pp, Rs 35.*

This small but excellent book provides straightforward and comprehensive information, using a question and answer format, on HIV/AIDS and its prevention, with a special emphasis on India.

The book is organized into seven chapters covering the various clinical and social aspects of HIV/AIDS. It also provides guidance on prevention and suggestions for care and support of those already infected. The history as well as the current situation of the HIV/AIDS epidemic worldwide and in India has been presented and common misconceptions explained. The guide personalizes the information for families in India, presenting suggestions on talking to children about HIV/AIDS and for realistic assessment of one's own risk of infection.

The book avoids the use of euphemisms so commonly employed when discussing sensitive subjects. It provides clear, accurate and practical information on commonly asked questions and those that are not even asked. This will help readers to protect themselves and others from HIV infection.

A list of names and addresses of sources for additional information is also provided. However, the names and addresses of several important Indian organizations such as the Voluntary Health Association of India which produces HIV/AIDS information material in a variety of formats and languages, and the National AIDS Control Organization are missing from the list.*

An additional small, but important fact which could be included in the section on condoms and their use is that unadulterated glycerine (with no additives such as colour or scent) is a safe and cheap water-based lubricant. It is available with most chemists and can be used instead of the much higher priced, and frequently unavailable, K–Y jelly.

Reasonably priced at Rs 35, the book should prove an excellent reference for its target readers comprising parents, youth, AIDS awareness and prevention groups, and professionals such as teachers, doctors, nurses and social workers. The only criticism of this book is that it is written in a professional language which may be a barrier for many potential readers also in need of this important information.

NANCY JAMIESON
Calcutta

* *The addresses of these organizations are: Voluntary Health Association of India (VHAI), 40 Institutional Area, New Delhi 110016 and National AIDS Control Organization (NACO), Red Cross Building, 1 Red Cross Road, New Delhi 110001.*

—Editor

Table. I. Composition of some of the anti-tubercular 'kits' available in the Indian market

Brand name	Composition
AKT-4	1 capsule of rifampicin 450 mg 1 tablet of ethambutol (800 mg) and isoniazid (300 mg) 2 tablets of pyrazinamide 750 mg
Isorifazin	Each capsule contains: Rifampicin 225 mg Isoniazid 150 mg Pyrazinamide 500 mg
Isorifazin S	Each tablet contains: Rifampicin 450 mg Isoniazid 300 mg Pyrazinamide 1000 mg
Isorifazin forte	Each tablet contains: Rifampicin 300 mg Isoniazid 200 mg Pyrazinamide 750 mg
Macox-ZH	Each capsule contains: Rifampicin 225 mg Isoniazid 150 mg Pyrazinamide 750 mg
Montorip Tricox	Each capsule contains: Rifampicin 150 mg Isoniazid 100 mg Pyrazinamide 500 mg
Rimactazid-Z	1 tablet of rifampicin (450 mg) and isoniazid (300 mg) 2 tablets of pyrazinamide 750 mg
Rifacom-EZ	2 tablets of pyrazinamide 750 mg 1 tablet of ethambutol 800 mg
Zucox kit	1 tablet of rifampicin 450 mg 1 tablet of isoniazid 300 mg 2 tablets of pyrazinamide 750 mg
Zucox E	1 tablet of rifampicin (450 mg) and isoniazid (300 mg)

possible for anyone to remember the variable composition of these 'kits'. Further, the combinations of tablets/capsules in these 'kits' also vary, with some containing rifampicin and isoniazid and others containing isoniazid and ethambutol. Therefore, the prescribing physician may not be sure whether the patient is taking the correct drugs in optimal doses. It may be argued that every physician must familiarize himself with the 'kits' he is prescribing. However, a study conducted in India has clearly shown the multitude of regimens (many of them inadequate or inappropriate) used by physicians in the treatment of tuberculosis.[4]

Further, the patient may consult another physician, who may not be familiar with the composition of the 'kit' being taken. There is a good chance that with these 'kits' the patient is not being optimally treated and, therefore, may not respond to therapy due to the development of resistant strains, which defeats their very purpose.

In view of the above facts, we strongly feel that the Drug Controller of India should regulate the composition of the 'kits' (which could be used according to the weight of the patient). These could be as follows:

1. For patients weighing <35 kg: 300 mg rifampicin, 200 mg isoniazid, 1000 mg pyrazinamide and 800 mg ethambutol.
2. For patients weighing 36–50 kg: 450 mg of rifampicin, 300 mg of isoniazid, 1500 mg of pyrazinamide and 1000 mg of ethambutol.
3. For patients weighing 50–60 kg: 600 mg rifampicin, 300 mg isoniazid, 2000 mg pyrazinamide and 1200 mg ethambutol.

5 April 1996

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Polio eradication programme in India

The weekly epidemiological records of the World Health Organization (WHO) and the Central Bureau of Health Intelligence of India (CBHI) were reporting an annual incidence of 10 000–32 000 cases of poliomyelitis during 1974–90. The CBHI data were based on information received from selected hospitals. On the understanding that these data were not representative of the actual number, Basu[1] estimated that less than 1 in 15 cases were reported and that the actual incidence was about 2 lakhs per year.

The total number of cases in India is quoted to be in the range of 3000–5000 per year.[2] A seventy per cent reduction in the number of cases is being claimed, i.e. a decline from 26 000 to 5000 cases. Nobody is quoting the 200 000 figure anymore. Thus, while progress in polio eradication in India is commendable, in view of the 'pulse polio' campaign now being undertaken in the country there are some questions that require clarification:

1. Are these 3000–5000 reported cases only those which have laboratory confirmation? Sokhey in 1992 has stated that laboratory confirmation is not yet widely practised.[3]
2. Are these cases based on the CBHI report alone? Is the extrapolation as done by Basu in 1981 still applicable?
3. Was the extrapolation by Basu wrong? If so, it would imply that the figures were unnecessarily inflated to 200 000 in the 1980s and that the problem of poliomyelitis was not as serious as it was made out to be.
4. Is it possible that because emphasis is now on confirmed polio cases, the other cases of paralysis are being labelled as those of non-polio origin? It is likely that earlier even these non-polio cases were being included in the list of polio cases.
5. What is the present number of cases of paralyses from causes other than polio? This information is important, since after eradication of laboratory-confirmed poliomyelitis, as and when it is documented, it would be vital to determine the exact aetiology and presentation of these non-polio cases, e.g. the differences in clinical pattern of the disease compared with polio. If after declaration of eradication of poliomyelitis, non-polio cases continue to occur, the problem will remain unsolved.

5 April 1996

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The HIV-tobacco theorem

The HIV-tobacco theorem states that 'in terms of risk of death, being a smoker is equal to getting yourself deliberately pricked with an HIV-infected needle, thrice every year.'

The proof:

1. The seroconversion rate following a needle-stick injury from an HIV-positive person is 0.47%.[1] If one were to have 3 such injuries every year, one would face a 1.5% risk of HIV infection yearly, or a 45% risk over 30 years. Since HIV infection is usually fatal within 10–12 years, this would mean a 45% risk of death over 40–42 years. Thus, thrice-yearly HIV-infected needle-pricks would kill 45% of recipients over 42 years.
2. Tobacco kills 50% of its regular users within 40 years.[2]

Therefore, smoking is at least as dangerous as getting yourself deliberately pricked with an HIV-infected needle, thrice every year.

It is time we stop the proliferation of something as dangerous as HIV—the tobacco plant.

25 April 1996

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DIS 4: 18

Medicine and Society

Poliomyelitis in Indian adults

H. V. WYATT

INTRODUCTION

Acute poliomyelitis has been a major problem in India with attention focused mainly on children. However, from several rather limited studies, more than 300 adult cases have been described which suggest that many cases are unreported. How is it possible that when the median age of paralysis is about 12 months, individuals can reach their teens without adequate immunological protection? This paper examines possible reasons for the occurrence of polio in adults in areas where polio virus is ubiquitous.

ADULT POLIO

World War II

In World War II, polio was a serious medical problem among British and American servicemen in the Middle and Far East. It was more common among officers, particularly officer cadets, compared to other ranks.[1] There were more than 96 cases among Indians, an incidence which drew no comment even from the Indian doctors who wrote the official medical histories as it was so much lower than among the British (Table I). Unfortunately, we do not know if there have been cases in the Indian forces since World War II as the annual *Report on the Health of the Armed Forces* does not include polio as a separate section for servicemen.[2]

Other Indian cases

Some cases in teenagers and adults have been reported (Table II), the oldest being 38 years, although I have met an Indian scientist who was paralysed in middle age. Almost all the older cases were reported before 1960, a period when infant mortality was high and probably few children with paralysis reached hospital or survived. In these reports, 1.8% of the cases were more than 9 years of age. After 1958 there was probably only one case over 14 years of age. I have found no cases in the literature since 1978, but it was at this time that the Extended Programme of Immunization (EPI) concentrated on children, with most papers coming from paediatric departments and reported in paediatric journals. Many papers report lameness surveys, which do not include adults. Present reports concentrate on the under-fives only.

Dependants of Indian servicemen

The hospitals of the Indian Armed Forces treating the dependants of servicemen have recorded cases of polio (Table III). However, all sick dependants will not necessarily use the military hospitals. Wives in villages or those far from the nearest military hospital would go to a local doctor. The absence of any deaths among wives may suggest that the most severe cases do not reach hospital and that those who do come after the acute stage has subsided. Small children, on the other hand, may be carried to a hospital when ill. The mortality of nearly 1.7% is close to that for children with polio attending outpatients in large sentinel hospitals.[11] No comparisons are possible as the total numbers of children and wives are not known. The annual report[2] also mentions a few cases attending Family Welfare Centres, but these may duplicate the hospital admissions.

TABLE I. Acute poliomyelitis among servicemen, India Command 1942–6[1]

Year	British*		Indian	Mortality (%)	
	Officers	Other ranks		British*	Indian
1942	18 (1.1)	21 (0.33)	3 (0.01)	31	–
1943	18 (0.8)	17 (0.14)	7 (0.01)	29	43
1944	36 (1.2)	45 (0.36)	15 (0.02)	30	13
1945	64 (1.8)	70 (0.49)	52 (0.06)	28	10
1946	38 (1.6)	47 (0.54)	19 (0.03)	18	5
Total	174	200	96	26.5	11

* includes Indian officers

DIAGNOSIS

Are these adults misdiagnosed or are these real cases of polio? In 1943, the consultant neurologist in India, Brigadier D. McAlpine, reported on the epidemic of polio in Malta where more than 400 children and 57 British servicemen suffered from paralysis. Polio virus had been isolated from post-mortem material injected into primates in Egypt and at the Rockefeller Institute, New York[12] (also post-mortem reports in possession of the author and replies from doctors, nurses and polio victims). In India, cases were seen at military hospitals by British and Indian doctors but on evacuation to the UK, patients were seen by a board of specialists. Specific notes were distributed for differential diagnosis, including acute toxic polyneuritis and infective neuritis and their occurrence in both British and Indian servicemen.[13,14] Many other neurological diagnoses including acute encephalitis lethargica[15] and arsenic poisoning were considered.

