

**THE WORLD BANK GROUP ARCHIVES**

**PUBLIC DISCLOSURE AUTHORIZED**

**Folder Title:** Forty First Tuberculosis Seal Campaign 1990 - Join Hands to Fight Tuberculosis - Defeat Tuberculosis Now and Forever - The Tuberculosis Association of India

**Folder ID:** 793021

**Project ID:** P010473

**Date:** 1/1/1990

**Fonds:** Records of the South Asia Regional Vice Presidency

**ISAD Reference Code:** WB IBRD/IDA SAR

**Digitized:** 10/9/2018

To cite materials from this archival folder, please follow the following format:  
[Descriptive name of item], [Folder Title], Folder ID [Folder ID], World Bank Group Archives, Washington, D.C., United States.

The records in this folder were created or received by The World Bank in the course of its business.

The records that were created by the staff of The World Bank are subject to the Bank's copyright.

Please refer to <http://www.worldbank.org/terms-of-use-earchives> for full copyright terms of use and disclaimers.



THE WORLD BANK  
Washington, D.C.

© International Bank for Reconstruction and Development / International Development Association or  
The World Bank  
1818 H Street NW  
Washington DC 20433  
Telephone: 202-473-1000  
Internet: [www.worldbank.org](http://www.worldbank.org)



The World Bank Group  
**Archives**  
793021  
R1998-026 Other #: 22 135837B  
Forty First Tuberculosis Seal Campaign 1990 - Join Hands to Fight Tuberculosis - Defeat  
Tuberculosis Now and Forever - The Tuberculosis Association of India

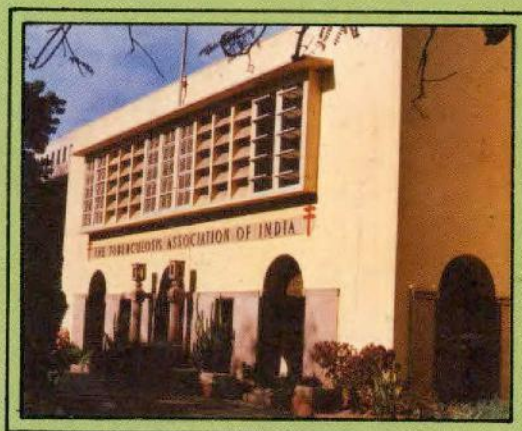
**DECLASSIFIED**  
WBG Archives



# 41st. T.B. SEAL CAMPAIGN-90

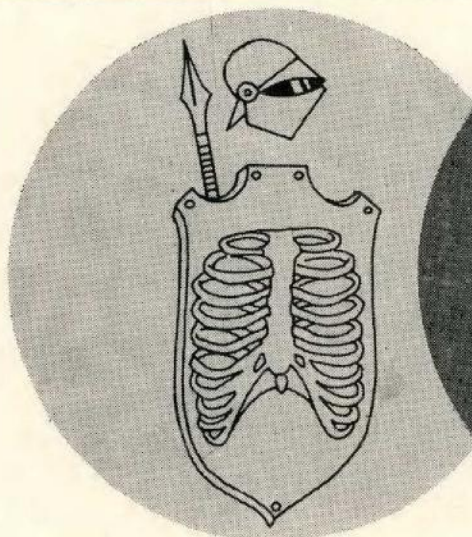


- JOIN HANDS TO FIGHT T.B.
- DEFEAT T.B. NOW AND FOREVER



**THE TUBERCULOSIS ASSOCIATION OF INDIA**

3, RED CROSS ROAD, NEW DELHI-110001



**CRUSADE  
AGAINST TB  
IS OUR  
PRIORITY—  
LUPIN**

## **SOME OF OUR SIGNIFICANT MILESTONES**

### **ETHAMBUTOL HCl**

- LUPIN is the **WORLD LEADER** in the basic manufacture & export of Ethambutol.
- LUPIN supplies over 60% of the Ethambutol requirement of the world.

### **RIFAMPICIN**

- LUPIN caters to 35% of Global need by manufacturing 120 Tons Per Annum of Rifampicin.

### **PYRAZINAMIDE**

- LUPIN's modern plant has commenced manufacturing Pyrazinamide.

## **LUPIN assures continuous availability of all anti TB drugs**

**COMBUTOL 200 / 400 / 600 / 800 / 1000**  
(Ethambutol HCl)

**COMBUNEX (Ethambutol + INH)**  
Readymade R-CIN Syrup & R-CIN 200 Syrup

**R-CINEX 450 (Rifampicin + INH)**

**R-CINEX Dispersible Kid Tablet**

**R-CIN 150 / 300 / 450 / 600 (Rifampicin)**

**PYZINA 500 / 750 (Pyrazinamide)**



**LUPIN LABORATORIES LTD.**

159, C.S.T. ROAD, KALINA,  
SANTACRUZ EAST, BOMBAY 400 098.

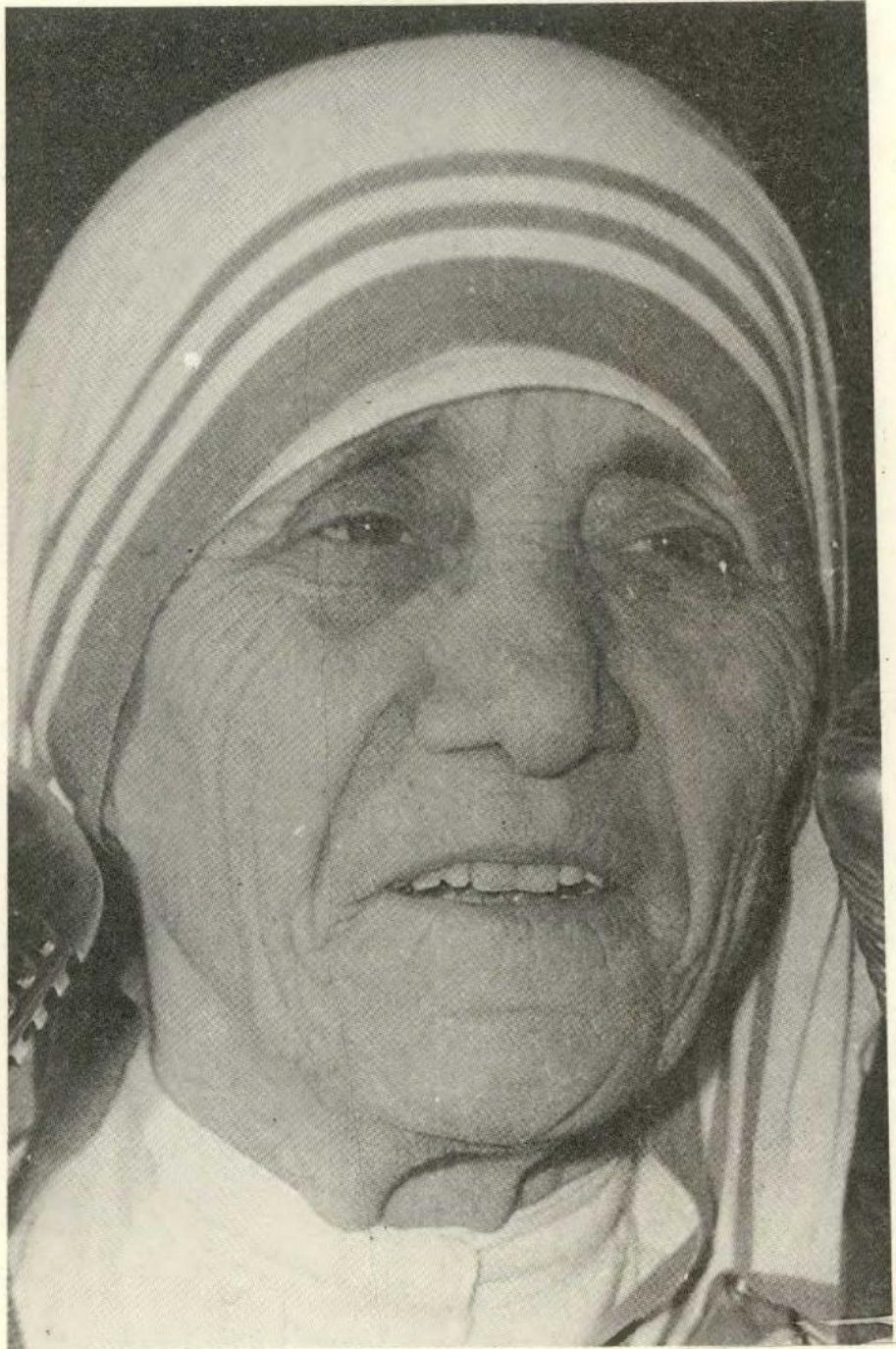


**SHRI R. VENKATARAMAN**  
**OUR PATRON**



**DR. M. S. CHADHA**  
**OUR PRESIDENT**

**OUR BELOVED MOTHER SPREADING THE LOVE OF GOD:  
CRUSADER IN ALLEVIATING HUMAN SUFFERING**

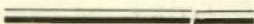


**MOTHER TERESA**



## MESSAGES

We express our profound gratitude to all the dignitaries who have sent their valued MESSAGES published in the following pages. These Messages will cause deeper impact in mobilizing public opinion and means to fulfil our obligations towards service to humanity and in alleviating human suffering.







सत्यमेव जयते  
राष्ट्रपति  
भारत गणतंत्र  
PRESIDENT  
REPUBLIC OF INDIA

M E S S A G E

On the occasion of the **41st T.B. Seal Sale Campaign, 1990**, I have great pleasure in extending my felicitations to the Tuberculosis Association of India for its band of devoted workers.

I have no doubt that, as on earlier occasions, the Association will receive generous contributions for its noble objectives.

My best wishes for the success of T.B. Seal Sale Campaign.

*R. Venkataraman*

R. VENKATARAMAN

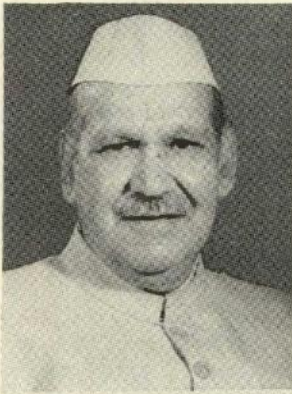
New Delhi,  
August 30, 1990.



उप-राष्ट्रपति, भारत  
नई दिल्ली

VICE-PRESIDENT  
INDIA  
NEW DELHI - 110011

September 14, 1990



M E S S A G E

I send my best wishes for the success of the 41st T.B. Seal Campaign being launched on Gandhi Jayanti 1990, by the Tuberculosis Association of India.

*S. D. Sharma*  
( S.D. Sharma )



PRIME MINISTER

MESSAGE

The Tuberculosis Seal Campaign is inaugurated appropriately, each year, on October 2nd, a day on which we rededicate ourselves to the ideals of Mahatma Gandhi whose message of selfless service has been a continuing source of inspiration. The Campaign is a reminder to all of us that it is our moral duty to lend a helping hand to those in distress. While advances in modern medicine have increased the chances of preventing and curing tuberculosis, the effectiveness of various measures can be further enhanced only with the active involvement of the people.

On the occasion of the 41st Tuberculosis Seal Campaign I send my best wishes to the tuberculosis Association of India and call upon the people to contribute generously to the cause. I wish the Tuberculosis Seal Campaign all success.

[Vishwanath Pratap Singh]

New Delhi  
September 21, 1990

उपराज्यपाल  
दिल्ली  
LIEUTENANT GOVERNOR  
DELHI



राज निवास  
दिल्ली-११००५४  
RAJ NIWAS  
DELHI-110054

August 21, 1990



MESSAGE

I am glad to know that T.B. Association of India is launching the 41st T.B. Seal Campaign on 2nd October, 1990 and is bringing out a Special T.B. Seal Campaign Souvenir on this occasion. There is need to create awareness among the people that TB which was till recently considered incurable has now become curable if it is detected early. People should be motivated to undergo medical check up so that diseases are detected and controlled in time.

I wish the Association all success in its endeavours.

A handwritten signature in black ink, appearing to read 'Arjan Singh'.

( ARJAN SINGH )

GOVERNMENT OF INDIA  
MINISTRY OF HEALTH & FAMILY WELFARE  
NEW DELHI-110011



SEPTEMBER 12, 1990

I am glad to know that Tuberculosis Association of India will be organising T.B. Seal Sale Campaign on 2nd October, 1990. It is an auspicious day being the birthday of our "Father of the Nation" who was a doyen for such social activities for the upliftment of the sick and poor. I hope the people of our country will take part in large numbers by giving their active cooperation in this campaign and disseminate the message of "Fight against Tuberculosis" to the community.

I send my best wishes for the success of the campaign.

R. Srinivasan



MESSAGE

I am happy to learn that the Tuberculosis Association of India is bringing out a Special TB Seal Campaign Souvenir on the occasion of its forty-first TB Seal Campaign on 2 October 1990, the Gandhi Jayanti Day.

The important role played by the Association in the implementation of the National Tuberculosis Programme to supplement governmental efforts in stepping up the activities in general and to help in the smooth implementation of the programme through various activities such as health education, case-finding and case-holding in particular are really commendable. Considering the fact that the disease continues to be a major public health problem in the countries of the South-East Asia Region, WHO has been strengthening and supporting governmental as well as non-governmental efforts in the field of TB control by appreciating such awareness campaigns addressing the general public so as to make TB control as an integral part of primary health care.

I wish all success in this endeavour.



Dr U Ko Ko  
Regional Director

New Delhi  
22 August 1990



THE TUBERCULOSIS ASSOCIATION OF INDIA  
3, RED CROSS ROAD  
NEW DELHI 110 001

Dated 21<sup>st</sup> September, 1990

The 41st TB Seal Campaign of the Tuberculosis Association of India is being inaugurated by our most respected Rashtrapatiji on 2nd October, 1990, the Gandhi Jayanti Day. On this auspicious occasion, I convey, on behalf of the Tuberculosis Association of India, our sincere greetings to all our country-men and workers in the field of tuberculosis.

Tuberculosis, though no longer regarded as 'a dreaded disease' of 4-5 decades ago, thanks to the advances made in its chemotherapy it still continues to be a major public health problem in the country. Its incidence and prevalence are high and a sizeable segment of our population is afflicted with the disease which is also responsible for a heavy exonomic drain on our national resources. The magnitude of the problem calls for all-out efforts, if the ravages of tuberculosis have to be forestalled.

The Tuberculosis Association of India, its affiliates and Tuberculosis Workers are wedded to the cause of alleviation of human suffering. It is imperative that voluntary organisations should have sufficient funds to achieve their goals. The TB Seal Campaign has two main objectives, viz. associating the people with TB Control Programme and of raising funds for their TB Association.

I would fervently appeal to our people to come forward and buy the Seals and also donate liberally for this noble cause.

*Dr. M. S. Chadha*  
*President*



THE TUBERCULOSIS ASSOCIATION OF INDIA  
3, RED CROSS ROAD  
NEW DELHI 110 001

Dated 13<sup>th</sup> September, 1990

I am glad that the Tuberculosis Association of India is bringing out a Souvenir on the occasion of the 41st TB Seal Campaign which will be released by the respected President of India on 2nd October, 1990.

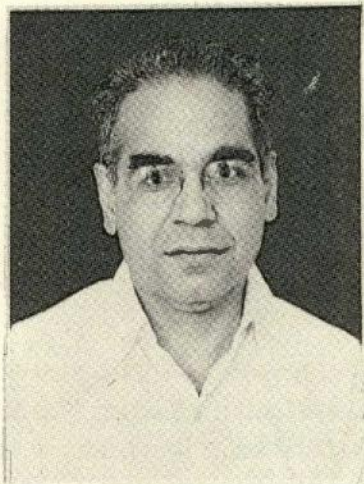
Tuberculosis continues to be a major public health problem in our country. Ignorance about the disease, its mode of spread, facilities for diagnosis, treatment and prevention, etc. is still appalling in our country. An intensive health education drive is, therefore, a must for Tuberculosis control programme. A programme, even if it is scientifically sound, economically and operationally feasible and highly efficient, will not succeed unless and until people accept it, cooperate in its implementation and utilise fully the facilities provided by the Government. It is the responsibility of the voluntary agencies like the Tuberculosis Associations and other welfare organisations, to bring about this involvement of the community.

The Tuberculosis Association of India organises the TB Seal Campaign every year. The object of this Campaign is not only to collect money for health education and other control activities but also to spread the message of Tuberculosis control all over the country through these Seals.

I wish the Tuberculosis Association of India and its affiliates in the States every success in their efforts to fight this scourge.

*DR. G.K. VISHWAKARMA*  
*CHAIRMAN*





THE TUBERCULOSIS ASSOCIATION OF INDIA  
3, RED CROSS ROAD  
NEW DELHI 110 001

Dated 4<sup>th</sup> September, 1990

On the eve of the 41st TB Seal Campaign, I send my warm greetings and good wishes to our TB Associations, workers in the field and the people of India.

Tuberculosis today is not the kind of frightening disease it used to be a few decades ago. Effective tools to treatment and prevent this disease have been found, new methods of control have been developed and anti-bacterial drugs are found to be effective in curing even advanced cases of tuberculosis. What we require at this stage is a mass effort to create in the country an awareness that tuberculosis is curable and preventable. The programme can succeed only if the people get deeply involved in the National TB Control Programme and utilise the facilities made available to them. The activities of our TB Associations are directed to achieve these desired ends and the TB Seal Campaign has been the one single all-India effort calculated to involve the people of India in the anti-TB movement. This campaign helps also in arousing public consciousness against tuberculosis in our country.

I appeal to one and all to support this campaign and help the Associations in carrying the message that Tuberculosis is preventable and curable. I wish the TB Seal Campaign a success.

*Dr. I.D. Bajaj*  
*Vice-Chairman*

## ACKNOWLEDGEMENTS

We are grateful to our donors, advertisers, contributors and well-wishers who have contributed so generously towards making this Souvenir a success. Thanks are due to the officers and staff of the Tuberculosis Association of India, who have worked hard to achieve the goals.

We are grateful to all who have contributed useful, meaningful and educative articles in this Souvenir.

The Souvenir Committee places on record its sincere thanks to all who have helped, assisted and contributed to the grand success of this Special Souvenir released to the Nation by the most respected President of India, as a part of the 41st TB Seal Campaign, on 2nd October, 1990 - Gandhi Jayanti Day. We are grateful and indebted to the respected Rashtrapatiiji for his patronage, guidance and blessings.

### **Souvenir Committee:**

**Dr. I. D. Bajaj**  
Vice-Chairman

**Shri S. Ratnam**  
Honorary Treasurer

**Shri G.B. Pai**  
Honorary Legal Adviser

**Dr. D. R. Nagpaul**  
Honorary Technical Adviser

**Shri Ashok Sachdeva**  
Secretary-General

# THE TUBERCULOSIS ASSOCIATION OF INDIA

## Patron

Shri R. Venkataraman, President of India

## President

Dr. M.S. Chadha

## Central Committee

Dr. G.K. Vishwakarma

*Chairman*

Dr. I.D. Bajaj

*Vice-Chairman*

Shri S. Ratnam

*Honorary Treasurer*

Shri G.B. Pai

*Honorary Legal Adviser*

Dr. D.R. Nagpaul

*Hony. Tech. Adviser*

Bhai Mohan Singh

Dr. S.P. Parma

D.G.A.F.M.S. (Lt. Genl. V.K. Tewari)

A.D.G.H.S. (TB) (Dr. B.T. Uke)

Dr. P. Vallal Peruman, MP

Dr. T. Kalpana Devi MP

Dr. M.D. Deshmukh

Dr. K.J.R. Murthy

Dr. S. Sivaraman

Prof. K. Jagannath

Dr. K.K. Jagdev

Dr. M.M. Singh

Dr. D.P. Tripathi

Dr. S.B. Trivedi

Dr. D.N. Gupta

Dr. S.R. Mathur

Dr. L.N. Chintey

Dr. P.K. Sen

Dr. M.K. Hazarika

Dr. M. Pathak

Smt. Teji Arjan Singh  
Dr. Damodar Bhounsule  
Dr. A.G. Patel  
Dr. (Mrs.) Supriya  
Dr. R.M. Bali  
Dr. S.M. Qasim Andrabi  
Dr. P. Chandrasekhar  
The Hony. Secretary, Kerala TB Association  
Dr. D.P. Verma  
Dr. T.B. Master  
Dr. K. Choudhary  
Dr. S.N. Tripathy  
Dr. K.P. Singh  
Dr. Jaswant Singh  
D.D.H.S. (Thoracic Medicine), Madras  
Dr. M.M.S. Sidhu  
Dr. N. Deb Burman  
Dr. M.N. Nagu  
Shri Om Prakash Jain  
Dr. Hoimi Basu  
Dr. K.V. Krishnaswami  
Dr. M.M. Singh  
Dr. S.K. Jindal  
Dr. P.P. Aravindan  
Dr. K.C. Mohanty  
The Director-General, Railway Health Services (Ex-officio)

#### Finance Committee

The Chairman  
The Vice-Chairman  
The Honorary Treasurer  
Shri G.B. Pai  
Bhai Mohan Singh

## Executive Committee

The Chairman  
The Vice-Chairman  
The Honorary Treasurer  
Shri G.B. Pai  
Bhai Mohan Singh  
Dr. D.R. Nagpaul  
Dr. Hoimi Basu  
Dr. Damodar Bhounsule  
Dr. T.B. Master  
Prof. K. Jagannath  
Dr. M.M.S. Siddhu  
Dr. B. Krishnacharya

## Technical Committee

K.C. Mohanty  
Dr. S.C. Kapoor  
Dr. D.R. Nagpaul  
A.D.G.H.S. (TB) Dr. B.T. Uke  
Dr. R. Prabhakar  
Dr. K. Chaudhuri  
Dr. K. Jagannath  
Dr. V.K. Sreenivasan  
Col. R. Jayaswal  
Dr. M.M. Singh  
Dr. P. Chandrasekhar  
Dr. S. Sivaraman  
Dr. S.B. Trivedi  
Dr. C. Srinivasa Rao  
Dr. Baldev Raj

*Chairman*

*Co-opted*

## Research Committee

Hony. Technical Adviser of the  
Tuberculosis Association of India

*Convener*

Dr. R. Prabhakar

Dr. K. Chaudhuri

Dr. B.T. Uke

## Editorial Board

### Indian Journal of Tuberculosis

Dr. P.K. Sen

*Emeritus Editor*

Dr. D.R. Nagpaul

*Editor*

Dr. M.D. Deshmukh

Dr. K.V. Krishnaswami

Dr. M.L. Mehrotra

Dr. S.P. Tripathy

Dr. S.C. Kapoor

Dr. G.V.J. Baily

Dr. D.N. Gupta

Dr. S.K. Jain

Dr. A.N. Malaviya

Dr. S.M. Tuli

Dr. D.D.S. Kulpati

## New Delhi Tuberculosis Centre Managing Committee

Dr. I.D. Bajaj

*Chairman*

Shri S. Ratnam

*Hony. Treasurer*

Shri G.B. Pai

*Hony. Legal Adviser*

Hony. Tech. Adviser, TAI

Secretary-General, TAI

The Director of Health Services, Delhi Administration (*Ex-officio*)  
The Representative of the New Delhi Municipal Committee  
The Joint Secretary (S), Ministry of Health and Family Welfare or his nominee  
The Joint Secretary (F), Ministry of Health and Family Welfare or his nominee  
The Asstt. Director General of Health Services (TB), Government of India

### **Lala Ram Sarup TB Hospital Managing Committee**

Dr. I.D. Bajaj	<i>Chairman</i>
Shri S. Ratnam	<i>Hony. Treasurer</i>
Shri G.B. Pai	<i>Hony. Legal Adviser</i>
Hony. Tech. Adviser, TAI	
Secretary-General, TAI	
The Asstt. Director General of Health Services (TB), Government of India.	
The Joint Secretary (F), Ministry of Health and Family Welfare or his nominee	
The Joint Secretary (S), Ministry of Health and Family Welfare or his nominee	
Dr. M.M.S. Siddhu	
Shri Inder Sain Jain	
Chaudhary Dalip Singh	
Director, C.G.H.S. or his nominee	
Medical Commissioner, ESI Corporation	
Health Officer, Municipal Corporation of Delhi	
Director, (Welfare) DGP&T	
Shri Rama Shankar	

### **The Tuberculosis Association of India**

Shri Ashok Sachdeva	<i>Secretary-General</i>
Shri V. Narayanaswamy	<i>Administrative Officer</i>
Shri A.K. Bhattacharjee	<i>Accounts Officer</i>
Shri P.R. Menon	<i>Superintendent</i>

# THE TUBERCULOSIS ASSOCIATION OF INDIA

## OBJECTS OF THE ASSOCIATION:

1. The name of the Society is the Tuberculosis Association of India (incorporating the King Emperor's Anti-Tuberculosis fund and King George Thanks-giving (Anti-Tuberculosis Fund)).