Similarly, dependants of Indian Armed Forces officers and men were treated and examined by service neurologists and civilian specialists. After World War II, several important papers on polio among civilians in India were published by Indian Army medical officers.[16]

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TABLE II. Cases of paralytic poliomyelitis in Indians aged 10 or more reported in the literature

Year	City	Total cases	Age (years)	*n*	Comments
1937–41[3]	Madras	279	10–14	24	Age of onset, surgical patients, probably includes Europeans
			15–24	10	
			25–38	6	
1949[4]	Bombay	82*	16–24	2	Both females, 1 pregnant, age 23
			25–30	3	all males
1945–58[5]	Bombay	1310	10–14	17	
			15–19	7	
			>19	25	
1963[6]	Udaipur	75	13	1 girl, died	
1969–71[7]	New Delhi	2316	10	19 boys, 10 girls	
1971[8]	New Delhi	390	11	eldest case	
1974–75[9]	New Delhi	2045	>10	6 boys, 6 girls	
1972–78[10]	Bhopal	489+	25	1 male	
Total		6986		128 (1.8%)	

* these cases may have been included in the totals quoted by Athavale[5] for the Polio Research Centre (PRU), Bombay shown here
+ cases admitted to the Paediatric Department of Kasturba Hospital, Bhopal and the Military Hospital, Bairagarh

TABLE III. Number of admissions for poliomyelitis and polioencephalitis among dependants of officers and other ranks of the Indian Army (1967–91)[2]

Years	Children		Wives	
	Officers	Other ranks	Officers	Other ranks
1967	7 (1)	78 (2)	0	0
1972–78	22 (2)	850 (8)	0	0
1979–80	3 (0)	171 (2)	0	20
1985–89	16 (0)	516 (12)	2	51
1990–91	1 (0)	105 (2)	2	12
Total	49 (3)	1720 (26)	4	83

There were no entries for the year 1968–71 and 1981–84
Figures in parentheses are the number of deaths

DISCUSSION

Indian soldiers were not alone in being attacked by polio; 7 cases occurred among 150 000 West African soldiers serving in Sierra Leone, Nigeria and the Gold Coast from 1940–45. Among West African soldiers invalided from India and Burma one had polio.[17] These soldiers, like the Indian soldiers, came from countries with childhood polio. In adult Africans, however, the disease would seem to be very rare.

Did all these youngsters and adults lack immunity to one type of polio virus, or was their immunity temporarily lowered or overwhelmed? There has been no analysis of social, temporal or other factors which might affect susceptibility in a country where there is constant exposure to the polio virus. Cases of paralysis in children with full immunization have been reported from Vellore,[18] might polio in adults provide clues?

In India where almost all cases of polio occur in children under 5 years and the polio virus is ever present, we might expect that adults would be constantly challenged and have high antibody titres. Fifty-five babies were tested at 6 weeks, when they should have maternal antibodies and be protected.[19] Two-thirds of these babies had no detectable antibody to any of the three types of polio virus. Of 87 babies, the cord bloods of 29% were triple negative. Therefore, in spite of constant exposure mothers have very low titres. One possibility is that constant exposure to infection with polio viruses induces very effective gut immunity and no stimulation of humoral immunity. If this were so, a very heavy infection with a virulent strain might overwhelm the gut immunity, invade the blood stream and establish an infection before enough antibody had been synthesized.

Indian servicemen in World War II had a case-fatality rate of only 11% (Table I), less than half that of the British. Although there will have been some older British officers, most of the servicemen both British and Indian will have been 18–30 years old. The low case-fatality suggests that Indian servicemen might have had some protection against paralysis. There were no deaths among 87 wives of servicemen (Table III) suggesting that these were not acute cases but patients coming for physiotherapy or examination. The reports give a mean stay in hospital for each group, but no other details.

If the immunization programme reduces the passage of the wild polio virus, adults might be left with decreasing gut immunity and any exposure to the wild virus might then lead to paralysis.

All cases of paralytic poliomyelitis in persons over 10 years should be investigated by attempting virus isolation and antibody determination.

We need to know the age, gender, social class, history of injections, of exercise[20] and whether the pattern of muscle paralysis is typical of polio.

I would be pleased to hear from doctors who have experience of cases of polio in adult residents in India.

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Tuberculosis - the continuing scourge of India

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Epidemiological picture of tuberculosis in India is complex with wide variation in the annual risk of infection and prevalence of disease. The concentration of the disease among younger age groups makes tuberculosis a major socio-economic burden in India. The disability adjusted life years (DALYS) is estimated to be around 63 and 46 lakhs of years of life lost in men and women respectively. The burden is likely to increase with HIV epidemic with an increase of cases with dual infection, increase in morbidity and mortality due to tuberculosis. Management of drug resistant tuberculosis is a major hurdle in tuberculosis control and is a major step in cutting the chain of transmission to those with HIV infection, AIDS and immunodeficiency. Development of new therapeutic modalities to address this problem are also urgently required. Poor patient compliance has been the reason for failure of many control programmes. Operational research studies conducted by the TRC have resulted in elucidation of socio-behavioural aspects of patients which need further investigation for remedial measures. Studies to improve drug delivery and to measure the impact of health education and mass media on compliance are areas which need to be concentrated. Newer techniques such as DNA fingerprinting need to employed to improve knowledge of the patterns of transmission in communities. The impact of HIV infection on tuberculosis and the role of chemoprophylaxis in HIV infected individuals in high risk populations, children in close contact with newly diagnosed patients and HIV infected individuals need to be urgently explored. Improved methods for diagnosis of *Mycobacterium tuberculosis* infection must await considerable advance in the understanding of basic immunology, mycobacterial antigenic structure and host-parasitic interaction.

Key words AIDS - BCG - case holding - case finding - controlled clinical trials - DNA finger printing - HIV - multi-drug resistance - operational research - tuberculosis

Tuberculosis has been identified globally as an important health problem and enormous research has been carried out all over the world on the operational, applied and basic aspects of tuberculosis control with special emphasis on epidemiology, with primary objective of monitoring the trend of the disease by effective surveillance and to find effective preventive strategies in the form of chemoprophylaxis and immunoprophylaxis[1]. Several aspects of tuberculosis such as the epidemiology, immunology and pathogenesis still remain unclear while there have been no new drugs for the management of the disease in the last two decades. However, there has been a global resurgence of interest in tuberculosis due to the HIV/AIDS epidemic and the WHO and other agencies have launched a massive research programme to combat the disease.

Prevalence of infection

The tools to measure both infection and disease have remained relatively unchanged for decades. Our current knowledge about infection is based on the tuberculin test which requires well trained personnel and is affected by cross-reactions with other myco-

bacterial infections and BCG vaccination. Multiple risk factors that are associated with the development of the disease have been identified although the natural history of the disease is poorly understood.

The epidemiological situation in India does not appear to have changed significantly over the years since the First National Sample Survey of 1955-58 (ICMR-Tuberculosis in India. A sample survey special reprint series No. 34, Delhi, ICMR, 1-21). A few small scale studies of district population conducted in the rural and peri-urban areas around Bangalore and a longitudinal study with 6 rounds conducted from 1961 to 1981 in 22 villages around Bangalore provide good data on small populations[1]. Similar information is available from the BCG trial population in Chingleput district of Tamilnadu[2].

The National Sample Survey did not include tuberculin skin tests and the annual risk of infection could not be measured directly at that point in time. The prevalence of infection based on tuberculin testing has been shown to be age dependent in the earlier studies carried out by Ukil and Benjamin[3,4] who also showed that, contrary to popular belief tuberculosis was common in rural areas. Frimodt-Moller[5] found that the infection rates in Madanapalle to be 10, 21 and 31 per cent at the ages of 10, 20 and 30 yr respectively. Similar observations have been made in skin test surveys conducted in Dharmapuri district, Tamilnadu and Anantapur district, Andhra Pradesh[6]. These surveys done between 1983 and 1984 showed that the prevalence of infection in children 0-9 yr was 10.1 and 10.4 per cent respectively. In the Chingleput BCG study area, the overall prevalence among all age groups was 50 per cent (54% in males and 46% in females)[2].

Incidence of infection

In the Chingleput study the incidence of infection which was measured in the placebo treated group was 1.75, 2.4 and 4.03 per cent in the 1-4, 5-9 and 10-14 yr age groups respectively at the end of 4 yr of the study[2]. A longitudinal survey conducted by the National Institute of Tuberculosis, Bangalore[7], has provided information on the annual risk of infection of 3.2 per cent. In contrast the three surveys over a 15 yr period, using tuberculin testing conducted in Chingleput district, Tamilnadu, have not shown decreasing trends in annual risk of infection and estimates have been 1.7 per cent in 1969, 1.93 per cent in 1979 and 1.73 per cent in 1984[8].

Prevalence of disease

Passive case finding is the mainstay of case finding in most developing countries. This relies heavily on sputum examination by smear and culture, chest radiography and tuberculin skin testing. The prevalence of disease in the BCG trial area as seen by culture positivity with one sputum sample was 404/100,000 (598 for males and 205 for females)[2]. Studies of prevalence of disease conducted over several rounds of the longitudinal study of the National Tuberculosis Institute (NTI), Bangalore, in the surrounding areas have shown that the overall prevalence of smear and culture positive tuberculosis has apparently remained constant[9]. But there has been a marked decline in smear positive tuberculosis and this is attributable to different screening methods used in the 1984-86 survey than in the previous rounds. This could have resulted in the increase in the number of smear negative culture positive cases detected.

In surveys I to IV conducted by NTI, the entire population over 5 yr of age was X-rayed and those with suspicious X-ray had sputum bacteriology done. However, in the 1984-86 survey, the population (10-44 yr of age) had skin tests and those with positive reaction 10 mm with PPD had sputum bacteriology done while the entire population over 45 yr of age had sputum bacteriology done. Thus, sputum bacteriology was performed on a much larger population in this recent survey. The decline in smear positive prevalence closely parallels the decline in annual risk of infection measured in the same population lending support to the hypothesis that in the area around Bangalore tuberculosis has been declining[6]. Contrary to the finding of NTI surveys in Bangalore area, the Tuberculosis Research Centre (TRC) surveys on small scale in the districts of North Arcot in Tamilnadu and Raichur in Karnataka States have shown total bacteriological prevalence of 430 and 1090 per 100,000 respectively[10]. The sputum examination in these surveys was conducted using Ziehl Neelsen stain and fluorescence microscopy on two

samples of sputum, and culture examination. These small scale studies illustrate the wide range of prevalence rates within India with potential for the occurrence of extremely high annual risk of infection in some areas such as Raichur district.

Thus, epidemiological picture of tuberculosis in India is of a complex nature with wide variation in the annual risk of infection and prevalence of disease. Hence it is felt essential that the level of risk of infection state-wise be determined in order to understand the epidemiology of tuberculosis in the Indian context and to monitor the control programme by well designed surveillance studies. The National Sample Survey and the Tuberculosis Research Centsurveys have clearly brought out the age distribution of the disease and its concentration among the younger age groups which are considered as the most productive segment of the population similar to the situation in most developing countries. The unique age-distribution of tuberculosis makes it as a major socio-economic burden in India.

Tuberculosis and women

It would be wrong to assume that tuberculosis is only a major health problem for men over 30 yr of age rather than for women although epidemiological studies show higher rates of this disease in men[6]. The National Sample Survey of 1955-58 and the longitudinal survey around Bangalore and more recent district surveys have shown that the problem of tuberculosis in women is considerable in their productive age of 15-44 yr. There are an estimated 70,000 deaths each from tuberculosis in the age group 15-44 yr[6].

Mortality

The mortality rates in tuberculosis as made out from published evidence of the first 4 surveys for 1961-68 have been between 69.2 and 95.4 per 100,000 and in subsequent V and VI surveys in 1977 and 1981 was estimated to be 41 per 100,000. The estimate made by sample registration system 1988 is around 400,000 deaths per year from tuberculosis and shows an increasing trend with age[11]. These may be crude numbers; probably underestimates of the real mortality rate.

Burden of illness

The socio-economic impact of the disease in the community in India needs to be looked into since the disability adjusted life years (DALYS) is estimated to be in the order 62.8 and 45.6 lakhs man-years of life lost in men and women respectively[12].