2. The objects for which the Association is established are:-

(a) The prevention, control, treatment and relief of tuberculosis.

(b) The encouragement of and assistance in the establishment throughout India of State Associations having objects similar in whole or in part to those of the Association.

(c) The affiliation or control of and the rendering of assistance to any institution having objects similar in whole or in part to the objects of the Association.

(d) The taking over of such portion as may be entrusted to it of the King Emperor's Anti-Tuberculosis Fund on such terms and conditions as may be agreed upon.

(e) The taking over of the King George Thanks-giving Fund and

administration thereof.

(f) The taking over of the assets and/or activities of any person or body for the advancement of the objects of the Association.

(g) The administration of endowments having for all or any of their objects the prevention, control, treatment and relief of tuberculosis.

(h) The collection, management and disbursement of funds raised or to be raised for all or any of its objects.

(i) The purchase or acquisition on lease or in exchange or by way of gift or otherwise of any real or personal or immovable or movable property and any rights or privileges necessary or convenient for its purposes.

(j) The sale, improvement, management and development of all or any part of the property and rights of the Association.

(k) The borrowing of money with or without security.

(l) The establishment and maintenance of Provident Funds or Pension Funds for the benefit of the employees of the Association.



(m) The undertaking of Research and Investigation on subjects concerning tuberculosis and allied chest diseases.

(n) The doing of all such things as are incidental or conducive to the attainment of the above objects or any of them or which may be conveniently done along with or as subsidiary to the said objects.

---

---

**TB can be prevented.**

**TB can be prevented by BCG vaccination. BCG should be given before the infection takes place. Infection taking place after BCG vaccination has much less chance to develop into disease.**

**Every child should be vaccinated before one year of age.**

**In villages health workers give BCG to children in their homes or it is given in health centre.**

**In big cities children are vaccinated soon after birth in the hospital before mother and child are discharged.**

**BCG is harmless and can be given safely soon after birth.**

---

---



SHRI ASHOK SACHDEVA  
SECRETARY-GENERAL

Shri Ashok Sachdeva took over as the new Secretary-General of the Tuberculosis Association of India on 12th February, 1990. He has vast administrative experience of many years in different aspects of Administration. He is well-versed with all aspects of financial, administrative and managerial matters. He has zeal for social work and in this short spell of time he has made his presence felt as a devoted T.B. worker, bringing about overall improvement in the activities of the Association.

# THE TUBERCULOSIS ASSOCIATION OF INDIA : A BRIEF

ASHOK SACHDEVA\*

The role of voluntary organisations in dealing with any public health problem, specially like Tuberculosis, cannot be over-emphasized. The first organised and concerted effort to combat tuberculosis in India was the establishment of the Tuberculosis Association of India in February, 1939.

Consistent with its status of National Voluntary organisation, the Association has spread no efforts during the 50 years of its existence, to help intensify the anti-tuberculosis movement in India and supplement Governmental endeavours in implementing the National Tuberculosis Programme. In this, the Association is assisted by 25 State TB Associations which are affiliated to it and about 300 District TB Associations which, in turn, are affiliated to the State TB Associations. The Association has the patronage of the President of India. The Director-General of Health Services is its ex-officio Chairman. It works in close cooperation with the Ministry of Health and the Director-General of Health Services of the Government of India. Similarly, the State TB Associations also work in close cooperation with the Health

Departments of their respective Governments.

## ORGANISATIONAL SET-UP

The Governing Body of the Association is its Central Committee which includes, among others, representatives of State TB Associations, members of the Parliament of India, representatives of the Directorate-General of Health Services, Government of India, National Conference of TB and Chest Diseases Workers, the Indian Red Cross Society, members nominated by the President of India and ex-officio members. The Executive Committee, appointed every year from among the members of the Central Committee, is responsible for the day-to-day running of the Association. The Association is assisted in its various activities by a Technical Committee consisting of senior tuberculosis professionals in the country, a Research Committee, a Health Education Committee and an Editorial Board for its Journal. The General Body and the Central Committee of the Association meet once a year while the other Committees meet as often as necessary. The Association has an Honorary Technical Adviser who is also Convener of its Technical and Research

\* Secretary-General, Tuberculosis Association of India, New Delhi.

Committees and Editor of the Indian Journal of Tuberculosis. The Secretary-General is the Chief Executive Officer of the Association and is responsible for carrying out, under the direction and control of the Executive Committee, the programmes and policies of the Association. He is responsible for the proper maintenance of the accounts and for discharge of such other duties entrusted to him. The Secretary-General is also the Secretary to various Committees and Sub-Committees of the Association and maintains the cognate minutes and records.

## MEMBERSHIP

The membership of the Association is confined to Founder Members, Central Committee Members, members representing State TB Associations and a few Ex-officio members. There is no direct membership of the Central Association.

## ACTIVITIES

### (a) Home Treatment Scheme

One of the first steps the Association took immediately after its establishment was to evolve a practical approach for the care of tuberculous patients. The Association advocated domiciliary treatment in 1940 for the first time and this is today the

sheet-anchor of tuberculosis control in the world. A field trial in Delhi carried out by New Delhi TB Clinic in 1941-42 proved its feasibility and effectiveness, with the result that this was accepted as the National Policy towards TB Control, and priority was given by the Government to start TB clinics all over the country.

### (b) Technical Committee

In 1948, the Association formed its Technical Committee which consists of 15 senior TB specialists. This Committee deals with all aspects of the TB problem and its recommendations are generally accepted by both official and non-official agencies. The National TB Programme introduced in 1962 is periodically reviewed by this Committee and its recommendations are calculated to facilitate its successful and effective functioning.

### (c) Research Activities

The Association started its research programme in 1975 with the double objectives of : (i) conducting original studies in respect of short-course chemotherapy, operational aspects and allied problems and (ii) to inculcate a spirit of research among the young workers and to raise the standard of scientific work in TB institutions in general.

(d) National & State-level Conferences

An important and regular programme of the Association is the organisation of annual Conferences for TB & Chest Diseases workers. The last National Conference was held at Madras during December 1989. Our State Associations also organise Conferences, Seminars, Camps, etc. on the same pattern as that of the National Conference.

(e) Tuberculosis Seal Campaign

The Tuberculosis Seal Campaign is an important activity of the Association and its affiliates. The collections made is utilised by the State and District TB Associations for promoting various activities. This campaign has helped in building up strong public opinion in favour of anti-TB work. In India, the campaign apart from fund raising, constitutes the main plank of voluntary work. It enable every citizen to associate himself with the movement against a powerful public health enemy.

(f) Health Education

Health Education material brought out by the Association consists of films on Tuberculosis, educational posters, cinema slides, rexine scrolls, flip book, school health brochures, etc. in

English, Hindi and regional languages. These are distributed through the State Associations and other voluntary agencies and the Government. The Association's illustrated booklet "What you should know about Tuberculosis" was produced in English, Hindi and eight regional languages. The Association has published another publication entitled "Lectures on Tuberculosis for General Practitioners". This provides essential information on evolution, diagnosis, treatment and prevention of tuberculosis that a general practitioner needs in his routine practice. Health education material is also sent directly to organisation and also individuals to bring about awareness on the subject.

(g) Publications, including Quarterly Technical Journal

The Indian Journal of Tuberculosis, a Quarterly publication of the Association, has completed 36 years of useful service to the medical profession. This is the only Journal devoted exclusively to TB in our country. The Association published in 1972 a comprehensive textbook on tuberculosis to meet a long-felt need for such a book by specialists in India. Another publication "Hand Book of Tuberculosis" covers, in simple language, the essential facts about the clinical, epidemiological and public health aspects of the disease.

#### (h) Specialized Institutions

The Association had set up specialized institutions to serve as "Models" and also as Demonstration and Research Centres for operational studies and training of personnel. (1) The New Delhi TB Centre, established in 1940, as a Training & Demonstration Centre and the TB Hospital, Mehrauli, undertake training of under-graduate and post-graduate and post-graduate medical students.

#### (j) Refresher courses

The Association in cooperation with its affiliates in the States and the Indian Medical Association has been organising periodic one-day refresher courses for general practitioners.

#### (k) State & District TB Associations

The 25 State TB Associations have been undertaking such activities as would strengthen the hands of officials who implement the National TB Programme. Most of them have TB Associations at District levels. They organise case-finding and immunization camps in remote areas. They assist the District TB Control agencies in supervising the drug distribution and intake of drugs by patients.

#### (l) International Contacts

The Tuberculosis Association of India is an affiliate of the International Union Against Tuberculosis & Lung Disease, Paris. It is also working in close cooperation with the international agencies like the WHO, UNICEF, etc.

#### (m) Funds

The income of the Association is made up of interest on investments, sale of Health Education material, donations, contributions, subscriptions, etc. and a small share of TB Seal Sale collections made by the State Associations. The Association does not receive any financial support from the Government.

In olden days health of an individual was entirely his or her own responsibility. Today it is considered to be the responsibility of the State and the Society in addition, more so in the case of infectious diseases. If a person suffering from an infectious disease like tuberculosis cannot or does not take action to get well, not only his own life is in danger but he poses a danger for the health of his family and the entire community to which he belongs. Consequently, the Government is providing health care near the people's place of residence, even in the rural areas, introduced the National TB Programme in 1962.

An indepth critical study established that tuberculosis is not merely a medical problem but also a social one and therefore, providing health facilities alone is not enough. Unless people themselves accept the programme and avail of the facilities that are provided, it will not succeed even if it is otherwise effective and feasible. There is still appalling ignorance about tuberculosis, its causation and spread in the community. Many people do not avail of the facilities at the health centre even if they have symptoms suggestive of the disease and many amongst those who start treatment give it up pre-

turely as soon as symptoms abate and thereby defeat the programme. It is estimated that about 12 million people are suffering from this disease at any point of time. Twentyfive percent among them are infectious and spreading the disease to their kith and kin and to the community. It is therefore obvious that if tuberculosis has to be brought under control in our country, health consciousness of the community has to be raised; people have to be educated about their role in TB control programme, so that their acts of omission or commission do not harm, directly or indirectly, the very society of which they are the constituents.

---

---

**WE SOLICIT YOUR PARTICIPATION  
IN FIGHTING A RELENTLESS  
BATTLE AGAINST TB**

---

---

# TUBERCULOSIS SEAL CAMPAIGN

ASHOK SACHDEVA\*

The annual TB Seal Campaign, introduced in India in 1950, serves as an important and powerful impetus to the activities of our TB Associations. The Campaign helps to raise funds for promoting voluntary anti-TB work in the country and provides opportunities to every citizen to contribute to the fight against Tuberculosis. It also helps to arouse consciousness among the public about the tuberculosis problem. In fact the TB Seal Campaign has been the one single all India effort aimed at involving the people in the anti-TB movement and ensuring their full participation in implementing the National Tuberculosis Programme.

## THE STORY OF THE TB SEAL

A kindly man named Einar Holboell worked in a post office in Denmark. Once while sorting heavy Christmas mail in 1903, he noticed some children limping across the road. He was extremely moved by the sight of these children who were suffering from tuberculosis of the bone. It hurt him to see the suffering caused by sickness and he wished he knew something to do about it. A thought struck him.

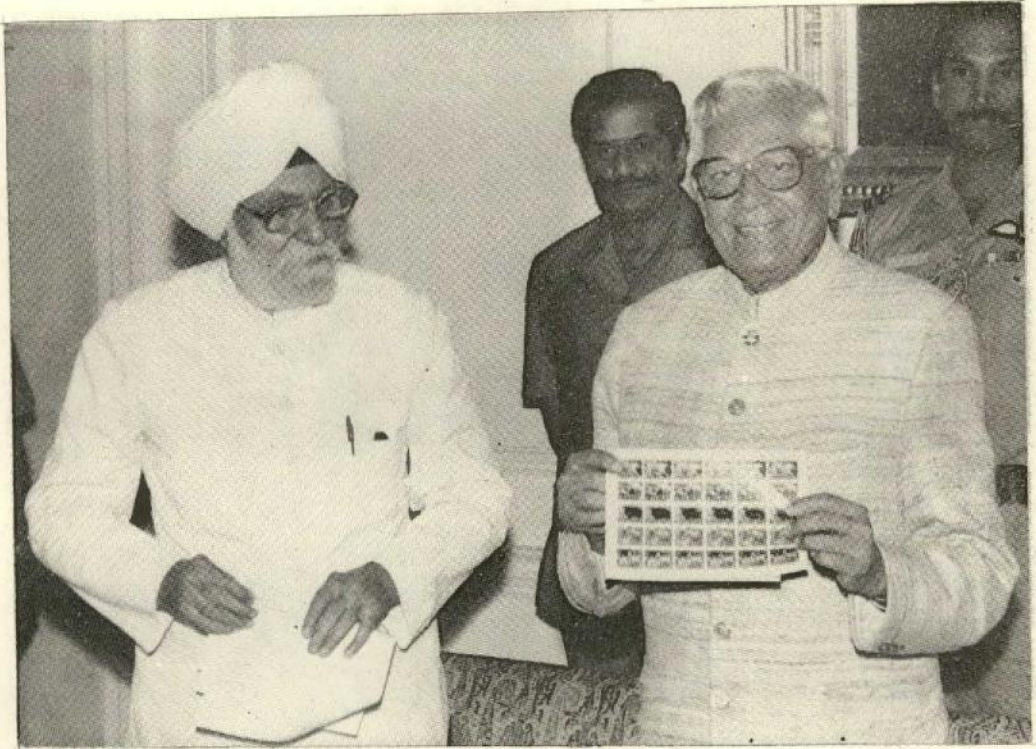
“If we could get people to buy a special Christmas Seal while the spirit of giving is strong during Christmas, it would be wonderful. There are so many letters and packages, and just a penny seal on each one would bring a lot of money to help the sick and needy children. There might even be enough to start a hospital for children.”

The idea of Einar Holboell was received enthusiastically by the Danish people. The King of Denmark gave his approval. This was how the first Christmas Seal appeared in 1904 with the Patronage of King Christian. The Seals had on them Queen Louise's picture and all Christmas letters carried a 2-ore Christmas Stamp. The Danish people participated in the first campaign by using an average of two stamps per person as extras on their Christmas mail. The first hospital for children in Denmark was built out of the returns of this Campaign. The sale of Christmas seals for collecting funds for anti-tuberculosis work was soon taken up by other countries and today almost all National TB Associations are collecting large sums of money through this Campaign. Holboell, who died in 1927, was happy to see his idea prosper and grow in other countries while he was

---

\*Secretary-General, Tuberculosis Association of India.





*Respected President of India and Patron, Tuberculosis Association of India  
inaugurating the 40th TB Seal Campaign.*



*President of the National Association Dr. M.S. Chadha Presenting  
the TB Seals to the Rashtrapati*

still alive. Thus, the idea of Danish Postal official provides succour to millions of TB sufferers all over the world.

## **TB SEAL CAMPAIGN IN INDIA**

A proposal to introduce the TB Seal to raise funds for anti-tuberculosis work in India was first considered in 1944, but it has to be deferred for the duration of the War. Conditions in the country during the post-war days were also found unfavourable for embarking on such a new venture. The Tuberculosis Association of India adopted the proposal in October, 1950, almost half a century after Einar Holboell conceived the idea. The Government of India allowed the Association to conduct the campaign every year from 1950 onwards.

In India, we do not call the Seal the "Christmas Seal", as is being done in other countries, as Christmas is not the only festive occasion in our country. Other festivities such as Dussera, Puja, Diwali, Id etc. are equally important and in a secular State like India, emphasis on any particular festival was not considered desirable. Therefore, the Tuberculosis Association of India decided to name the Campaign, "The TB Seal Campaign" and chose for it the season which is likely to cover some of the important festive occasions. Starting on 2nd October-Gandhi Jayanti

Day-the Campaign terminates on another important day for the Association, i.e. 23rd February, the Foundation Day of the Association. During the intervening weeks the people of India celebrate most of their important festivals. On these occasions the Association appeals to people to remember that they have a duty towards their brethren stricken with tuberculosis and as a token of their sympathy for the cause asks them to purchase TB Seals.

## **MESSAGE OF THE TB SEAL**

The TB Seal conveys the message that tuberculosis is preventable and that its victims can, if diagnosed early and treated properly and adequately be restored to normal life. The Campaign is inaugurated in the capital by the President of India and in the States by Governors/Ministers/other dignitaries. In special messages issued on the occasion, they appeal to the people to buy TB seals in large numbers and help fight tuberculosis in our country. Though the Seals have no postal value, our people have been buying them in large numbers and using them on their mail during festive occasions as a token of their support to the anti-tuberculosis campaign.

## **ORGANISATION OF THE CAMPAIGN**

The Organisation of the TB Seal

Campaign in India is the joint responsibility of the Tuberculosis Association of India and its affiliates in the States. While the Central Association supplies the seals and propaganda material, it is the responsibility of the State Associations to see that the seals are distributed and sold throughout the country. In this they seek the help of their District Associations which, in turn, receive assistance from all sections of the public including officials, non-officials, commercial organisations, voluntary agencies, medical and educational institutions, etc. They also organise local committees and enlist the cooperation of various bodies like, Rotary Clubs, Lions, YMCAs, YWCAs, etc. for the sale of seals. Upto 1956 the TB Seal was being sold for One Anna. In 1957 and 1958 it was sold at 5 Naya Paise, from 1959 to 1977 at 10 Paise and from 1978 to 1982 at 20 Paise. In 1983 and 1984 it was sold at 25 paise and from 1985 onwards it is being sold at 50 paise per seal. It is proposed to increase the selling price of the seal to Re. 1/-.

The forthcoming campaign to start on 2.10.1990 is the 41st in the series. Looking back over the past 40 years, its contribution to the anti-tuberculosis drive has, by no means, been insignificant, both in respect of raising funds for voluntary work and for creating better awareness among the people about tuberculosis. This is particularly

important in view of the fact that until the seal campaign started there was little or no organised publicity about tuberculosis. Further, prior to the starting of the TB Seal Campaign in 1950 many State Associations had little or no means for instituting regular programmes. Their resources were mostly confined to the returns from the corpus of the 1937-38 Appeal Funds and donations from the public. The seal campaign provided the much needed additional finances for propaganda and other essential activities. The Associations have now become more active and their organisation set up has considerably improved. They have been able to mobilise individuals, welfare organisations, educational institutions, rotarians, commercial and industrial concerns, railways and State Governments in the Campaign.

The Association received substantial donations of newspaper space and also cash for the same purpose. These donations were fully utilised for publicising the campaign as widely as possible. In the course of this publicity drive, anti-TB material of educative value were given out in various newspapers, care being taken to see that this publicity campaign dealing with various aspects of anti-TB measures covered and many newspapers in as many languages as possible in different parts of the country.

## INTEREST IN FOREIGN COUNTRIES

Indian Diplomatic Missions accredited to countries all over the world take considerable interest in selling our TB Seals and have contributed considerably to our seals funds. The total collections remitted by the Indian Missions abroad during the last 40 years have been considerable. As a result of their sustained efforts our seals have become quite popular in other countries and there is an increasing demand for exchange of seals.

## SEAL COLLECTIONS

It is gratifying to record that most of our State Associations have taken keen interest in the seal campaign and the collections have shown considerable improvement during the last few years. While the first campaign raised about Rs. 10,11,000, the subsequent five campaigns averaged only about Rs. 6,18,000. There was a fall between the 7th and 10th campaigns, the average being about Rs. 5,00,000/-. The lowest collections were in the 7th campaign which realised only Rs. 4,05,000. However, from the 14th campaign onward there has been a gradual but steady rise in the collections except in 1977-78. The 39th campaign has brought in a collection of over Rs. 45,00,000 in 1988-89. The accounts for 40th campaign are being

finalised. The collections reported from the last 39 campaigns amount to about Rs. 600 lakhs. Though these collections are not insignificant, yet it has to be stressed that these are not commensurate with either the size of the country or of the tuberculosis problem. In fact some of the States have yet to mobilise fully this potential source for raising funds for their various activities. Our Associations have to strive hard and see that the seal consciousness penetrates deep into our rural areas, influences the society as a whole and the message that tuberculosis is preventable and curable reaches every nook and corner of our country.

## UTILISATION OF COLLECTIONS

After meeting the expenses connected with the organisation of the campaign, including cost of seals and propaganda material, the State Associations give to the Central Association 5% and 2% of the collection towards its general activities, Research Fund respectively. The balance of the collections is available for anti-TB work in the respective States. These are mainly spent on health education, promoting domiciliary services, assisting needy patients, organising TB shibirs, seminars, Conferences, postgraduate refresher courses, etc. Some States have also put up a number of TB wards in general hospitals and provided essential equipments such as x-rays,

microscopes, mobile vans, etc. By and large the funds are utilised for promoting anti-TB work. The Central office at New Delhi has taken up health education awareness programme in a big way.

### TAI AWARDS

With a view to create better interest and enthusiasm in the campaign, the Association instituted awards of Shields, Cups and Merit Certificates to State Associations for highest collections recorded by sale of TB Seals in 1966. The Shield in respect of the 38th TB Seal Campaign was awarded to the Anti-TB Association of Tamil Nadu which had collected the highest collections so far recorded by any State from any campaign. The Runner-up Cup for the next best collection from the 38th campaign was awarded to the TB Association of Kerala for its collections of Rs. 5,50,005.

The spirit of competition fostered by these awards have resulted in better performances by most of the States. Some of the State Associations have also instituted trophies, shields,

medals and prizes as incentives to those who make large collections from within the State.

To sum up, Tuberculosis Associations in many countries organise seal campaigns primarily for fund-raising. In India the campaign, apart from fund raising, constitutes the main plank of voluntary work. It enables every citizen to associate himself with the movement against a powerful public health enemy. The funds raised in the campaign enable the Associations to carry out health education work in particular and other anti-TB activities, in general. However, the funds so far being raised are not as spectacular as in many other countries and collections can and must be stopped up. Further, it is a matter of great satisfaction that this campaign has helped to build up a considerable volume of public opinion in favour of the anti-TB movement in India and it has been responsible for enlisting the continuous support of all sections of the community. It is hoped that it will further enthuse our Associations to improve their organisational set-up and make the seal campaign in our country more rewarding than it has been heretofore.

# TUBERCULOSIS CONTROL - A CHALLENGE

DR. S.P. PAMRA\*

Principles of tuberculosis control are unexceptionable. They are true for all times and in all situations. Tuberculosis had started declining in some countries of the West, long before Robert Koch discovered the tubercle bacillus and thus, long before any scientific preventive or control measures could be visualised, leave aside implemented. This was partly due to the natural decline of the epidemic, inherent in its epidemiology and partly due to relative prosperity in the wake of industrialization and colonization.

The spectacular advances in the field of medicine recently in respect of tuberculosis considerably hastened the decline and, today it has virtually been controlled in many affluent countries. The position in the poor developing countries, on the other hand, is still dismal and tuberculosis continues to be a major health hazard inspite of the fact that the expertise and know how of tuberculosis control is equally available to these countries as well. The reason for this disparity is obvious. Wherever advancement on the socio-

economic front has kept pace with scientific advances, tuberculosis has been controlled. But wherever socio-economic development has lagged behind, control is still distant.

Poverty influences tuberculosis in two ways. Poor people are more susceptible to develop disease. Secondly, without adequate resources, the quantum and quality of tuberculosis services remain inadequate, thereby hampering its control. It is an irony that those who can afford do not need and those who need cannot afford!