The burden of illness due to tuberculosis has hardly shown any decline and it is likely that it will be increased by the HIV epidemic with an alarming rate of increase of cases with dual infection to be followed by an increase in morbidity and mortality due to tuberculosis. To add to this complex situation, irregular and inadequate chemotherapy as a result of poor drug compliance by patients, difficulties in management of multidrug resistance tuberculosis and relapse of the disease coupled with a low efficiency of the control programme could add to the existing problem. It may be worthwhile mentioning that rationalization of prescription practice of anti-tuberculosis drugs by practitioners of medicine is essential for the efficient management of tuberculosis.

Tuberculosis in industries

As in other countries tuberculosis has been seen in areas with rapid industrialization and urbanization in India. There have been several surveys of tuberculosis among workers engaged in dusty occupations. An increased occurrence of tuberculosis was seen in the pottery and ceramic industries. However, there was no increase among those working in the coal and steel industries. Higher rates of occurrence were seen among *bidi* workers and cotton mill workers[13].

Drug resistance

Management of drug resistant cases of tuberculosis is a major problem for the practitioners of medicine and programme managers in tuberculosis control. It has been estimated that the initial drug resistance (primary and acquired) to INH in patients seeking treatment is as high as 30 per cent in North Arcot district in Tamilnadu and Delhi; and in those who remain bacteriologically positive after chemotherapy, it is estimated to be around 78 per cent in North Arcot district, Tamilnadu[14]. Added to the problem of INH resistance is the appearance of rifampicin resistance which is of the order 2-4 per cent in newly

diagnosed cases and up to 16-30 per cent among treatment failures[14]. An estimate of drug resistance is of utmost importance in the epidemiology and control of the disease since the treatment programme needs to be modified for effective management of the disease. More importantly, this will also help to cut the chain of transmission of drug resistance tuberculosis to the vulnerable individuals especially those with HIV infection and AIDS and others with immunodeficiency.

The National TB control programme and its impact

Management of pulmonary tuberculosis was revolutionised in the mid fifties by the advent of domiciliary chemotherapy established by the Tuberculosis Chemotherapy Centre (TCC, Madras) now known as Tuberculosis Research Centre (TRC), with proven efficacy. This was the need of the hour when there were approximately 1.25 million infective pulmonary tuberculosis cases prevalent in the country with only about 30,000 beds in the sanatoria. The Government of India having been convinced with reliable results obtained by the well planned and executed controlled clinical trials by the Centre, considered integration of the National Tuberculosis Programme in the primary health care system to tackle the problem of pulmonary tuberculosis which was equally distributed in the urban and rural settings. The Programme was drawn up with excellent user-friendly protocols and manuals for health workers. The regimens of treatment which were investigated at the Centre and elsewhere in the world using streptomycin, PAS or thiacetazone and isoniazid initially for 2 months followed by 10 months of double drug combination of PAS or thiacetazone and isoniazid proved nearly 80 per cent efficacious under the clinical trial conditions[15]. However, there were failures of the regimen to the extent of approximately 20 per cent due to initial drug resistance and relapses. Earlier attempts at prevention of poor drug compliance by patients led to the evolution of supervised administration of streptomycin and isoniazid on a twice weekly basis for 12 months which was again a signal contribution of the TRC, Madras. This was found as efficacious as the daily unsupervised regimens (self-administered) of treatment. However the major setback for these regimens of treatment for a period of a year has been poor treatment adherence by patients with an unacceptable rate of 25-30 per cent of patients completing treatment under the programme conditions[16].

Extensive experimental studies with highly bactericidal and sterilizing drugs such as rifampicin and pyrazinamide revolutionised the treatment of tuberculosis in the early 1970s. Applying the principles of chemotherapy based on sound scientific foundation regimens of treatment of shorter duration ranging from 5-8 months containing highly bactericidal drugs such as streptomycin, isoniazid, rifampicin and pyrazinamide were evolved by well designed and conducted studies at the TRC, Madras and elsewhere in the world by the British Medical Research Council (BMRC)[17-19]. These short course chemotherapy regimens were highly efficacious with very low relapse rates ranging from 1-5 per cent and were also found to be very useful in successfully treating patients with initial drug resistance to streptomycin and isoniazid.

The treatment regimens of 12 month duration and short course regimens of 6-8 months duration have been accepted for application under the NTP by the Government of India based on the proven efficacy of these regimens under controlled trial conditions.

The regimens of treatment with shorter duration of 6-8 months when applied under the existing conditions in the District TB Programme in India on a pilot scale in 18 districts were shown to improve the treatment adherence; 50-60 per cent of patients completing treatment compared to about 30 per cent with conventional 12 month regimens. However, this is not a panacea for tackling the major problem of treatment defaulters. Operations research studies conducted by the TRC and elsewhere have resulted in identifying sociological and behavioural problems in patients which need to be investigated to find out remedial measures and evolve suitable strategies. One such strategy could be the involvement of the community in the programme with its effective partnership in tackling this major health problem by establishing a link between the providers and beneficiaries of health in respect of tuberculosis. There is also need for health education of the community to create awareness of the disease and sensitisation to demand health care from the providers. A good programme needs good health services management

and the providers of health care either the Governmental or the non-Governmental Organisations should be efficient programme managers and as such training of health personnel at various levels should also be ensured. Basic orientation of health workers at the management and grass-root levels should also be considered by instituting continuing education programmes by experts at the state and district levels.

Although the NTP has been in operation for the past three or four decades there has been little impact on the epidemiology of the disease which could be attributed partly to the laxity in the management of the Programme, financial constraints and probably due to lower priority given to the Programme as compared to others. With the advent of HIV infection and AIDS and the projected heavy burden of the deadly disease in the population, the problem of tuberculosis in India could escalate many folds with 50 per cent of the population already infected with tuberculosis as evidenced by tuberculin positivity and an ARI (annual risk of infection) of 1.2 to 1.5 per cent among children below 5 yr[6].

It is therefore obvious that in spite of the fact that effective tools to tackle this major health problem are available, the disease has perpetuated for decades since the tools have not been put to proper use. Thus all efforts should be made to augment the efficiency of the programme in order to contain and control the disease. The revised tuberculosis control strategy that has been planned emphasises good treatment adherence of patients, with micro level planning and an attempt to decentralise at the district level to improve the efficiency at the peripheries in order to meet the requirements of health services at the primary health care level.

It is worth mentioning here that no programme would be worse than a badly managed programme since a badly managed programme would result in perpetuating the malady not to mention the financial drain on the national exchequer. Further, a badly managed programme could result in serious consequences such as increase of drug resistance tuberculosis especially the multidrug resistant forms (MDR-TB) which will incur a phenomenal amount of money for management of such patients; a burden that is felt even by the technically advanced countries with affluence.

Recommendations for research in tuberculosis in India

Research in the area of epidemiology should be focussed on the establishment of surveillance systems to monitor the change in transmission risk in selected communities and the risk factors for tuberculosis disease should be identified so that control measures may be modified or focussed. Newer techniques such as DNA 'fingerprinting' need to be employed to improve knowledge of the patterns of transmission in communities. The impact of HIV infection on tuberculosis and the role of chemoprophylaxis in HIV infected individuals also need to be urgently explored.

Diagnosis (case-finding) : Passive case finding is the mainstay of case finding in most developing countries. This relies heavily on sputum examination by smear and culture, chest radiography and tuberculin skin testing. Improvement of case-finding programmes will require development of methods for estimating the coverage and efficacy of case detection in the community and to determine the principal factors influencing the coverage of case-detection, such as health education, training of health personnel. Attention should be given especially to technological improvements in existing diagnostic procedures for use during the period preceding the introduction of new technologies. The objectives are to increase sensitivity, specificity and technical simplicity without compromising cost-effectiveness and to adapt present technology for the increasing problem of diagnosing sputum smear-negative tuberculosis in HIV-positive individuals. Improved methods for diagnosis of *Mycobacterium tuberculosis* infection must await considerable advance in the understanding of basic immunology, mycobacterial antigenic structure, and hostparasite interactions. The objective is the development of a better (*i.e.*, simple, rapid, sensitive, specific, inexpensive) method for identifying persons harbouring viable tubercle bacilli, especially those most likely to develop clinically active disease.

Treatment and case-holding : Although efficacious regimens have been developed for the treatment of tuberculosis, poor patient compliance has been the

reason for the failure of many control programmes. Studies of options to the delivery of the intensive phase of therapy by evaluating the feasibility of directly observed therapy (DOT) in the initial intensive phase of short-course chemotherapy need to be explored. Studies to improve the patient compliance by use of calender packs, identifying patients who need to have supervised therapy, and the effect on compliance of personal health education and mass media are other areas which need to be explored. Studies to determine how, and quantify the extent to which, private physicians can be induced to participate in a National Tuberculosis Control programme through accurate diagnosis, appropriate regimen selection, and extended patient follow up as well as studies of the surveillance of primary resistance to isoniazid, streptomycin, rifampicin and ethambutol worldwide also need to be carried out. Development of new therapeutic modalities (*i.e.*, new drugs, drug delivery systems, and immunotherapy) to address the problem of increasing drug resistance and further shorten current therapy are also urgently required.

Prevention : BCG vaccination and preventive chemotherapy are currently used as preventive agents in tuberculosis. The role of BCG has been critically examined in several trials but the results at best have been equivocal. Efficacy and operational studies, including analysis of cost-effectiveness to define the role of preventive chemotherapy in high-risk populations, especially children living in close contact with newly diagnosed patients and persons infected with HIV need to be carried out. In addition, studies of revaccination with BCG vaccine to assess this frequently performed but unproven intervention need to be explored.

Development of new forms of preventive therapy, *e.g.*, new drugs, depot preparations, and immunotherapeutics need to be explored along with efforts to develop and test new tuberculosis vaccines, including basic studies of the immunology and microbiology of the tubercle bacillus. These studies should also include efficacy studies of neonatal vaccination, studies of additives of BCG (*e.g.*, killed *M. vaccae*), and continued studies of the safety of BCG vaccine in HIV infection.

Economic, social and operational research : The WHO has identified major socio-economic challenges and operational problems confronting national tuberculosis programmes[20]. These include studies of the economic and social impact of tuberculosis at the household, community and national levels, including analysis of differential impacts on socio-economic, ethnic and age groups. The development of a tuberculosis transmission model to illustrate the potential benefits of proposed tuberculosis control programmes at the national level will greatly help in planning control strategies. It is mandatory that surveys of tuberculosis should include estimation of prevalence of drug resistance also as a major component in order to monitor the control programme. The outcome of such studies could be the evidence of drug compliance by patients and prescription practices.

Accurate epidemiological information is needed through well planned and designed studies which are properly executed to yield reliable results. These studies need to be conducted by group of experts from various disciplines with a common protocol using reliable tools and application of proper methodology for collating and analysing the data collected. There is also a need to establish methodologies for surveillance which should be standardized and made user-friendly to be applicable throughout the country by any agency. These are considered important steps in epidemiology as it may be observed from the foregoing paragraphs of this paper that the epidemiology of tuberculosis presents a varied picture in different parts of the country attributed to the geographic location, socio-cultural milieu and economic strata.

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Special Article

DIS 4: 20

National Tuberculosis Control Programme

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TUBERCULOSIS is major public health problem. It primarily affects people in their most productive years of life.

PROBLEM :

World

The annual incidence of new cases of all forms of tuberculosis (TB) world-wide is estimated to be approximately 8 million of whom 95% occur in developing countries. The total number of TB cases at a given time world wide is 16-20 million of whom 8-10 million are smear positive and highly infectious.

Three million people died from TB in 1995 surpassing the worst years of 1990's when 2.1 million died annually.

India

In India about 50% of the total population are infected with the bacillus of tuberculosis. Fourteen million people are estimated to be suffering from active TB of which 3-3.5 million are highly infectious sputum positive cases. About 0.5 million die of the disease every year.