Shimao\*\* has shown an unmistakable correlation between the decline in tuberculosis and the per capita expenses incurred in some Eastern countries on tuberculosis services. Japan spends about 1.5 US \$ per head per year and the decline is as high as about 10% per year. Malaysia and Korea spend about 90 and 45 US cents and the decline is 8% and 6% per year respectively. Thailand spends about 6 cents per year and the decline is less than 3% per year. In India, it is very difficult to compute the total expenditure incurred because in addition to the Central and State Governments, some expenditure is also incurred by municipalities and

---

\* Eminent TB Specialist; Former Director, New Delhi TB Centre and Ex-Hony. Technical Adviser, TB Association of India

\*\* T. Shimao; Ind. J. Tuberc.; 1986, 33, 108

other big employers like the Army, Railways, ESI, etc. It has been assumed\* that the total per capita expenditure in India comes to about Rs 2/- (about 12 US cents) per head per year. Naturally, the decline is much less than in Japan, Malaysia and Korea and it will continue as such unless the calibre of the tuberculosis services and financial allocations on which these depend improve considerably.

This does not, however, mean that tuberculosis cannot be brought under control without socio-economic prosperity. The Iceland experience has shown that if the quantum and quality of tuberculosis services is improved, adequate decline in disease can be obtained even without much enhancement of living standard.

Tuberculosis services in India have traditionally been concentrated in or near large cities. The National Sample Survey (1955-58) showed that the prevalence of tuberculosis in the villages was not much less than in the cities and therefore it became imperative that tuberculosis services should be available all over the country if the disease was to be controlled. The National Tuberculosis Programme (NTP) introduced in 1962 envisaged integration of tuberculosis with the general health services below the district level

since specialised clinics were already operating in almost all district headquarters and other big towns. Although the programme is epidemiologically sound and financially and operationally feasible, the performance even today continues to be below expectations.

The main reasons for this poor performance are:

- (1) It has not been possible to extend the programme to the entire country.
- (2) Many peripheral health institutions are not fully functional.
- (3) Poor utilisation of even the available facilities.

Sometimes it is argued that the poor performance under the National Programme is because the programme is not vertical. It is usually forgotten that situated as we are, there is no other alternative to an integrated horizontal programme. Nor perhaps an alternative is necessary. Our National programme has been universally acclaimed. It today forms the prototype of the National programmes of most of the developing countries and some developed countries as well and is functioning smoothly and effectively. It is not any inherent weakness of NTP but the human failure and apathy of workers in the peripheral health institutions which unfortunately detract from its potentiality.

\* S.P. Gupta; Ind. J. Tuberc.; 1986, 33, 101



It has to be remembered that it is not always the lack of resources which leads to poor performance. It is common experience that even where the programme has been implemented and the services are easily accessible, the performance still remains poor. Take for example, the situation in Delhi. The tuberculosis services in Delhi are much better than anywhere else in the country and fairly adequate. There are 16 specialised clinics working in different parts of the city and each one of these is easily accessible for the region in which it is located. In spite of that, in Delhi more than 50% of the sputum positive cases are unknown cases i.e. they have not been identified and therefore are not taking treatment. It is these cases which defeat control. The position in the rural areas where the primary health institutions are often much less accessible because of their distance from some of the villages is much worse.

Nor do all diagnosed cases complete the requisite treatment. Treatment of tuberculosis even with the most potent drugs is still to be continued for 6-9 months during which period the patient has to attend the treatment centre periodically (say every 2 to 4 weeks) for drug collection. If the distance between the patient's residence and the treatment centre is too big or there is a clash between the working hours of the patient and the clinic (as in cities), the

patients become defaulters. They either become irregular or drop out of treatment because they cannot afford the time and money to visit the treatment centres periodically as indicated above. Sometimes, the patients are blamed for this default. Yet, if one looks at the problem in depth, it will become clear that it is the organisation which is more at fault than the patient. If patients are able to collect the drugs at times convenient to them without in any way clashing with their working hours and the time and money spent on drug collection remains manageable, there is no reason why many patients should give up treatment before completing it.

There is no denying the fact that the health services have to be expanded and made fully functional. Shortages in staff, equipment, etc., have to be removed. The programme has to be extended to the entire country. Sub-optimal progress is because health programmes have to compete with developmental programmes in respect of budget allocations. In such a situation, it is not unusual that developmental programmes get precedence. It should, however, be kept in mind that the developmental programmes also indirectly help in tuberculosis control because by improving the quality of life, they make people less susceptible to develop disease.

If the services cannot be expanded adequately and expeditiously, innovations have to be evolved to step up case-finding and case-holding as much as possible within our resources. This is a challenge which we face and it has to be met.

Some examples of these innovations will not be out of place. Many years ago, the New Delhi TB Centre started a subsidiary drug distribution centre in a locality situated 6 kms from the Centre. A health visitor visited the locality once a week early in the morning on a day which was holiday for most of the patients living in that locality. The advantage was that all the patients in the locality could collect the drugs easily at a time which was convenient to them, did not interfere with their normal vocation and without spending any money because the subsidiary centre was within a walking distance. The result was that the patient's compliance in drug taking improved tremendously. An international voluntary organisation (Ryder Cheshire Mission) has started providing a similar service in one of the outlying re-settlement colonies through a mobile clinic which visits the colony late in the evening and all patients of that colony can conveniently collect the drugs without going out of the colony. Regularity in treatment is almost 100%. Not only that, the mobile clinic

collects the sputum of symptomatics also in order to facilitate case-finding. The same organisation is providing a similar service in a block of villages in Dehra Dun district at a distance of about 50 kms from the city. Tuberculosis team is stationed in a nodal village from where case-finding and drug distribution are made available almost at the patient's doorstep. Again, the results are very promising. These are experiments no doubt but they do prove that services available under the programme can be supplemented by voluntary organisations without much inputs in order to improve the performance under the programme.

If side by side with these innovations, intensive steps are taken to educate the community and to make them health conscious, results will improve considerably. After all, any health programme, howsoever sound, will not succeed unless the community for which the programme exists accepts it, cooperates and utilises the available services.

It is with this objective that the Tuberculosis Association of India recently launched an intensive health education programme in 250 districts of the country through their State affiliates and district branches. Health education aids are being produced by the Tuberculosis Association of India in all regional

languages and made available to the District centres. Health education is preceded by motivation of the medical personnel, para-medical personnel (multi-purpose health workers) and the community leaders who are in a position to influence the people's attitude and their involvement in the NTP. It is expected that in due course of time, this intensive effort will reduce the quantum of unknown cases and most of the patients so diagnosed will complete the treatment regularly and thus contain spread of infection.

All this cannot succeed without political will. Tuberculosis was included in the 20-Point Programme of the Government some years ago and this for the first time provided evidence of the political will to make the programme successful. A coordinating committee was set up in the central Health Ministry. This Committee met every 6-8 weeks and representatives from the State Health Departments attended these meetings and their performance was reviewed and guidelines given for improving the performance. The improvement in performance was unmistakable and yet this was done without any material increase in the inputs. The only new development was accountability and this boosted the performance. Unfortunately, these meetings were discontinued too soon. But it proved that with political will and accountability, the performance can improve.

A word about the role of the voluntary organisations. Tuberculosis is as much a social malady as a medical one. Therefore, the Society itself has to take a hand in the fight against disease. A chariot moves on two wheels. Unless both the wheels move simultaneously and synchronously, the chariot will not run. The two wheels of the chariot of tuberculosis control are governmental agencies and voluntary organisations. If both of them do not work shoulder to shoulder and in unison, control will be difficult to achieve. Many old tuberculosis clinics established voluntary care and after-care committees in pre-chemotherapy era. They even provided free drugs to the patients when government had taken up this responsibility in addition to supplementing their diet and removing other socio-economic difficulties which could hamper their treatment. Chemotherapy has brought in a sea change in the scenario of tuberculosis management. Most of the helps that they rendered then are no longer required today. But that does not mean that they are redundant now. All that is needed is re-orientation of their activities. They have to support the NTP. Their main activity should be health education of the community and supplementing the government effort through innovations like the ones mentioned above as far as they can. Scope of innovations is immense and

they can take several forms according to the needs of the community. While it is the government's duty to provide and expand as far as possible the tuberculosis services, it should be the responsibility of voluntary organisations to motivate the community, educate it and thus bring about a fuller and proper utilisation of the available facilities.

Lastly, India is a signatory to the Alma Ata Declaration. A question is

often asked "Will we be able to provide health care for all by the year 2000 A.D.?" Frankly, if our achievements during the last 20 years or so are the yardstick, we will not be able to do so. But if all concerned, professional as well as lay people, official and voluntary agencies, work assiduously and unitedly, and meet the challenges posed above to the extent that is possible, it should not be difficult to achieve the objective.

***Anyone can get Tuberculosis. Tuberculosis does not respect age, sex, wealth or poverty. However, Tuberculosis is more among***

- Males than females***
- Older people than young***
- Poor than rich people.***

***The number of Tuberculosis patients per 1,000 population is the same in villages and cities.***

***Since more people live in villages, more patients are found in villages.***



DR. D. R. NAGPAUL

Dr. D. R. Nagpaul is presently the Honorary Technical Adviser to the Tuberculosis Association of India. He is also the Editor of the Indian Journal of Tuberculosis published by the Tuberculosis Association of India. Dr. Nagpaul is an eminent TB worker, a specialist in this field. He was born on 25th August, 1920 in Karor, now in Pakistan. An M.B.B.S. from the Punjab University, TDD from Wales and post-graduation in TB from Trudeau School of Tuberculosis, U.S.A. He is the former Director of the National TB Institute, Bangalore. Dr. Nagpaul has won several awards and was awarded Fellowship by the Wattumul Foundation and the WHO on TB Control. Recipient of several gold medals, he has also received commendation and distinction from the philippine TB Society. He is recipient of Padam Shri by the Government of India. The Association feels honoured in having a man of his eminence and distinction as expert to advise on technical matters and edit the prestigious Indian Journal of Tuberculosis.

# INDIA'S NATIONAL TUBERCULOSIS PROGRAMME-AN OVERVIEW

DR. D.R. NAGPAUL\*

## INTRODUCTION

An overview of National Tuberculosis Programme (NTP) is not a simple matter because many politico-administrative, socio-economic, operational and technical factors have impinged upon it as well as interacted in various ways and at different times, some factors are, in fact, part of the wider national ethos, controlled by forces beyond technocrats. Any facile opinion about success or failure of NTP at this stage of development can, therefore, be correct to an extent but cannot be the entire truth.

Historically, attempts to deal with tuberculosis in the country began sometime after the turn of the present century. Led by voluntary effort, these attempts had perforce to be sporadic and limited in nature and comprised mostly of sanatoria in the hills. Around the time India gained political independence, the well known Bhore Committee Report was published, ushering in the era of planned health programmes. Justifiably, NTP could be deemed to have been born then. Be-

side, the value of domiciliary treatment having been established, it was possible to plan a broad-based programme to deal with tuberculosis.

At that time, NTP comprised five more or less independent but planned schemes viz. (i) BCG vaccination of the susceptible population. (ii) establishing clinics for diagnosis and treatment of tuberculosis patients (iii) increasing beds in tuberculosis sanatoria and hospitals. (iv) colonies and vocational centres for rehabilitation of tuberculosis patients and (v) research, roughly in that priority order. The planning, half a century back, was based on the best technical knowledge and population. Thus, the country was to have at least one bed for each tuberculosis annual death, one clinic for 100,000 population, and so on. For understandable reasons, plan progress remained confined to urban areas. Then the National Tuberculosis Prevalence Survey, 1955-1958, jolted every one by demonstrating that the tuberculosis problem in India is in reality rural, on account of the predominantly rural population.

The decade following freedom also brought into relief socio-economic inadequacies of NTP, in the Indian con-

\* Ex-Director, National Tuberculosis Institute, Bangalore; Hony. Technical Adviser, T.A.I.; Editor, Indian Journal of Tuberculosis, K 111, Hauz Khas Enclave, New Delhi-110016.

text, despite the logic and use of similar, approach in other countries. Search for a better model for NTP began around 1955. The then Tuberculosis Chemotherapy Centre, Madras and National Tuberculosis Institute (NTI), Bangalore, established to find indigenous solutions to the local problems, soon succeeded in showing a new way. This more appropriate technology was found suitable not only for India but other developing countries as well. The new technology took into consideration the felt needs of the people, scarcity of resources, social customs and prejudices, as well as polity, in addition to moulding application of scientific knowledge to the field conditions. NTI demonstrated feasibility and practical applicability, and even established the potentials for case-finding and case-holding, before Government adopted the new basis of NTP in 1962.

Since 1962, district-the socio-political unit-is made the operational unit of NTP. Techno-managerial leadership of district tuberculosis programme (DTP) rests with a five member managerial team (Medical Officer, Treatment Organizer, Laboratory Technician, X-ray Technician and Statistical Assistant) posted at the TB clinic, redesignated as district tuberculosis centre (DTC). Managerial training, of a uniform standard, to DTC teams is given by NTI. Programme activities are standardised and made available in the form

of manuals by NTI. It is the responsibility of DTO and his team in DTC, to involve all peripheral health institutions (PHI) in the district, in offering DTP services to the people, either as microscopy or as referring centres; give in-service training to PHI staff and supervise their working, for NTP. Besides, there is provision for State and Central level programme monitoring and supervision of the performance of DTP, from State level, and of State programmes from the Centre. Within the above fairly comprehensive structuring, there is scope for flexibility to suit local conditions, as long as basic principles are observed. This is necessary because under the constitution, Health is a State subject and all responsibility for programme implementation and evaluation rests with States. An agreed quantum of central assistance (which includes international aid) flows to State governments and provides the modicum of uniformity on a countrywide basis. NTI has been monitoring NTP quarterly since 1978. This presentation, therefore, is based on those periodic reviews, a recent in-depth study done by an independent voluntary agency and the experience of those associated with NTP since its birth.

## **EXTENSION OF NATIONAL TUBERCULOSIS PROGRAMME**

In the nineteen fifties, the approxi-

mately 400 million people were spread in roughly 300 districts. Average district population then was 1.5 million - 80% rural - and number of PHIs around 50, besides the DTC. Since then, the population has grown to over 800 million. And due to socio-political reasons, the number of districts has gone up to 437; average district population to 1.8 million and average number of PHIs to 60, with improvement in the health infrastructure.

By 1988 end, out of 437 districts, only 371 (85%) had DTP. But at no time since 1962 has the proportion of implemented districts crossed the 85% level, nor has the proportion been improving for many years. Analysis of the 66 non-implemented districts in 16 States/union territories reveals a mixed bag of reasons, largely of administrative nature.

<i>Likely reason/ State</i>	<i>Non- Implemented Districts</i>	<i>Total Districts</i>
<b>Sparse population</b>		
Arunachal Pradesh	5	10
Assam	6	17
Himachal Pradesh	3	12
Jammu & Kashmir	5	14
Manipur	6	8
Meghalaya	3	5
Mizoram	1	3
Nagaland	5	7
Sikkim	3	4
Union territories	8	12
9 States/UTs	45 (49%)	92

#### Administrative Reasons

Bihar 10 (26%) 38

#### Recent Bifurcation of District

Haryana	1	12
Kerala	4	14
Maharashtra	3	30
Punjab	1	12
Rajasthan	1	27
U.P	1	57
6 States	11 (7%)	152

District populations being unequal, non-implementation of 15% of the districts does not mean that much population has no DTP cover, nor that population in the newly carved districts is denied access to the established DTP services. Nonetheless, why should a proportion of the population not have access to services near their homes so long after the introduction of DTP in the country? And, for that matter, how many PHIs in the implemented districts are not participating in DTP?

In the 371 implemented districts at the end of 1988, around 14,000 PHIs were participating i.e. on an average 38 out of the estimated 60 PHIs in each district (63%). It appears that for administrative/operational convenience, mostly those PHIs that are in the semi-urban and more populated rural pocket have been implemented, reminiscent of a similar practice for the entire country. In other words, the entire population has not yet been covered by DTPs.

Attempting a more precise



estimate of the population proportion having access to DTP services may not be rewarding because, in reality, the population in a five km radius zone of influence around each health institution have good access; besides, the people in the zone of influence utilize the facilities to different extent. The incomplete coverage and varying utilization of DTP services are very important to a discussion of expectations from NTP performance.

## PERFORMANCE

Routine quarterly programme reports are the source of information for a review of activity performance. But, around 85% of DTP reports are re-

ceived on time and contain information for around 70% of the participating PHIs, in addition to that of DTC. A very small number of delayed reports get included in the next analysis of performance. Since the non-reporting DTPs are not the same every quarter, one could project the reported performance by pro-rata addition of the performance of non-reporting DTP to estimate the overall NTP performance (Table 1).

The quarterly programme reports show a wide variability in performance: the fluctuations observed in the performance of individual DTPs probably represent the varying inputs of good and not so good workers; in

**Table 1 :** Case-finding in thousands-reported and calculated for non reporting-according to type of case under NTP, 1978-1987.

Reported	Years									
	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Sputum positives	128	138	128	130	176	210	212	223	227	227
Suspect cases	322	366	348	358	514	612	616	685	730	811
Extra-pulmonary	41	43	41	40	43	57	62	66	77	90
Total	491	547	517	528	733	879	890	974	1034	1128
Calculated										
Sputum positives	188	185	174	189	219	256	262	259	381	286
Suspect cases	473	508	474	521	638	747	764	798	904	1000
Extra-pulmonary	61	58	56	58	66	69	77	76	95	114
Total	722	751	704	768	923	1072	1103	1133	1380	1400

respect of states, some perform consistently well while others do not improve at all, suggesting the influence of local administration and work culture. Under the circumstances, calculation of average DTP performance i.e. total performance divided by the number of reporting DTPs should do for making comparisons and analysis of trends.

### CASE-FINDING

During 1988, an average DTP discovered 4,015 new tuberculosis patients, 322 (8%) of whom were extrapulmonary. Of the 3,693 cases of pulmonary tuberculosis, 783 (21%) were Sputum positive of whom 385 were discovered by DTC and 398 (51%) by around 40 PHIs.

Table 1 shows case-finding per-

formance, as reported as well as calculated for non-reporting, according to type of case from 1978 to 1987.

There is a steady increase in case-finding during the last decade, more pronounced from 1982 onwards because in 1981 NTP was included in the 20-Point programme of the government and about that time multi-purpose health workers at the grass roots were involved in case-finding. Since there is no basic difference between the reported and calculated case-finding, one could say that around 1.5 million cases are now being discovered annually of whom one fifth are sputum positive.

The overall case-finding under NTP shown in Table 1 should be influenced by population increase as well as increase in the number of participating DTPs. Table 2 shows the total cases

**Table 2 :** Total cases found per 100,000 population and in average DTP (1978 to 1988)

Year	Case-Finding		Total Cases Per 100,000
	AVERAGE DTP		
	Sputum Exams	Sputum Positives	
1978	4,434	603	29
1979	4,685	586	28
1980	4,531	546	26
1981	4,493	536	28
1982	5,585	620	31
1983	7,495	725	36
1984	9,140	735	36
1985	9,951	735	36
1986	10,476	769	37
1987	11,542	772	37
1988	11,848	783	38

found per 100,000 population as well as number of sputum examinations done and sputum positive cases found in an average DTP to obviate the influence of the two factors. Table 2 not only underlines the findings of Table 1 but shows that the gain in case-finding has been obvious.

In 1981 two operational changes were introduced in the case-finding technology; targets were introduced for the number of sputa to be examined every year and multipurpose workers were to collect sputa from symptomatics during their home visits. It should be useful to examine their effect on the quality of sputum examination. Also, if the change influenced the relative contribution to case finding made by PHIs, where multipurpose workers operate.

Table 3 gives the number of sputa examined in an average DTP and the contribution, respectively, from DTP as well as PHIs, along with the related sputum positivity rates, from 1978 to 1988. Till 1981, around four and half thousand sputa were examined every year, with positivity rate of 13 percent, in an average DTP; of these two thousand eight hundred came from DTP and seventeen hundred from PHIs, with positivity rate slightly lower in PHIs. A dramatic change has occurred after 1981. The number of sputum examinations has risen very sharply; there is very little change in DTP performance, from year to year, but PHIs are examining more sputa every year, with a steadily declining positivity rate. It does appear that a steady plateau of 5% positivity rate has been reached in

**Table 3.** Number of sputa examined annually and percent positivity rate in average DTP, DTC and PHIs from 1978 to 1988

Year	Number of sputa examined						Percent Possibility		
	DTP	%	DTC	%	PHIs	%	DTP	DTC	PHIs
1978	4434	100	2859	64	1574	36	14	15	12
1979	4685	100	2971	63	1714	37	13	13	11
1980	4531	100	2830	62	1701	38	12	13	11
1981	4493	100	2687	60	1806	40	10	10	10
1982	5585	100	2895	52	2690	48	11	13	9
1983	7495	100	2908	39	4587	61	10	14	7
1984	9140	100	2913	32	6227	68	8	13	6
1985	9951	100	3013	30	6938	70	7	12	5
1986	10476	100	3098	29	7378	71	7	13	5
1987	11542	100	3227	28	8315	72	7	12	5
1988	11848	100	3359	28	8489	72	7	12	5

respect of PHIs too, and there may be no further decline. The significance of the decline in positivity rate is discussed later.

As mentioned in the introduction, PHIs hold an important position in DTP because they cater to 80% of the population. With a declining positivity rate, doubts may arise as to the real role of PHIs. Table 4 examines this point: the per cent contribution of PHIs in respect of total sputa examined, sputum positive cases found and total case-finding of an average DTP, from 1978-1988. It is indeed satisfying that during the last ten years, the PHIs share in sputa examined has risen from 36% to 72%, in sputum positive cases from 31% to 51% and in total case-finding from 30% to 47%.

#### TREATMENT AND CASE HOLDING

Information on these aspects is comparatively incomplete. During 1988, on an average 4,700 tuberculosis patients per DTP were put on treatment. Of the 4,000 newly discovered cases during the year, around 5% did not start treatment (initial default), while 25% got added on account of 'transfers in' and 'restarted treatment'. Only about 30% of DTPs reported cohort analysis, according to which only 27% had completed twelve monthly drug collections or more. Default in drug col-

lections is frequent more in urban areas and taking of defaulter actions infrequent. Sputum examination at the end of treatment completion is infrequent too, making any observation on sputum conversion unrealistic.

**Table 4.** *Percent Contribution from PHIs in Respect of Sputa Examined and Sputum Positive as Well as Total Cases Found annually in an Average District From 1978 to 1988.*

Year	Per cent Contribution from PHIs in respect of		
	Sputa examined	Sputum positive case	Total cases
1978	36	31	30
1979	37	34	32
1980	38	34	33
1981	40	35	33
1982	48	40	37
1983	61	45	43
1984	68	48	44
1985	70	50	44
1986	70	49	43
1987	72	50	46
1988	72	51	47

Since no appreciable improvement in treatment completion occurred after 1981, and the potential for treatment completion with standard regimens, in an NTI operational study, was no better than 45%, it was decided, in 1985, to try out six-month short course chemotherapy, despite some doubts regarding the capability of present day DTP case-holding. Eighteen DTPs in the South were placed under supervision of the Tuberculosis Research

Centre, Madras for this purpose. Treatment completion, on an average, has improved to 52% with the six-month drug regimens. And, another group of 176 DTPs have been assigned to NTI to see if short course chemotherapy will give similar results under the routine supervision of DTC teams. Since treatment compliance with the standard drug regimens, at the sixth month of therapy, is also around 50% to 60%, it is believed that case-holding and treatment completion can be improved to around sixty percent level, under NTP, by switching over completely to short course chemotherapy.

## MANAGEMENT

The management aspect of NTP does not look as rosy as the activities discussed above. The incomplete extension and coverage of population by NTP has been described. Training management, of DTC teams is another similar example. Since 1962, over 4,800 team personnel or roughly 900 full teams have been trained by NTI. But in 1988, only one fourth of the 371 implemented districts had trained full teams in their DTCs, while 70% DTPs had the services of a trained DTO (team leader). This position is much beyond the usual attrition rate and suggests a causal attitude towards managerial training and posting of full teams for proper management. Some administrators even question the role of managerial teams

for DTPs when the programme is running 'smoothly' despite incomplete teams and some team members being untrained.

Many DTP reports have the column of supervisory visits paid to PHIs left blank. Rest of the reports show that only 40 to 50 per cent of the scheduled visits are made. It is a common observation that the more conveniently located PHIs are visited repeatedly and some not visited at all; also, that more frequently the supervision is half-hearted. No wonder that one third of the PHIs on an average are left unimplemented. As regards supervision from the Central level, only six per cent of the scheduled visits to the State were paid in 1988 and supervision exercised by the State over their DTPs was no better. Central monitoring of NTP is excellent but monitoring at the State level, and corrective actions following monitoring as well as supervision, leave much to be desired.