Around 1.5 million TB cases are detected every year of which about 20-25% are positive for sputum and rest are radiologically active sputum negative patients. It is estimated that almost an equal number of TB cases are detected and treated by non-government organisations including private practitioners. The number of new TB cases detected and put on treatment during the last 5 year is shown in Table 1.

Table 1 — *Showing Number of New TB Cases*

Year	TB cases detected and put on treatment (in lakhs)
1991-92	12.79
1992-93	15.39
1993-94	13.59
1994-95	12.49
1995-96	13.89

TB AND HIV CO-INFECTION :

Most people are unaware of the enormous and deadly role TB is playing in the AIDS epidemic. More HIV-infected individuals die from TB than from any other cause. In one out of every 3 people who dies of AIDS, it is TB that actually kills them.

The experts opine that the epidemiological situation with regard to TB will deteriorate further with the spread of HIV as it has happened in other countries. Around 60% of the AIDS cases reported in India have evidence of active TB. Patients suffering from HIV are 25 times more likely to develop TB disease as compared to persons infected with tubercle bacilli alone. When an HIV positive person is infected with TB it is very likely that he/she will get seriously sick with TB. TB is the only major opportunistic infection which can spread through the air to HIV negative people. Therefore as HIV/TB dual infections continue to rise, TB will spread more quickly to otherwise healthy, populations. Furthermore TB in an HIV positive case hastens the process of development into an AIDS case.

NATIONAL TB CONTROL PROGRAMME (NTCP)

To combat the problem of TB the Government of India launched the National Tuberculosis Control Programme in 1962 with the following objectives:

(i) To detect as many TB cases as possible.

(ii) To effectively treat all patients so as to render infectious cases as non-infectious, and prevent non-infective active cases from becoming infectious.

(iii) To established district TB centre (DTC) in every district of the country.

(iv) To extend short course chemotherapy (SCC) in all district.

(v) To strengthen existing State TB training and demonstration centres.

STRATEGY :

(i) Early detection and regular treatment.

(ii) Free domiciliary treatment through PHC.

(iii) Conversion of infectious cases into non-infectious and preventing non infectious cases from becoming infectious with treatment.

(iv) Establishing DTC in every district.

At the time of launching the programme, treatment of tuberculosis patients was done with standard regimen for 12-18 months. Subsequently short course chemotherapy (SCC) drugs were introduced on a pilot basis during 1983-84 in 18 districts and later extended to another 101 districts by 1987-88 and further to 75 districts during 1988-89. At present 292 districts in the country are providing SCC drugs for treatment of TB cases.

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CURRENT STATUS OF THE NTCP :

At present DTCs have been established in 454 of the 496 districts in the country. DTCs concerned with the managerial responsibility of the programme like planning, implementation, co-ordination and supervision of tuberculosis case finding and treatment. It also provides referral service for TB patients from peripheral institutions. Each DTC has trained personnel, diagnostic equipment (x-ray and microscope) and transport.

In addition there are about 330 TB clinics functioning in the country and are mostly located in the big towns and cities and are equipped with laboratory and x-ray unit. There are 47600 beds available for treatment of TB cases.

TB TRAINING AND DEMONSTRATION CENTRE :

At present 16 TB training and demonstration centres are functioning in different States of the country. Apart from training, these centres are providing guidance, supervi. , co-ordination and technical assessment to the programme in the respective States.

VOLUNTARY ORGANISATION UNDER NTP :

The country has a large number of voluntary organisations (NGOs) active in the field of health. For TB control programme voluntary organisations are assisted in terms of free supply of drugs for conventional therapy only. Presently, 57 such NGOs are registered with the NTP.

CASE FINDING :

Case finding undertaken in DTP is passive one. These include the chest symptomatics with cough for more than 3 weeks or those with haemoptysis of variable duration reporting on their own at DTC as well as PHIs.

Method of case diagnosis are by direct sputum microscopy and x-ray examination.

TREATMENT POLICY :

(notherapy policy for NTP is laid down, taking into consideration the efficacy and operational aspect of NTP. The salient feature of the chemotherapy policy are:

TB patients under NTP are treated either with (1) standard regime (SR) for a period of 12 months or (2) SCC for 6-8 months.

Drugs are issued free of cost including administration of streptomycin injection.

Treatment is offered on domiciliary basis as self administration chemotherapy giving medicines for 30 days at a time.

Sputum positive patients have been accorded priority over sputum negative patients in order to cut the chain of transmission effectively. Sputum positive patients are provided with SCC in the SCC districts only.

TREATMENT REGIMEN :

TB patients diagnosed under NTP are treated either with SR for a period of 12 months or with SCC for 6 or 8 months. The categorisation of patient and drug regimen for treatment are shown in Table 2.

Table 2 — *Showing Standard Regimen/Conventional Regimen*

Regimen code	Regimen with drugs	Duration (month)	Category of patient
R1	2 STH/10 TH*	12	New smear positive cases where SCC is not available Seriously ill smear negative cases Extra pulmonary patients in general
R2	12 TH	12	Smear negative cases with x-ray positive Lost patients, smear negative on reporting back
SCC :			Highly irregular patients
RA	2 EHRZ/6 TH	8	New smear positive cases Serious form of extra pulmonary
RB	2 SHRZ/4S$_3$H$_3$R$_3$	6	Failure cases Relapse cases

* E to replace S and *vice versa*, depending on availability and E to replace T wherever not tolerated.

Dose : S = Injection streptomycin 0.750 g, T = thiacetazone 150 mg, H = INH 300 mg, E = ethambutol 800 mg, R = rifampicin 450 mg, Z = pyrazinamide 1500 mg.

DRUG PROCUREMENT AND SUPPLY :

The programme is based on 50:50 sharing basis between Centre and State. The amount of drugs needed by each State is determined annually by the Central TB division from the number of patients reported in the previous year, the population and the request received from the districts. These requests are initially scrutinised at the State level.

The Medical Store Organisation under DGHS procures anti-TB drugs. The drugs are routed through 6 medical store depots for distribution to various DTCs of the State directly by rail or road transport on the release orders issued by TB division of the DGHS.

CASE HOLDING :

Motivation—Case holding is an essential part of the TB control programme. Presently the case holding is very poor resulting in low treatment completion rate. This can be achieved by educating and motivating the patient and his family and maintaining regularity in drug supply and case management.

Defaulter action—Under the programme, provisions are made for the retrieval of the defaulters for drug collection specially the smear positive patients. First action is taken if the patient does not report for drug collection on due date by posting a letter next morning. Second action is taken by home visit, if patient does not report on 4th day from due date. The defaulter action taken and date and dosages of drug collection are recorded on the treatment card. But there is no provision for reporting the action taken for defaulter retrieval.

Supervision—According to NTP policy, the DTO and his team of laboratory technician and treatment organiser are responsible for the supervision of all personnel within their district involved in tuberculosis activities. The team is expected to visit each of their PHIs on a quarterly basis. They are to evaluate diagnostics and treatment procedure, validate laboratory result, monitor the drug supplies and support equipment. Supervisory checklists have been provided by the NTP to guide the supervision of DTCs and PHIs. At PHI level, medical officers have been made responsible for the supervision of laboratory technician and multipurpose health worker.

Training—National Tuberculosis Institute (NTI), Bangalore is responsible for training the DTP key personnel through an in service training in the implementation and management of the programme. The NTI is conducting annually two courses each of 10 weeks duration. The State TB training and demonstration centres train other medical and paramedical staff involved in the programme delivery.

Achievement—With the inclusion of TB programme in the 20 point programme, a thrust has been given for the expansion of the essential activities under the programme. Targets for detections of new TB cases are being increased every year.

As the programme is integrated with general health services, attempts are also being made for distributing anti-TB drugs through sub-centres so that the treatment facilities are available closer to the patient.

Short course chemotherapy (SCC) drug regimens containing highly potent drugs have been introduced in the programme since 1983. So far 292 districts of the country have been brought under the ambit of SCC and it is proposed to introduce these regimes in all the districts in a phased manner.

The mortality rate has decreased from 80/100,000 population in 1970 to 53/100,000 population in 1993. Further the severer forms of childhood tuberculosis is on the decline and extensive exudative lesions are less frequently seen.

REVIEW OF THE TUBERCULOSIS CONTROL PROGRAMME

Though the programme has been in operation for last 30 years nothing much of epidemiological impact was achieved. The programme was reviewed by a joint team of Government of India, WHO and SIDA in 1992. Their salient findings were

(i) Inadequate budgetary outlay and shortage of drugs.

(ii) Too much emphasis is given on clinical and radiological diagnosis.

(iii) Sputum microscopy facilities are not sufficiently utilised.

(iv) Poor quality of sputum microscopy.

(v) Emphasis on case detection rather than cure.

(vi) Lack of consensus among practitioners regarding treatment regimen.

REREVISED STRATEGY

On the basis of the findings of the review and recommendation made, a revised strategy has been evolved with technical assistance from WHO. The revised strategy strengthens the identified weakness of the programme and stresses the effective utilisation of the available infrastructure. The objectives of the revised strategy are:

(i) To achieve 85% cure rate by administering supervised SCC.

(ii) To detect 70% of the estimated cases after achieving desired cure rate.

To achieve the above objective the following strategy has been adopted :

(a) Use sputum testing as the primary method of diagnosis among self reporting case.

(b) Standardise treatment regimen.

(c) Ensuring a regular, uninterrupted supply of drugs up to the most peripheral level.

(d) Increase budgetary outlay.

(e) Augmentation of the peripheral level supervision through creation of a sub-district supervisory unit.

(f) Emphasise on training, IEC and operational research.

SPUTUM EXAMINATION - DIAGNOSTIC TOOL :

Chest symptomatic and other persons with symptoms compatible with tuberculosis consult medical staff and general health facilities. These may be government organisation, NGOs or private. Government facilities offer systematic sputum examination -free of charge -to symptomatic who have productive cough of over 3 weeks duration.

The medical officer at the health facility screens the patients and sends those who can be tuberculosis suspects for smear examination (three samples in two days, two spot and one early morning). The patient receives sputum containers and instructions, and provides the sputa, which is examined in the laboratory. In case sputum microscopy is not available at the health facility then the patient's sputum or smears are sent to the nearest microscopy centre or the patient himself may be referred to these centres if these are nearer. Two spot specimens and one early morning collection are recommended for sputum examination. How the chest symptomatics are diagnosed is shown in Fig 1.

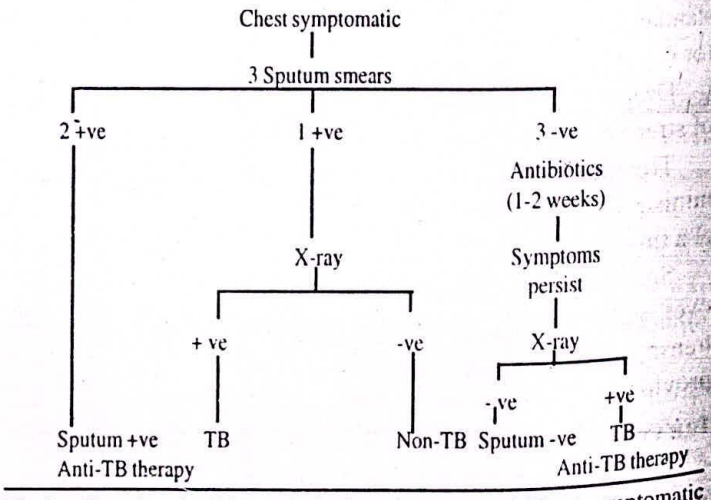


Fig 1—Showing the Diagnosis and Management of Chest symptomatic

PILOT PROJECT

PILOT PHASE - I :

With SIDA assistance the revised strategy was tested as pilot project from last quarter of 1993 in 5 project areas in Delhi, Bombay, Calcutta, Mehsana in Gujarat and Bangalore covering a population of 2.35 million.

Categorisation of Patients and Treatment—Patients were categorised as I, II and III according to the status of sputum finding and the treatment regimen followed for different categories are as listed in Table 3.

Table 3 — *Showing Categorisation of Patients and Treatment*

Category	Type of patient	Intensive phase	Continuation phase
I	Sputum +ve and seriously ill sputum -ve	EHRZ thrice a week for 2 months	HR thrice a week for 4 months
II	Sputum +ve relapse, failure and others	EHRZS thrice a week for 2 months, then EHRZ thrice a week for 1 month	EHR thrice a week for 5 months
III	Sputum -ve pulmonary and extra pulmonary	HRZ thrice a week for 2 months	HR thrice a week for 4 months

Dose : E - 1200 mg, H - 600 mg, R - 450 mg, Z - 1500 mg, S - 750 mg

Drugs under the pilot study were supplied in multidrug blister packs for one day. During intensive phase drugs were taken by the patients under direct observation of the health staff ie, direct observed therapy (DOT). During continuation phase a blister pack for one week (3 doses) was given to the patient and at least the 1st dose was directly observed at the time of collection. On the next collection the patient should return the empty blisters.

Results—The initial results are very encouraging. In the project areas the ratio of pulmonary smear positive to smear negative ranges from 1 : 1.1 in Delhi to 1 : 1.4 in Calcutta, as compared to the national figures of 1 : 4 to 1 : 5. This reflects the improvement in quality of diagnosis brought about in project areas by emphasis on good quality sputum microscopy and better supervision.

It is also observed that the sputum conversion at 2-3 months was over 90%. The cure rate for the first cohort from 3 project areas ie, Delhi, Gujarat and Bombay shows a cure rate of 96.8%, 81% and 75% respectively. Due to reason of migratory population, Bombay achieved a less cure rate. It can be observed that the cure rate achieved very closely match the sputum conversion result at 2-3 months.

PILOT PHASE - II :

Encouraged by the results of the pilot phase - I the Government of India decided to extend the revised strategy to 17 project sites covering a total population of 15.83 million. World Bank assistance of US $ 1.996 million has been made available as project preparation facility advance.

It is envisaged to extend the revised NTCP in phases throughout the country. To ensure a systematic and speedy introduction of revised NTCP without sacrificing quality control a series of interventions will be introduced which will modify the functioning of the entire NTCP. The following interventions are being proposed :-

(a) Strengthening of the TB cells at the central and State levels.

(b) Strengthening of the Training Institutions for TB at the Central and State level.

(c) Gradual implementation of the revised strategy for TB control in 102 districts covering a population of 271 million.

(d) Strengthening of the National Tuberculosis Control Programme in remaining 203 SCC districts as transitional step to adopt the revised NTCP.

(e) Providing for an uninterrupted supply of anti-TB drugs (both SCC and conventional) throughout the country.

The Government of India is seeking World Bank assistance for the above interventions.

INTERNATIONAL ASSISTANCE :

The International Agencies like UNICEF, WHO, ODA, DANIDA and SIDA have provided necessary support and assistance to the National TB Programme in the form of supplying x-ray equipment, x-ray rolls, laboratory equipment, vehicles, SCC drugs and operational research. Japan Grant Funds are also available for conducting workshops and training programmes.

WORLD BANK ASSISTANCE - REVISED NTCP :

Gross inadequacy of funds to support various components of the programme has been primarily singled out for the poor achievements of results under NTCP. Considering the vast magnitude of the problem of TB existing in the country and expert's concern of possible worsening of the situation with the advent of HIV spread in the country, renewed emphasis is being given to the revised NTCP and ODA assistance has been sought to obtain adequate funds to support various components of the programme.

The Government of India has requested the World Bank to provide funds for implementing the revised strategy of NTCP in the country. To start with, this revised strategy is to be implemented in 15 States covering a population of 271.21 million and the rest of the district are to be prepared for revised NTCP. World Bank assistance of around US $ 150 million is being sought.

The various components of the revised strategy have been pre-tested in 16 project sites of the above mentioned cities and States covering a population of 13.85 million with budget estimate of about Rs 8 crores. The World Bank has provided Project Preparation Facility (PPF) for implementation of the revised strategy in this Pilot Phase.

ODA SUPPORT :

The British ODA has shown its interest in supporting TB control in its programme of support for health development in India. They have been participants in the World Bank. WHO Missions visiting India from time to time. The ODA has reached an agreement between the Government

(Continued on page 384)

DRUG DOSAGE :

Drug	Daily dosage mg/kg	Intermitent dosage mg/kg
Isoniazid	5	15
Rifampicin	10	15
Streptomycin	15-20	15-20
Pyrazinamide	35	50
Ethambutol	25 for 2 months then 15	30
Thiacetazone	4	-

Despite the availability of highly effective treatment regimens for tuberculosis, cure rates remain low in most developing countries. The main reason for this is that patients do not take the prescribed medicines regularly for the recommended period, ie, poor patient compliance.

Daily regimen, as short as 6 months, of therapy is more effective than intermittent regimens because minor irregularities in taking drugs do not affect the effectiveness of the therapy. On the other hand, intermittent regimens may be less effective in the face of such irregularities, because many poor and uneducated patients start taking medicines weekly or twice weekly whenever they remember.

RECOMMENDATIONS TO GOVERNMENTS :

The 17th Eastern Regional Conference on Tuberculosis and Respiratory Diseases recommended that member associations in the region should encourage governments to :

(i) Identify tuberculosis as a priority, in national plans and budgets and international collaboration activities.

(ii) Ensure that national tuberculosis programmes comply with the new global tuberculosis central strategy developed by the International Union against Tuberculosis and Lung Disease and adopted by the WHO through the introduction of short course chemotherapy as a prime objective of all tuberculosis control programmes.

(iii) Implement this strategy, taking into consideration the sustaining health service system. Once 85% cure rate is achieved, the programme should start to expand its case finding activities for detection and treatment of more cases.

(iv) Continue BCG vaccination of the newborn, unless the infants have AIDS - related symptoms.

[1]WHO—Treatment of Tuberculosis, Guidelines for National Programmes, Geneva : WHO, 1993.

[2]American Thoracic Society — Treatment of tuberculosis and tuberculosis infection in adults and children. *Am Rev Respir Dis* 1986: **134** : 355-63.

[3]Seth V — Chemotherapy for tuberculosis. *Indian Pediatr* 1996, 36: 146-7.

[4]Iseman MD — Treatment of multidrug-resistant tuberculosis. *N Engl J Med*, 1993, **329** : 784-91.

(*Continued from page 375*)

of India for support to the NTCP to the extent of £900.600.00. The areas of support include strengthening of Central TB division, training activities and implementation of the revised NTCP in Medak district of Andhra Pradesh and Moti Nagar and Nehru Nagar district of Delhi.

DANIDA SUPPORT :

DANIDA assistance has been sought to implement the revised strategy of NTCP in the State of Orissa where the emphasis would be focused on tribal areas.

FUTURE PLAN :

Twenty-five per cent population (271.21 million) coverage under revised NTCP initially.

Preparation and extension of revised NTCP strategy to the remaining 203 SCC districts in a phased manner.

Extension of revised NTCP to all the non-SCC districts once implementation of strategy in SCC districts in a final stage.

Government of India would maintain the trend of increasing the budgetary allocation; 10 crores (1989-90) to 46 crores (1994-95).

Strengthen the State TB training and demonstration centres.

Conduct operational research in problem areas in programme implementation including logistics and service delivery.

It is also proposed to revitalise NTP in non-project areas by expanding DTP in the remaining districts, extending SCC in all the districts, strengthening State TB demonstration and training centre, improving quality of sputum microscopy, improving the system of procurement and supply of drugs and augmenting health education activities.

EXPECTED OUTCOME :

With the successful implementation of the revised strategy it is expected to achieve.

(i) A cure rate of atleast 85%.

(ii) Case-detection of atleast 70%.

(iii) Rate of reduction in the annual risk of infection from the current 2-2.5% to 8-10%.

(iv) Reduction in mortality to about 20/100,000 population.

(v) Reduction in relapse rate to less than 5% from current rate of 15%.

(vi) Reduction in drug resistant/failure cases to less than 5% from current figure of 20%.

THE HINDU

SURVEY OF THE ENVIRONMENT '97

TUBERCULOSIS

Persistent killer

TB is a social and environmental disease to control which technical packages alone are insufficient, says Thelma Narayan.

TUBERCULOSIS (TB), an ancient infectious disease, was known as the dreaded "white plague," "pthisis" or "consumption" in the English terminology of the last century and as "*Rajyaroga*" (king of diseases) in India.

Fifty years after Independence it is still India's biggest public health problem, claiming an estimated 500,000 lives every year and causing disease in about 17 million. Affecting adults in the prime of their lives, it causes much suffering and economic loss for patients, their families and the nation. It results in 26 per cent of preventable adult deaths and is one of the most important causes of death among women of child-bearing age. What is tragic is that the disease is curable.

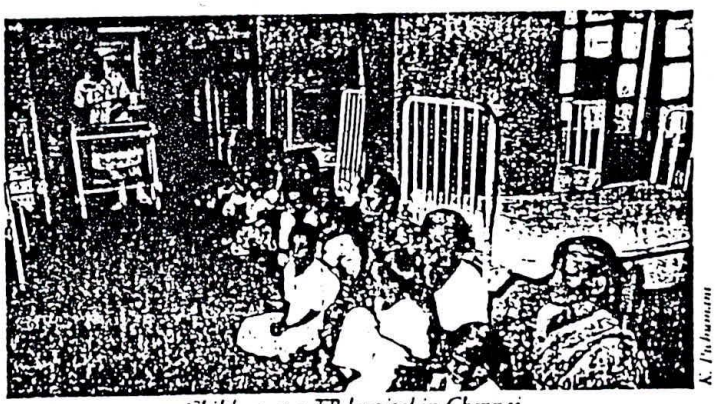
Causative agent

Though its infectious nature was recognised earlier, it was the German scientist Robert Koch, who in 1882 isolated the bacteria *Mycobacterium Tuberculosis* as the causative agent of tuberculosis. The work of several researchers suggests that the tubercle bacillus has co-existed with human beings since early times. Like other organisms in the process of evolution it has developed a complex ecological relationship. This is indicated by the presence of various strains of the organism with differing virulence. The south Indian strain, for instance, is less virulent than the British strain.

Animals harbour different species of mycobacteria. From the human disease point of view, cattle are the most important. In Europe, *Mycobacterium Bovis* was a fairly important source of infection. It spreads from cattle to people through drinking raw, unpasteurised or unboiled milk. A major control programme, involving the detection and slaughter of infected tuberculin positive animals, was successfully conducted.

Studies in Calcutta and Bombay in the Thirties and Forties found that *M. Bovis* was not a cause of human TB in those areas and was relatively uncommon in cattle. Studies in Madras around the same period indicated the presence of TB infection among cattle herds.

More recently in 1995, at a meeting in Madras, veterinary scientists and TB specialists expressed concern about the occurrence of TB in cattle. Cattle primarily suffer from pulmonary TB (affecting the lungs) with infection almost invariably progressing to disease. It spreads through the air borne route. The primary human disease due to *M. Bovis* is usually non-pulmonary.



Children at a TB hospital in Chennai

There are a wide range of species of saprophytic atypical environmental mycobacteria. While not usually associated with human disease, more recently, infections caused by *M. Avium Intracellulare* have occurred in patients with AIDS.