Every year modest targets are set for sputum examinations but these targets are being met to no more than 50%. Still, case-finding under NTP has improved satisfactorily. It stands to reasons that if management were better and supervision more effective, achievement of targets would be far better, case-finding superior in numbers and proportion of sputum positive cases, and case-holding able to reach

the promise of chemotherapy.

Equipment is in working order in 90% of DTPs; supervisory vehicles in 60% of DTPs; budgets-especially for travel - are inadequate in most DTPs and the supply of drugs-not so much the stock of drugs as their distribution and quality-and other expendables leaves much to be desired.

## DISCUSSION

Twenty five years after the adoption of DTP, the NTP presents a picture of encouraging progress and frustrating constraints.

Since 1978, when central monitoring of NTP began, the number of DTPs has gone up from 313 to 371; the average number of sputum examinations per DTP in a year has increased to nearly three times; x-ray examinations by one and a half times; total new cases found are now twice in number and sputum positive cases one and a half times (from 0.2 to 0.3 million every year); and contribution of PHIs in case-finding has increased from 30% to 47%. Now, 1.5 million new cases are found every year of which around 8% are extra-pulmonary, 72% suspect cases and 20% sputum positives. Treatment completion has improved from about 30% with standard drug regimens to 55% with short course chemotherapy. This progress may not be spectacular

but is surely notable.

Management wise, the coverage of population with DTP services has, perhaps, not gone beyond 60%; the annual sputum examination targets are being met to the extent of 50%; only 25% of DTCs have full trained teams posted; supervision over PHIs does not exceed 50% of scheduled visits, and so on. Nevertheless, this state of affairs is not confined to NTP alone : barring a few exceptions, it is part of the national scene and reflective of a society in flux.

Besides inadequate management, some of the basic concepts underlying DTP, and the attitudes that go with them, have not yet completed their full evolution. There appears to be a stalemate in respect of integration. Despite a much wider acceptance of the idea than before, there is insufficient structuring, devolution of responsibility and powers, and budgeting procedures to let integration play its role fully and bring in the envisaged benefits. In some States, and in selected areas in other States, it could be that integration introduced in the sixties has begun to disintegrate, creating confusion and making the services more vulnerable. Similar confusion prevails regarding the purpose and role of multipurpose workers at the grass roots. The same could be said regarding the concept of voluntary and private sector collaboration and co-ordination with the DTP

services in the district. Considerable efforts have been made in enlisting their co-operation by arranging for the staff of these two sectors, seminars and workshops, supply of drugs for free distribution for their patients, offer of diagnostic services in respect of problem cases and even home visiting to retrieve the defaulters. The progress, however, has been disappointingly small and slow. Attitudinally, these three sectors see their role in competition rather than extending complementary and supplementary assistance to each other for the same beneficiaries.

Operationally, the referral system vital to integrated functioning is almost non-functional. Studies are needed urgently to understand the reasons. Another operational aspect needing urgent study is the phenomenon of falling sputum positivity rate. When the operational base for selection for sputum examination is widened, a certain fall in positivity rate can be expected. What is disquieting is the large gap in the fall between DTC and PHIs, which is understandable to an extent, but needs investigation to make sure. It would be premature to conclude that there has been a fall in the quality of sputum examination, or similar other assumptions.

An operational factor of great importance is the formulation of expectations based on the early NTI studies on

the potential of case-finding and case-holding under DTP. The gap between expectations and actual performance is large enough to cause dissatisfaction. On the one hand these comparisons have helped in focussing attention on certain aspects of performance leading to improvement in case-finding as such, and the relative contribution from PHIs, on the other hand a closer examination of around 30% to 40% achievement of the expectations has suggested an element of unreality in the earlier potential studies. True, those studies were carried out under DTP field conditions, strictly according to programme manuals. But the study staff belonged to NTI. That staff had motivations and work ethos quite different from the attitudes and application to work found among general health services staff. The potential studies served a very useful purpose by establishing credentials of DTP at the point of time. If we have to use those results for the formulation of expectations, then we must repeat the studies in exactly the same manner but use average general health staff for carrying out the activities under the overall surveillance of NTI staff. Even otherwise, there is need to repeat some operational studies under the present day changed conditions.

Technically, there are hardly any major problems. Perhaps, two points

could be looked into by NTI. One relates to the reason why sputum positive cases, among the symptomatics, continue to remain around 20% while the suspect cases constitute the bulk i.e., 72% of the total new cases found. It is likely that following integration, there has been a fall in the quality of x-ray reading : Steps may have to be sug-

gested to control the extent of over-reading, if any. The second point is to carry out field trials of a suitably modified model of DTP which is applicable to the remote hilly districts with sparse population. This should help to speed up the implementation of those districts which have been left out of NTP for so long.

**Summary :** The overview takes into consideration the historical, socio-economic, administrative, and technical factors which have played a prominent role in shaping India's National Tuberculosis Programme. It comprises an analysis of the current status, trend during the past ten years and discussion of some aspects that need further attention. Now, a majority of the constraints are administrative and not even operational, while the needed technical improvements are few. At the present stage of development, it would appear premature to say if the programme has succeeded or failed.

---

---

*Help us in our massive fight against TB*

---

---



# WORLD CONFERENCE ON LUNG HEALTH

DR. S.P. PAMRA\*

The World Conference on Lung Health held in Boston (USA) from 20th to 24th May, 1990 was a unique Conference organised jointly by the American Lung Association, the American Thoracic Society and the IUAT-LD. The 27th quadrennial Conference of the IUAT-LD was merged with this Conference. The Conference was a grand success and was attended by over 10,000 delegates from 89 countries.\*\*

The Programme was so extensive that apart from the main venue, viz. Hynes Convention Center, many sessions were organised in three five star hotels adjacent to the main convention centre. An exhibition was organised jointly by the pharmaceutical industry, manufacturers of instruments and appliances and Book Publishers.

The Conference was inaugurated by Dr. Sullivan, Health Secretary in the USA Government. The inaugural ses-

sion was also addressed by the Presidents of the American Lung Association and the American Thoracic Society and the Chairman of the Executive Committee of the IUAT-LD. The Health Secretary emphasized the importance of anti-smoking and anti-pollution activities. He also commended the significant role which the IUAT-LD has played in the control of tuberculosis all over the world in general and mutual aid programmes in developing countries particularly.

The concluding session of the Conference was addressed by Dr. H. Nakajima, Director-General of the World Health Organisation.

The main thrust of his address again was on smoking in the world context and control of tuberculosis and acute respiratory infections in children.

The following awards of the IUTA-LD were made in the closing session:-

## a) Membership of Honour

Dr. J. Cabral (Portugal), Dr. P.Q. Edwards (USA), Dr. H. Eule (GDR)\*\*\*, Dr. K. Hitze (Austria), Dr. M. Melloaguerre (Uruguay), Dr. N. Oussedik (Algeria)\*\*\*, Dr. Z.S. Ozgen

\* Eminent T.B. specialist. Former Director, New Delhi TB Centre and ex-Hony. Technical Adviser, Tuberculosis Association of India.

\*\* Delegates from India numbered about 15, prominent amongst whom were Dr. S.P. Tripathy (Additional Director-General, ICMR); Dr. R. prabhakar (Director, TB Research Centre, Madras); Prof. S.R. Kamat, Bombay; Dr. M.L. Mehrotra, Agia; Dr. M.M. Singh, Delhi; and prof. Vimlesh Seth, AIIMS, New Delhi.

\*\*\* Posthumous.

(Turkey), Dr. H. Rodriguez-Castells (Argentina), Dr. N.C. Sen Gupta (Singapore), Mr. R. Sinesheimer (USA), Dr. K. Toman (Austria), Dr. H. Van Guns (Netherlands)\*\*\* and Dr. M. Zierski (FRG).

#### b) Medals

Dr. James Kieran (USA), Dr. Alice Lotte (France), Dr. Dennis Mitchison (U.K) and Dr. Tadao Shimao (Japan).

#### c) Prizes

Four prizes each of US \$ 5000 were awarded for the first time to young scientists from developed and developing countries for significant research in tuberculosis and non-tuberculous respiratory diseases. The recipients were Dr. Digambar Behera (India), Dr. Brigitte Raohelina (Madagascar), Dr. Jan Kus (Poland) and Dr. Hans Rieder (Switzerland).

The Scientific programme included one plenary session on each of the five days, the subjects being Tuberculosis and AIDS; Respiratory Infections in Children; Air Pollution and Health; Asthma and Tobacco. Five resolutions pertaining to these problems were adopted at the closing session (For Resolutions please see Annexure).

Special mention may be made about the plenary session on tobacco smoking because of the impassioned and

thought provoking addresses by Dr. C. Everett Koop, Former Surgeon General of USA and Senator Kennedy of Massachusetts. The former severely indicted the multi-nationals who because of declining tobacco sales in developed countries have mounted high-power publicity drive in developing countries. He exhorted all concerned to defeat their nefarious designs.

Over 200 symposia on variety of subjects were held during the five days, including Breakfast and lunch seminars. Most of the subjects pertained to non-tuberculous chest diseases. Important subjects on tuberculosis which were discussed in special sessions were the state of tuberculosis control programme vis-a-vis eradication in developed countries; national programme in developing countries; fund-raising; the role of health education in patient's compliance in treatment programmes; epidemiology; prevention; tuberculosis in children and BCG.

Apart from these special sessions, bulk of the scientific papers dealing with diagnosis, treatment and epidemiology of tuberculosis were put up in poster sessions. A few sessions were organised for Nursing and other para-medical personnel.

The arrangements for the conference were excellent. No efforts were spared to make the sessions as

interesting and informative. Delegates participation was very good. Receptions for delegates were arranged on each of the first four days at the end of the scientific programme.

## **SCIENTIFIC COMMITTEE ON TREATMENT**

The Scientific Committee on Treatment of the IUAT-LD met on 18th and 19th May, 1990 before the world conference. The main subjects of discussion were tuberculosis in children and the quality control and bio-availability of anti-TB drugs, particularly multi-drug formulations. The final draft produced by Dr. Hershfield on tuberculosis in children was discussed at the joint meeting of the Treatment Committee and the Committee on Tuberculosis Control. The draft was approved with minor alterations. The final document will be sent to the Executive Committee of the IUTA-LD for its adoption and circulation to constituent members, WHO and others concerned. This document, on the lines of the previous one dealing with chemotherapy of tuberculosis will be a useful guide for those dealing with tuberculosis in children.

The Treatment Committee noted with concern that some of the multi-drug formulations from some developing countries which were analysed in an international laboratory were found

to be unsatisfactory. The Committee urged the IUTA-LD to take up this question in right earnest in collaboration with the WHO to urge the governments all over the world to strictly enforce quality control of all drugs in general and life-saving anti-TB drugs in particular and to see that no pharmaceutical company is allowed to market multi-drug formulations of anti-TB drugs without proper bio-availability studies to ensure that the serum concentration of particularly Rifampicin is not adversely affected by the manufacturing process of these formulations.

## **EXECUTIVE COMMITTEE AND COUNCIL MEETING OF THE IUTA-LD**

It was decided that 24th March should be celebrated every year all over the world as Universal Tuberculosis Day. Special programmes should be taken up on this day to popularise the national programmes; to create awareness about the problem in the community with a view to improve community participation. This day should also be utilised in taking stock of the activities during the preceding year and preparing the blue print of activities during the succeeding year.

The finances of the IUTA-LD continue to be in a critical condition. Although the last year ended with a

small surplus, a big deficit is anticipated in the current and in the next year. The main cause of deficit is that a large number of constituent members and individual members' contributions continue to be in arrears. The constituent members were requested to clear their arrears as expeditiously as possible, so that the activities of the IUTA-LD do not get hampered.

The mutual aid programmes of the IUTA-LD were discussed and approved for the following year.