Reasons for the spread

Tuberculosis was probably only a disease striking animals many years ago. Two important periods in the epidemic spread of the disease among major human population groups appear to have been:

(a) The period of transition to agriculture and cattle domestication followed by population increases during the sixth and seventh millennia BC in the eastern Mediterranean region and Europe. Some of the earliest written records and ancient Indian medical treatises are said to describe the disease in early India. Tuberculosis probably existed among people at low levels of endemicity. Most often, that is, small proportions of the population suffered from the disease at any time.

(b) The period of industralisation starting in England and Europe in the 16th century. This resulted in a process of urbanisation with overcrowded, unhygienic living conditions for the working class in the new industrial and mining towns. People were paid low wages and had long hours of hard working in appalling conditions. Research indicated that this process was repeated in the U.S. and Africa and that industrial and urban growth were correlated with TB. There has been the observation that TB was "perhaps the first penalty that capitalistic society had to pay for the ruthless exploitation of labour." The environmental conditions during that time were closely associated with the poverty of people though the elites were reaping the benefits of empire and industry.

Observations in different countries, during the past 150 years, have shown these conditions to form the essential substrate in which TB and other infectious diseases thrive.

With improved housing, working conditions and nutrition of large proportions of their populations, disease and death rates from TB started declining substantially in West Europe and the U.S. This was unrelated to medical intervention and before the discovery of anti-TB drugs, which occurred from the late Forties onwards.

It has been suggested that population increase and European migration, colonialism and war initiated "epidemic waves" in different regions of the world in the last century. In India, people faced heavier taxes, landlessness increased and textile and cottage industries were affected. The process of impoverishment set the scene for repeated famine, an increase in TB and other epidemics.

During the First World War (1914-1918), death rates due to TB increased in all countries at war. The decline of TB in the U.K. was halted for 10 years from the start of the Second World War in 1939. Recent studies show higher rates of TB during war, conflict and among refugees.

India had a big problem of TB among the post-Partition refugees in 1947. Disrupted social conditions, undernutrition, poor housing and physical and emotional stress are pre-disposing factors. Tibetan resettlements in India also report a high prevalence of TB.

The disease thus seems closely linked to the social history of humankind mediated through its effect on the environment and on living standards.

The association of socio-economic and environmental factors with TB has been highlighted internationally by researchers. It was explicitly recognised in India at policy making levels by the Bhore Committee (1946) and the Mudaliar Committee (1961). It later was forgotten in the "scientific optimism" generated by the discovery of effective chemotherapeutic drugs. These discoveries did accelerate the tailend of the decline of the disease in countries that could afford and organise good nation-wide health services.

The association of socio-economic factors with TB was forgotten in the "scientific optimism" generated by the discovery of chemotherapeutic drugs.

Physical environment

a) *Housing*: Tuberculosis primarily affects the lung but can also spread within the body affecting several other organs. It is an air-borne disease, transmitted to others by coughing, spitting and talking.

Poor working conditions cause TB.

Only patients whose phlegm or sputum contain bacteria (termed sputum positive) are sources of infection for other people.

The bacteria disperse in the atmosphere through small droplets which survive for long periods in dark, unventilated conditions. Sunshine, present abundantly in India, effectively kills the bacteria.

Small tenements and houses with insufficient or no ventilation provide the right environment for the survival and spread of the organism. Poor, congested housing, a result and indicator of poverty, is an important element in disease transmission.

The National Sample Survey, a large multi-State cross-sectional Indian study conducted in 1955-58, found that people living in kutcha houses had a higher prevalence of TB. Twenty to twenty five per cent of patients with TB give a history of someone in the family also having had TB. Government and development groups working on housing schemes and activist groups campaigning towards housing rights thus indirectly contribute to TB control.

Smoky *chulhas* or cooking fires are shown by studies and experience in India to increase the risk of respiratory problems. They could aggravate the disease and make the life of a TB patient more difficult and perhaps be a risk factor in the spread of TB. Similarly patients with TB are advised not to smoke to prevent further lung damage. Promotion of smokeless *chulhas* by development agencies, could also be part of the anti-TB package.

b) *Urbanisation*: There were attempts in the Revised National Tuberculosis Control Programme in India in 1993 to give greater importance to urban areas in the programme. The urban population has increased over three decades from 20 per cent to 26 per cent in 1991, with some inter-State variations. Before the Fifties, TB was considered to be largely an urban problem, as it was in Europe. The National Sample Survey findings, however, showed that it was equally prevalent in urban and rural areas. Since 80 per cent of the population was then rural, the problem was understood as being predominantly rural.

The National Tuberculosis Programme was the first health programme to emphasise the need to develop general health services in rural areas with which TB services were to be integrated. Health services and health personnel were then predominantly urban based. Thirtyfive years later, 74 per cent of the population is still rural. Though some gains have been made, there continue to be urban-rural differentials in health budgets and health care services.

Vulnerable groups

The urban poor living in slums, *jhuggi* colonies and shanty towns comprise about 60 per cent of the urban population. The most deprived are homeless migrants, rag pickers and street children. These vulnerable groups are at greater risk of TB and need specific intervention, protection and social security.

The urban habitat has deteriorated greatly over the years with basic infrastructure unable to cope with the growing demands for housing, water, sanitation, roads and transport. The growing presence of small unregulated factories close to domestic sites or

the growth of slums next to large factories add to the problem. The all-pervasive corruption prevents and slows the development of basic services.

c) *Industralisation and work environment*: The work place provides an important environment which could predispose to or facilitate the development of TB. Miners and quarry workers exposed to various kinds of dust are likely to develop silicosis, and are at greater risk of developing TB. In crowded industrial sheds and factories, with poor ventilation, inadequate sunshine and fresh air, if one or some workers have untreated sputum positive TB there are definite chances of spread of infection.

Rapid industralisation, driven by the present economic imperative, most often sacrifices safety procedures (dust control) and effluent treatment (air pollutants) which decrease profit margins. This is particularly so when regulatory mechanisms are poorly implemented and the workforce is inadequately informed and poorly organised.

There are several indicators that air pollution levels are growing alarmingly in urban areas. Any additional assault or damage to the respiratory system (like smoking) could aggravate TB. The potential occupational hazards faced by health personnel working in close contact with TB patients has received scant attention.

d) *General causes*: In the early parts of the century there ware anti-spitting drives in several countries such as the U.K. Australia and South Africa among others as a preventive measure against tuberculosis, besides providing for better general environmental hygiene and cleanliness. Given the rampant practice of spitting in India, this would certainly be a challenge.

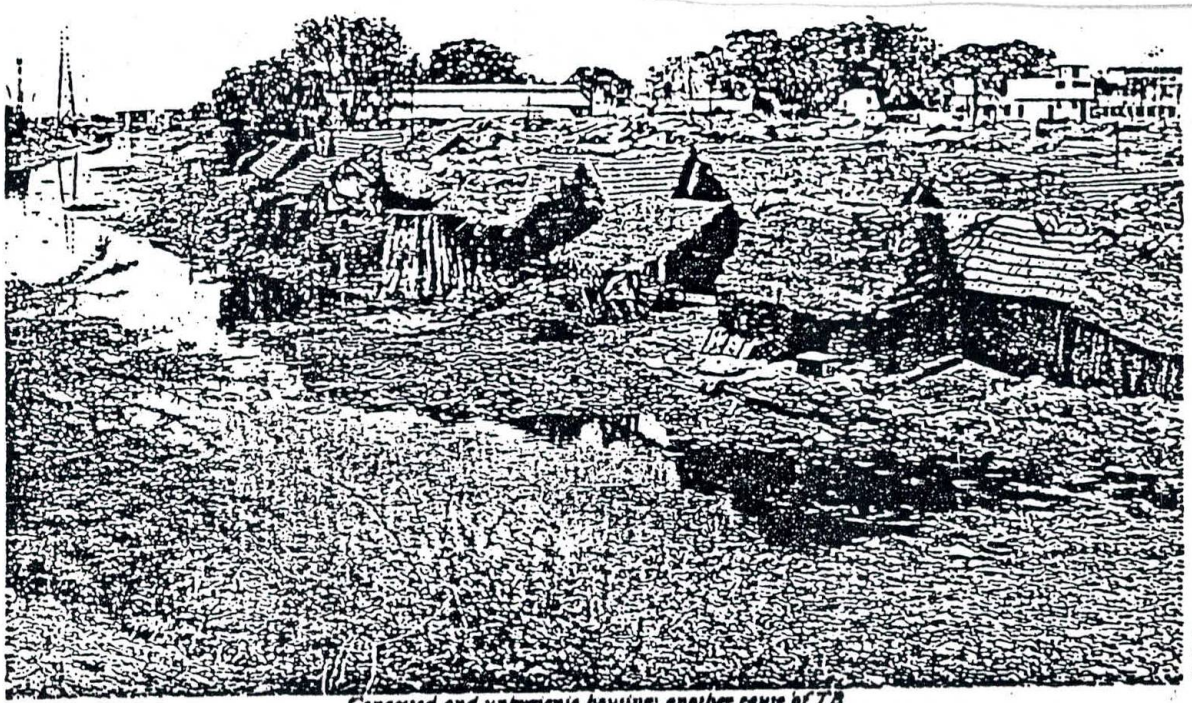
Impact of political and economic policies

Moving beyond the physical environment to the broader political and economic enviromments, it is important to understand global changes that are occurring and their impact on nations and on people, especially the poor. Studies to understand the immediate and short-term impact of structural adjustment on poverty, unemployment and the environment are important for several reasons.

These programmes also have a direct relationship with TB. Several countries across the world, for instance in Africa and the Phillipines, have documented the ill-effects of these programmes on the health of the poor, including high TB rates.

The impact of explicit pro-privatisation policies in State-run health services also needs careful study. These services are used most often by the poor to whom private care is inaccessible for long-term serious illnesses like TB.

Nationally, an important issue is the low priority given to health in terms of Central and State Government budgets. Equally important is the lack



Congested and unhygienic housing: another cause of TB

of commitment to develop and maintain quality of care and service in public sector institutions. Political interference, mismanagement and rampant corruption have reached unacceptably high levels in a vital area affecting the health and well being of citizens. This is an area for concern and social action.

Expectations belied

There were great expectations that the National Tuberculosis Programme (NTP), articulated in 1962 after indigenous research, would be able to relieve human suffering caused by TB and later reduce disease transmission so that it no longer was a public health problem.

Evaluation studies in 1975 and 1988 and the monitoring system of the NTP consistently report gaps between expected performance and actual outcome. One study has indicated that only 8 to 16 per cent of expected cases of TB get complete treatment from the public health services.

The past decade has seen a major change in the TB situation globally. In the mid-Eighties there was a reversal of decline in the incidence of TB in the U.S. This was followed between 1986-91 by an increased number of cases up to 33 per cent. Increased TB rates occurred in several West European countries too. Reasons cited for the increase in TB are association or co-infection with HIV/AIDS, neglect of TB control programmes by governments for over two decades and the development of Multi Drug Resistant (MDR) TB (bacteria that are resistant or non-responsive to two to three basic anti-TB drugs). A number of cases occur among the inner city homeless, among drug users, and among migrants and indigenous people. Twentyfive per cent of cases in the U.S. were among the "foreign born," similar to West Europe.

MDR TB arises because of inadequate and incomplete treatment for which the health services and patients have been blamed, out of context to the under-resourced and difficult circumstances in which they function and live respectively. The treatment of MDR TB is extremely expensive and often has a unsuccessful outcome under the best conditions. These events created a panic, raising the sceptre of a new epidemic in which available tools of treatment would not be effective. Newer diagnostics and drugs were not available as basic research in TB had stopped three decades ago. The new events brought to mind the long period, from the late 18th to the early 20th centuries when TB was the leading cause of death in Europe and America, decimating about 20 per cent of the population.

> Poor and congested housing, a result and indicator of poverty, is an important environmental element in disease transmission.

With international travel, global trade and international capital being involved and potentially affected, the sense of urgency appeared great. This resulted in a new global policy environment in which TB was once again high on the international public health agenda.

The World Health Organisation (WHO) declared TB a global emergency in 1993. There was increased intervention by the WHO, World Bank and bilateral agencies in the control of TB in "low and middle-income" countries.

Revised programme

A revised National TB Control Programme (RNTCP) has been introduced in India. A $150 million soft loan from the World Bank has been negotiated. This is conditional to using the WHO package prescription. A key element in this is the Direct Observation Treatment, Short Course-Chemotherapy (DOTS) in which health workers have to watch patients swallowing their pills three times a week, for at least two months, out of a six month treatment.

There are doubts about the feasibility, sustainability and ethics of such an approach. Being entirely technical it does not consider the social and environment roots of the disease. Hence it ignores social and community dimensions within which any technical package needs to be embedded. This would include personal, social support to affected people and their families. It would also recognise development organisations and activists as partners. Most importantly, it would address the question of social and economic inqeuality and injustice. It also assumes that the health system will "deliver" the RNTCP and does not try to understand the reasons why the NTP did not fulfil expectations.

Thelma Narayan is member-in-charge of research and evaluation at the Society for Community Health, Awareness, Research and Action, Bangalore.

DIS 4:22 (2)

BY ANAND ZACHARIAH

Could Tuberculosis be a Psycho-somatic disease : an alternative view point

(A modified version of the article, "Can stress cause disease? Revisiting the tuberculosis research of Thomas Holmes, 1949-1961. **Barron H Lerner. Annals of Internal Medicine 1996;124:673-680."**

Robert Koch's discovery of M.tuberculosis in 1882 proved that tuberculosis was an infectious disease. However the introduction of skin testing in 1908 showed that many more persons were infected with the bacillus than acutally had the disease. In India skin test surveys show that one-third of all people are infected with TB (primary tuberculosis). Only a small proportion of people `reactivate' the disease in adulthood (secondary tuberculosis). The factors that have been identified that lead to the spread and occurrence of disease are urbanisation, overcrowding, poor housing, unhealthy working conditions, specific occupational exposures, immunosuppression and undernutrition. Many of these factors are thought to act by increasing the risks of air borne transmission. However if most of the adult tuberculosis is due to endogenous reactivation, how do the above factors facilitate this reactivation process.

A large amount of TB research today is focussed on the immune response; why do only a few people develop tuberculosis, why do people respond differently to treatment. An area of research which is ignored in current literature is `psycho-somatic research' in tuberculosis. Rene Dubos, and other early TB researchers discussed that the issue of stress was closely related to the concept of resistance to tuberculosis. But with the focus on the germ and therapeutics, these ideas have not been pursued.

Thomas Holmes was a pioneer in psychosomatic research credited for showing the relationship between stressful life events and disease in general, and his work became the cornerstone of modern `mind-body' research. He started his work on psycho-somatic research as a physician in a United States TB sanatorium in 1949 exploring the relationship between stress and tuberculosis. Although he lacked the sophistication of modern epidemiological techniques, several of his studies showed that persons who had experienced stressful situations such as divorce, death of spouse, a loss of a job were more likely to develop tuberculosis and less likely to recover from it. He devised numeric scales that quantified stressful events and did prospective studies with control groups (some of his work is summarised below). Although Holme's work was rudimentary, and open to scientific criticism, his basic contention may have been correct. Holmes was well regarded among his colleagues and his work received governmental funding. His scientific findings however were not necessarily accepted. This may have been because the focus at that time was on the `germ' and TB treatment was believed to be causing a major decline in the disease prevalence. He left TB research in 1962 and his subsequent work was published in psychosomatic journals.

Holmes also emphasized the need to understand each patient holistically. The following is a discussion of a 29 year old black woman at a case presentation:

At this point in her life, the man she later married returned from war service to the small town in Louisiana, and after a month of superficial acquaintanceship they were married. The marital adjustment was always poor .... She spoke of herself as "not a hotblooded woman" who preferred church activities. Her husband preferred sports and parties. She resented the fact that he was not a good provider and stated, "My father built a good home for my mother. Here we are packed in; I need my own home". The husband chose Seattle as a place to live, and in 1946 they moved here.... The patient always resented the separation from her family and stated, "I always keep the far home available".

Holmes then explained why this particular woman had become tuberculous : "It was in the setting of unfulfilled dependency needs, and an increasingly strained marital adjustment in a new and unsympathetic environment, that the patient developed pulmonary tuberculosis " . This analysis recalled the holistic approach to psychosomatics that placed disease in the context of a patient's personal history.

The contention of this article is not that Holme's work proved the link between stress and tuberculosis, but that the body of his research has been completedly ignored in contemporary tuberculosis literature. His research and his presentations sought to challenge the standard model of the disease as a straightforward infection. "Although infection with the bacillus was necessary, tuberculosis could not be understood without recognition of the etiologic role played by underlying personalities and stressful situations". The research agenda that he initiated, has remained unworked on since that time.

While Holmes developed a sophisticated model of tuberculosis as a `psycho-somatic disease', he had little say about its prevention and treatment. Of course one way to alleviate stress among poorer people would have been to provide them with better jobs, housing and nutrition. However like most contemporary medical people he advocated educating people how to anticipate stressful events and thus adjust to them better.

The fate of Holme's's work is not unusual. Although we know that tuberculosis is a disease with social and environment roots, our technical solutions ignore this. Could the various factors that we are discussing, urbanisation, overcrowding, poverty mediate some of their influences through stress ? Is there a different way of looking at the same problem ?

Summary of Thomas Holmes work of tuberculosis

* In a study of 109 sanatorium residents Holmes found that patients who had localised resolving tuberculosis, were anxious and had normal

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advanced and deteriorating TB were depressed and had low urinary ketosteroid level.

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* To understand the effect of emotional stress and difficult social relations, he interviewed 100 patients admitted to the Seattle sanatorium. He found that 71 % had experienced financial hardship, 52 % job dissatisfaction, 31 % met criteria for alcoholism and that these factors clustered in the 2 years preceding the admission.

* He did the same study using a control group and a interview schedule which he devised to measure the previous occurence of psychosocial stress (Schedule of Recent Experience). He compared 20 matched sanatorium employees who developed TB and those who did not and found disturbing occurences more frequently in the preceding two years of tuberculous employees alone. He also assessed their "emotional integration" by a different scale and found that the TB employees were more frequently `pathologically disturbed".

* In the next study he used a partially prospective design, comparing patients who redeveloped sputum positivity on treatment after 3 months of sputum negativity (21 patients), to patients who remained sputum negative (24 patients). He found that those who had "thrown a positive" faced emotional problems during hospitalisation and had long histories of unstable lifes, lack of social,economic and family supports. Based on this data, he devised a new instrument to measure the level of emotional disturbance which predisposed to "throwing a positive". He re-analysed the baseline psychological difficulties of 10 controls using his instrument. On this basis he predicted that two of the controls on followup would `throw a positive' and his prediction actually came true.

* His final major study titled `Experimental study of prognosis' used the Berle Index, an instrument that identified psychological and social factors characteristic of recovering patients. A high Berle score predicted recovery from the illness. He prospectively studied 41 randomly selected newly detected tuberculosis patients. After five years followup, among the 26 who had achieved a normal or high Berle score, there were no treatment failures. However five treatment failures occurred among fifteen patients who had low Berle scores.

DIS 4:22

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DIS 4:23

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TUBERCULIN SENSITIVITY IN A HIGH-RISK CANINE POPULATION[1, 2]

W. R. SNIDER,[3] D. COHEN,[4] J. S. REIF, S. C. STEIN,[5] AND J. E. PRIER[6]

Snider, W. R., D. Cohen, J. S. Reif (School of Veterinary Medicine, U. of Pennsylvania, Philadelphia, PA 19174), S. C. Stein and J. E. Prier. Tuberculin sensitivity in a high-risk canine population. *Am J Epidemiol* 102:185–190, 1975.—An epidemiologic study of tuberculosis in dogs exposed to humans with recently reported tuberculosis was undertaken in Philadelphia between July 1966 and June 1968. A total of 29 dogs meeting the criteria for inclusion in the high-risk population were studied by history, physical examination, intradermal tuberculin tests, and radiographic and bacteriologic examination. Ten of the 29 dogs showed positive responses to US Department of Agriculture (USDA) standard mammalian tuberculin. Positive tuberculin tests to second strength PPD were demonstrated in five of the 10 responders to USDA mammalian tuberculin. No physical, radiographic or bacteriologic evidence of tuberculosis was found in any of the high-risk animals examined. In a comparison group of 70 dogs without known exposure to tuberculosis, two positive responses to USDA tuberculin were demonstrated and none to PPD.

dog diseases; epidemiology; tuberculin test; tuberculosis; zoonoses

Despite intensive efforts aimed at control and eradication, tuberculosis continues to represent an important disease of man in the United States, especially in urban areas. In the United States approximately 37,000 new active cases were reported in 1970 (1). In Philadelphia, Pennsylvania, a large, urban community, approximately 900 new active cases are reported from a population slightly in excess of 2 million (2).

Dogs and cats living in close association with active cases of human tuberculosis receive extraordinary exposure to this disease and represent a population of animals at high risk. In an investigation of apparently healthy canine and feline contacts of tuberculous patients by Hawthorne and Lauder in 1962 (3), *Mycobacterium tuberculosis* was recovered from seven of 48 exposed dogs and cats examined by culturing rectal and pharyngeal swabs. Twenty-two additional canine and feline contacts of tuberculous patients were examined by BCG intradermal tests and 11 (50 per cent) were found positive. Ten of these 70 animal contacts were obtained for autopsy and one had pathologic findings of tuberculosis. Other investigators have documented similar instances of canine and feline tuberculosis acquired from human patients (4–6).

The role of the dog and cat as potential reservoirs of bovine tuberculosis on Pennsylvania farms was recently described (7).

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Abbreviations: BCG, bacille bilié de Calmette-Guérin; OT, Koch's old tuberculin; PPD, purified protein derivative; TU, tuberculin unit.

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[2] Supported in part by a grant from Pennsylvania Department of Agriculture; by the U.S.A.P.H.I.S., US Department of Agriculture; and by US Public Health Service Training Grant TI GM 975.

[3] Formerly: TB epidemiologist, A.P.H.I.S., US Department of Agriculture, Austin, Texas. Dr. Snider died in August 1973.

[4] Present Address: University of the Negev, Beersheva, Israel.

[5] Department of Health, City of Philadelphia.

[6] Department of Health, State of Pennsylvania.

Concurrently, urban dogs exposed to humans with active tuberculosis were examined. An evaluation was made of various diagnostic procedures, particularly skin tests, as case finding tools for tuberculosis in dogs.

Materials and methods

Dogs from Philadelphia households in which patients with active tuberculosis had recently been discovered were chosen for study. The animals were identified by the Tuberculosis Control Section of the Philadelphia Department of Public Health. Upon finding a dog in the home of a newly reported case of human tuberculosis, the public health nurse referred the animal's owner to the investigators. The owner's cooperation was solicited by telephone call or personal interview. A comparison group consisted of dogs without known exposure to tuberculosis which were admitted to the University of Pennsylvania Veterinary Hospital. The comparison group consisted of routine hospital admissions. Animals which were critically ill or appeared to be in the terminal stages of diseases were not tested.

The following diagnostic procedures were performed on all dogs:

1) History and physical examination: A history of each animal was taken and recorded. Special attention was given to the type, degree and duration of known exposure to tuberculosis. To evaluate this exposure, histories of associated human patients were also recorded. Information concerning human patients was provided by weekly morbidity listings of newly discovered cases of human tuberculosis in Philadelphia (8). The listings included reports on the patient's bacterial status and disease activity.

2) Intradermal tuberculin test: Intradermal tuberculin tests were performed on all dogs. Two or three types of tuberculin were administered simultaneously using 0.1 ml of each antigen at separate sites. United States Department of Agriculture (USDA) standard mammalian tuberculin (approximately 15,000 TU) and second test strength purified protein derivative (PPD) (Parke Davis and Co.) (250 TU) were employed routinely. Old tuberculin (OT) (Parke Davis and Co.) (250 TU), was employed as the third antigen in 12 cases. Animals with induration of 5 mm or greater at 48 hours were considered positive.

3) Radiographic studies: Chest radiographs were made of each animal in the dorsoventral and left recumbent positions.

4) Bacteriologic studies: Swabs of the caudal pharynx (or larynx) and rectum were taken for culture and placed in sterile tubes containing 0.5 cc saline. At necropsy, selected tissues from lung and lymph nodes (mesenteric, subpharyngeal, and bronchial) were collected for Ziehl-Neelsen staining and mycobacterial culture.

Samples were processed according to recommendations of the National Tuberculosis and Respiratory Disease Association (9). Cultures were kept under observation for eight weeks. Mycobacterial growth was identified and classified by biochemical tests and growth characteristics.

During the period of this study (July 1, 1966 to June 30, 1968) the number of new active cases of human tuberculosis in Philadelphia was reported to be approximately 950 annually (10).

Sixty patients with tuberculosis from Philadelphia or their families were interviewed to request permission for examination of their dogs. Forty owners (67 percent) cooperated. Ten dogs brought to the clinic were excluded because of insufficient exposure to active tuberculosis or incomplete examination.

One dog referred by a veterinary clini-

fast organisms in pulmonary and mediastinal lesions of metastatic squamous cell carcinoma and has been described elsewhere (11).

Twenty-four of the household pets were exposed to patients with active pulmonary disease in which tubercle bacilli had been isolated from sputum samples sometime during their illness. In the other five dogs (T 602, 604, 606, 620, 622) exposure was either to individuals with active disease in areas of the body other than the lung or to patients with quiescent pulmonary disease in which acid-fast bacilli were not recovered.

The dog's contact with the patient also varied. In some cases intimate association was reported in which dog and patient shared the same room and were constant companions. In one case (T 647) the dog had frequently ingested his tuberculous owner's sputum. In another instance the contact between pet and patient was described as casual and infrequent.

Results

No signs of clinical illness were detected in any of the 29 dogs examined. Radiographic examination revealed no evidence of pulmonary tuberculosis. Attempts to isolate Mycobacteria by culture of rectal and pharyngeal swabs were also unsuccessful. In one tuberculin reactor which was euthanized and necropsied no gross or histologic evidence of tuberculosis was found.

Comparison of intradermal tuberculin test results in dogs exposed to human tuberculosis is presented in table 1. The overall rates for tuberculin sensitivity in the 29 dogs tested were 34.5 per cent for USDA tuberculin and 17.2 per cent for PPD. In the 24 dogs exposed to patients with active pulmonary disease the rates were 41.7 per cent and 20.8

tuberculin with induration and erythema ranging from 10 to 30 mm. Five of these 10 positive responses were supported by simultaneous reactions to PPD. In the other five, doubtful or negative responses to PPD occurred. Two of three dogs in this group tested with OT responded with induration and erythema of 10–17 mm. Both of the OT positive animals reacted simultaneously to USDA and PPD tuberculin. The 19 dogs that were negative to USDA tuberculin were also negative to PPD and 10 of these 19 tested with OT were similarly negative. Erythema without induration was occasionally noted in response to one or more antigens and was considered to represent a negative reaction.

Table 1

Comparison of intradermal tuberculin test results in 29 dogs exposed to human tuberculosis (University of Pennsylvania, July 1966–June 1968)

Animal No.	Tuberculin test results		
	USDA mammalian	PPD	OT
602	Neg.	Neg.	
603	Neg.	Neg.	
604	Neg.	Neg.	
605	Pos. (15 mm)†	Neg.*	
606	Neg.	Neg.	
607	Pos. (20 mm)†	Pos. (8 mm)†	
614	Pos. (25 mm)†	Neg.‡	
615A	Pos. (30 mm)†	Neg.‡	
615B	Neg.	Neg.	
615C	Neg.	Neg.	
616	Pos. (20 mm)†	Pos. (10 mm)†	
619	Neg.	Neg.	
620	Neg.*	Neg.	
622	Neg.	Neg.	
624A	Pos. (20 mm)†	Pos. (15 mm)†	
624B	Pos. (10 mm)†	Neg.	
628	Neg.*	Neg.*	
633	Neg.	Neg.	Neg.
639	Neg.	Neg.	Neg.
640	Neg.	Neg.	Neg.
641	Pos. (20 mm)†	Pos. (10 mm)†	Pos. (15 mm)†
647	Pos. (15 mm)†	Pos. (10 mm)†	Pos. (17 mm)†
648	Neg.	Neg.	Neg.
649	Neg.	Neg.	Neg.
651	Neg.*	Neg.	Neg.
652	Neg.*	Neg.	Neg.
656	Pos. (10 mm)†	Neg.*	Neg.*
658	Neg.*	Neg.*	Neg.*
660	Neg.*	Neg	Neg

Comparison group. Two tuberculin positive dogs were found in 70 hospitalized animals tested. The positive responses were to USDA tuberculin only. Simultaneous tests with PPD and O'T were negative in the two reactors. No evidence of tuberculosis was observed either in the two reactors or in the other 68 hospital dogs on routine clinical examination. When results of tuberculin tests in this group were compared to results of the test in the urban dogs owned by patients with active tuberculosis, a significant number of high risk dogs were found positive to intradermal tuberculin tests ($\chi^2 = 15.521$, $p < .001$).

Discussion

We know of no efforts in the United States, prior to this investigation, to systematically examine canine contacts of human patients with active tuberculosis. The only records available concerning the prevalence of mammalian tuberculosis in Pennsylvania dogs were those at the University of Pennsylvania Veterinary Hospital, Philadelphia. During the two-year period of this study one case of tuberculosis was recorded in a dog, unrelated to the investigation. Only three cases, all in dogs, have been found during the last 15 years at this hospital among approximately 75,000 patients.

The incidence of tuberculosis in man continued to decline in Philadelphia during the period of this study, but at a decreasing rate when compared to figures for previous years. The increasingly stable tuberculosis rate in Philadelphia was evident in yearly reports of new active tuberculosis cases.

In successive years of 1966 and 1967 approximately 950 new active tuberculosis cases were reported annually (10). This figure represents a rate of 46/100,000 population. Among cities in the United States, Philadelphia ranked 14th in incidence of tuberculosis in 1966 (12).

source population of approximately 1900 new active tuberculosis cases for the two-year period of this study were solicited to present their dogs for examinations. Conservative estimates of the dog population in Philadelphia indicate the 60 owners interviewed represent approximately 14 per cent of the patients with active tuberculosis who owned dogs. These figures are based on data presented by Cohen et al. (13) in which the licensed dog to human ratio in densely populated metropolitan areas adjacent to New York and Philadelphia was reported to be approximately 1:15. Assuming that each new active case of tuberculosis in Philadelphia was from a different household and the average household contains 3.5 persons (US Census figures), the total human population in the household of 1900 new active cases of tuberculosis would be approximately 6650 persons. A dog to human ratio of 1:15 would suggest that during the two years of this study approximately 443 canine contacts of active human tuberculosis existed in 1900 Philadelphia households of which 60 or 13.5 per cent came to the attention of this study. Of the 60 owners, 20 were uncooperative and 11 additional pets were excluded from the study because they did not meet selection criteria of this high-risk population. In the final analysis, 29 dogs owned by 29 patients were studied. The dogs examined thus represent approximately 7 per cent of all dogs estimated to be owned by tuberculous patients in Philadelphia during the two years of this study.

Tuberculosis was not demonstrated in these 29 dogs. No evidence of tuberculosis was detected either clinically or radiographically. Attempts to isolate Mycobacteria by culture of rectal and pharyngeal swabs from the 29 dogs were unsuccessful. In an earlier study of dogs and cats exposed to patients with active tuberculosis, direct culture of rectal and pharyngeal swabs on either Lowenstein or Dorset egg media

virulent human tubercle bacilli from 48 exposed dogs and cats (3). In the present study, swab specimens were treated with 4 per cent sodium hydroxide solution before inoculation on Lowenstein's media. This treatment was employed to reduce the number of saprophytic bacteria, but may also have been toxic to mycobacteria if they were present in the specimen.

Tuberculin tests on canine contacts of tuberculous patients in this study indicate that the reactor rate in this group is significantly higher than reactor rates in dogs from a general population. One-third of the dogs in the high-risk population were positive to tuberculin. This rate is less than that found in Glasgow dogs and cats with similar exposure in which 50 per cent were positive to BCG (3). Since BCG was not employed here, a comparison of reactor rates in the two studies is not possible. However, a comparison group of dogs without known exposure to tuberculosis was tuberculin tested as well as dogs from the high-risk environment. The reactor rate of 34 per cent in the high-risk group was found to be significantly different from the 3 per cent reactor rate found in the comparison group.

A higher reactor rate was found in contacts of patients with active pulmonary tuberculosis than in contacts of patients with extra-pulmonary or quiescent disease. Though limited by small numbers the difference supports a hypothesis that infection was transmitted by droplet nuclei or ingestion of sputum.

No standardized recommendations for tuberculin testing exist for a dog. Systematic studies to compare the sensitivity and specificity of the various tuberculins employed in field studies have not been performed. Therefore several antigens were employed in this population at the concentration normally available for field use. USDA tuberculin and concentrated strengths of PPD and OT were found to be dogs. In general, there was agreement in the results obtained with these tuberculins, as demonstrated by simultaneous testing of the same animal.

Because of the high concentration of USDA tuberculin, approximately 15,000 TU/0.1 cc, an atypical inflammatory reaction was occasionally observed. This reaction, however, was distinguishable from the induration and erythema of a true positive response. Atypical inflammatory reactions to PPD and OT were observed less frequently than to USDA tuberculin. A true positive response to PPD and OT was also accompanied by induration and erythema. The diameter of the true positive response was greatest for USDA tuberculin, intermediate for OT and smallest for PPD.

Although precise determination of the sensitivity and specificity of each of the tuberculins employed is not possible, it would appear that USDA mammalian tuberculin may have higher sensitivity and/or lower specificity than PPD or OT at the concentrations employed.

The findings in this study and a similar one conducted in Scotland (3) have provided evidence that canine contacts of human tuberculosis are influenced biologically by their exposure. In the Glasgow investigation both the increase in reactor rates to BCG and the recovery of virulent human tubercle bacilli from pharyngeal and rectal swabs indicated that the dog and cat may be involved in the epidemiology of human tuberculosis. Although active disease or viable tubercle bacilli were not recovered from canine tuberculosis contacts in the present study, the reactor rates to tuberculin in dogs approximated the findings of the Glasgow study. These disclosures should furnish sufficient evidence that dogs living in contact with persons with active tuberculosis must be considered as alternate hosts and potential reservoirs for human tubercle bacilli. C

be examined and dealt with utilizing the same principles which apply to other members of the patient's family.

We recommend that clinically affected dogs be euthanized because of their public health risk. However, we are faced with a much more difficult problem in determining what to do with exposed, sensitized, but clinically normal pets. These animals should be kept under surveillance to evaluate their public health significance. In view of the rarity of tuberculosis sensitivity in the total canine population it would perhaps be worthwhile to consider drug therapy (e.g. isoniazid) in tuberculin-positive contacts. This could be justified on the basis that, since we do not know the time of tuberculin conversion in the case of the pet animal, each tuberculin-positive animal should be considered as a recent converter and treatment instituted to abort the development of progressive disease.

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