## **COUNCIL OF THE EASTERN REGION**

A meeting of the Council of the Eastern Region was held on Monday, the 21st May, 1990 and the council members who attended the Boston Conference were present along with a few other observers from the countries of the Eastern Region. The council meeting reviewed the activities of the Region since its last meeting in Lahore in December, 1987. The arrangements in connection with the 16th Eastern Region Conference to be held in Beijing from the 16th to 20th October, 1990 were reviewed and decisions taken in respect of registration fees, guest speakers from other countries, subsidies to ensure attendance at the Beijing Conference by the junior research workers and some representatives of the countries having foreign exchange constraints.

The Council asked Dr. Pamra to visit Beijing for 3-4 days in July, 1990 to assist the Scientific Committee in finalising the scientific programme for the conference.

## **ANNEXURE**

### **I. RESOLUTION ON TUBERCULOSIS AND AIDS**

While many nations have launched campaigns to control TB and AIDS, the threat continues to outpace steps to contain it. To signal renewed commitment in the fight against these diseases, the World Conference on Lung Health calls upon the World Health Organisation and on governments and non-governmental organisations worldwide to endorse the followings:

That governments respond to the needs of people afflicted with AIDS or tuberculosis by insuring that patients with both diseases receive high-quality care;

that governments protect the uninfected by strengthening programmes aimed at controlling the spread of both diseases;

that governments and NGOs throughout the developed world keep pace with the growing threat from these diseases by supporting health programmes in those developing countries where AIDS and TB have reached pandemic proportions;

that governments and NGOs provide the practitioners needed to fight these diseases by training more health care professionals to diagnose and treat TB and AIDS;

that governments and NGOs lift the ignorance under which these diseases are spreading through stronger programmes of public information on AIDS and TB;

that Governments and NGOs support more basic research on AIDS and TB, and apply the resulting knowledge to the search for improved diagnostic tools and treatments; and

that governments and NGOs contribute to the conquest of both diseases by research to create an AIDS vaccine and develop a more effective vaccine for TB.

## **II. RESOLUTION ON RESPIRATORY INFECTIONS IN CHILDREN**

Many organisations are committed to breaking this chain, and to giving children throughout the world the promise of a normal span of life. To increase support for their efforts, the World Conference on Lung Health calls upon the World Health Organisation and on governments and non-governmental organisations worldwide;

to end the preventable deaths of millions of children every year by increased funding for provision, cold storage, and distribution of vaccines in developing countries;

to fight respiratory disease in developing countries by increased funding for training health care workers and for programmes to help parents recognize when children require medical attention;

to leave children less susceptible to infection by educating families about the risk and prevention of indoor air pollution; and

to lower the logistical hurdles that hinder vaccination programmes by funding research aimed at developing heat-stable vaccines.

## **III. RESOLUTION ON AIR POLLUTION AND HEALTH**

Pollution is not the unavoidable price of human progress. To foster an environmentally sound approach to development, the World conference on Lung Health calls upon the World Health Organisation and on governments and non-governmental organisations worldwide to endorse the followings;-

that governments worldwide agree to protect the lungs of workers by defining and enforcing standards for job related exposure to airborne hazards;

that Governments and NGOs embrace a broader concept of air pollution through policies to protect indoor environment;

that governments reduce the risk of environmental disasters such as Bhopal through stricter controls at sources of toxic pollution, and through plans to respond to potential disasters with rapid evacuation and emergency treatment of victims;

that governments protect the lungs of all their citizens through tighter controls on emissions of acid aerosols and other air pollutions; and,

that governments substantiate the scientific base of pollution control by further research into the hazards of indoor and outdoor pollution.

#### **IV. RESOLUTION ON ASTHMA**

The toll in life and health lost to Asthma is unacceptably high. To give millions of people with asthma the chance to lead longer and less restricted lives, the World Conference on Lung Health calls upon the World Health Organisation and on governments, non-governmental organisations, and health professionals worldwide:

To create a stronger foundation for fighting asthma by acquiring accurate data on death and illness;

to reduce death and illness through research into the underlying causes of the disease, and through studies aimed at identifying people who are at risk for fatal attacks;

to establish higher standards for asthma care through studies on the effectiveness of current medications, and through research into better drugs that go beyond symptom relief to treat the underlying disease;

to fight asthma where the disease is now largely untreated through strategies to bring care to people throughout the developing world; and

to acknowledge that education is key to the optimal treatment of asthma by training patients and families to take an active role in managing this condition, and by helping the public to understand the disease and the needs of people who suffer from asthma.

#### **V. RESOLUTION ON TOBACCO**

The long-term cost is an epidemic of smoking related disease; a manmade plague that threatens to bury already overburdened health care systems. To answer this threat, the World Conference on Lung Health calls upon the World Health Organisations and on governments and non-governmental organisations worldwide to endorse the following:

That governments place the lives of their people above tobacco money by severing all forms of support to the tobacco industry;

that governments ban attempts to seduce nonsmokers into smoking by banning all advertisement and promotion of tobacco products and brand names;

that governments cease contributing to the burden of disease in other nations by ending support for programmes promoting the import and export

of tobacco products;

that governments and NGOs protect the lungs of nonsmokers through policies that restrict or prohibit smoking in public places, with strong restrictions in health care facilities, public transport, and schools; and

that health professionals recognize their personal duty to fight nicotine addiction by helping smokers to overcome their dependence on tobacco, and by serving as public exemplars of a smoke-free society.

***Tuberculosis is curable.***

***Powerful and effective drugs are available for treatment of tuberculosis. These drugs kill the germs and cure the patients.***

***These drugs (medicines) must be taken regularly without break, in proper doses and as long as advised by the doctor.***

***Injections, hospitalisation and bed rest are not necessary in every case.***

***Drugs can be taken at home.***

***No need for any special diet.***





What every family and community has  
a right to know about

# Hygiene



## **Note to communicators**

More than half of all illness and death among young children is caused by germs which get into the child's mouth via food and water. The six prime messages of this chapter can help families and communities to prevent the spread of germs and so reduce illness and deaths.

It is important to stress that these messages, to be fully effective, must be acted upon by everyone in the community.

In communities without latrines, without safe drinking water, and without safe refuse disposal, it is very difficult for families to prevent the spread of germs. It is therefore also vital for the government to support communities by providing — as a minimum — the materials and technical advice needed to construct latrines and improve drinking water supplies.

To demand such services, communities need to know the facts about how illness is spread.

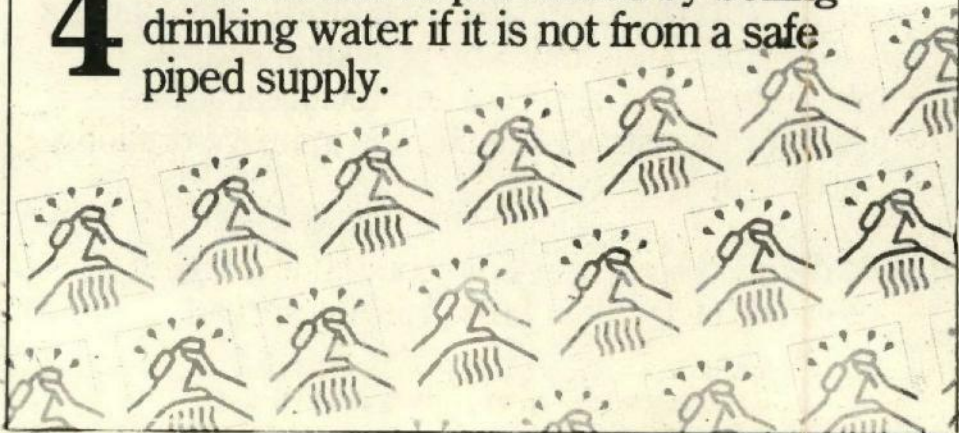
# Hygiene Prime Messages

**1** Illnesses can be prevented by washing hands with soap and water after contact with faeces and before handling food.

**2** Illnesses can be prevented by using latrines.

**3** Illnesses can be prevented by using clean water.

**4** Illnesses can be prevented by boiling drinking water if it is not from a safe piped supply.



**5** Illnesses can be prevented by keeping food clean.

**6** Illnesses can be prevented by burning or burying household refuse.



# Hygiene Supporting Information



## 1

**Illnesses can be prevented by washing hands with soap and water after contact with faeces and before handling food.**

- Washing hands with soap and water removes germs from the hands. This helps to stop germs from getting onto food or into the mouth. Soap and water should be easily available for all members of the family to wash their hands.
- It is especially important to wash hands after defecating, before handling food, and after cleaning the bottom of a baby or child who has just defecated.
- Children often put their hands into their mouths. So it is important to wash a child's hands often, especially before giving food.
- A child's face should be washed at least once every day. This helps to keep flies away from the face and prevent eye infections. Soap is helpful for washing, but not absolutely essential.

## 2

**Illnesses can be prevented by using latrines.**

- The single most important action which families can take to prevent the spread of germs is to dispose of faeces safely. Many illnesses, especially diarrhoea, come from the germs found in human faeces. People can swallow these germs if the germs get into water, onto food, onto the hands, or onto utensils and surfaces used for preparing food.
- To prevent this happening: -
  - Use latrines.
  - If it is not possible to use a latrine, adults and children should defecate well away from houses, paths, water supplies, and anywhere that children play. After defecating, the faeces should be buried. Contrary to common belief, the faeces of babies and young children are even more dangerous than those of adults. So even small children should be taken to use the

latrine. If children defecate without using a latrine, then their faeces should be cleared up immediately and either put down the latrine or buried.

- Latrines should be cleaned regularly and kept covered.
- Keep the faeces of animals away from homes and water sources.

## 3

**Illnesses can be prevented by using clean water.**

- Families who have a plentiful supply of safe piped water, and know how to use it, have fewer illnesses.
- Families without a safe piped water supply can reduce illnesses if they protect their water supply from germs by: –
  - Keeping wells covered
  - Keeping faeces and waste water (especially from latrines) well away from any water used for cooking, drinking, bathing or washing
  - Keeping buckets, ropes and jars used to collect and store water as clean as possible (for example by hanging up buckets rather than putting them on the ground)
  - Keeping animals away from drinking water
- Families can keep water clean in the home by: –
  - Storing drinking water in a clean, covered container
  - Taking water out of the container with a clean ladle or cup
  - Not allowing anyone to put their hands into the container or to drink directly from it
  - Keeping animals out of the house

## 4

**Illnesses can be prevented by boiling drinking water if it is not from a safe piped supply.**

- Even if water is clear, it may not be free from germs. The safest drinking water is from a piped supply. Water from other sources is more likely to contain germs.
- Boiling water kills germs. So, if possible, water drawn from sources such as ponds, streams, springs, wells, tanks or public standpipes should be brought to the boil and cooled before drinking. It is especially important to boil and cool the water which is given to babies and young children, because they have less resistance to germs than adults.
- If boiling is not possible, store drinking water in a closed or covered

container of clear plastic or glass, and leave it standing in sunlight for two days before using it.

## 5

**Illnesses can be prevented by keeping food clean.**

- Germs on food can enter the body and cause illness. But food can be kept safe by:—
  - Making sure that food is thoroughly cooked, especially meat and poultry.
  - Eating food soon after it has been cooked, so that it does not have time to go bad.
  - If food has to be kept for more than five hours, it should either be kept heated or kept cooled.
  - If already-cooked food is saved, it should be thoroughly re-heated before being used again.
  - Raw meat, especially poultry, usually contains germs. So it should not be allowed to come into contact with cooked meat. Utensils and food-preparing surfaces should be cleaned after preparing raw meats.
  - Keeping food-preparing surfaces clean.
  - Keeping food clean and covered and away from flies, rats, mice and other animals.

## 6

**Illnesses can be prevented by burning or burying household refuse.**

- Germs can be spread by flies, which like to breed in refuse such as food scraps and peelings from fruit and vegetables. Every family should have a special pit where household refuse is buried or burned every day.



What every family and community has  
a right to know about

# Aids



## Note to communicators

Acquired Immune Deficiency Syndrome, or AIDS, is a new global problem. Every nation is threatened by it, and as many as 5 to 10 million people may already be infected with the AIDS virus worldwide. It kills by damaging the body's defences against other diseases. As of 1989, there is no known cure.

Increasing numbers of babies are being born with the AIDS virus and many millions of children will be orphaned by it.

The five prime health messages in this chapter, if known about and acted on by all, could drastically reduce the future scale of this tragedy.

At the moment, the only effective weapon against the spread of AIDS is public education. That is why every person in every country should know how to avoid getting and spreading the AIDS virus.

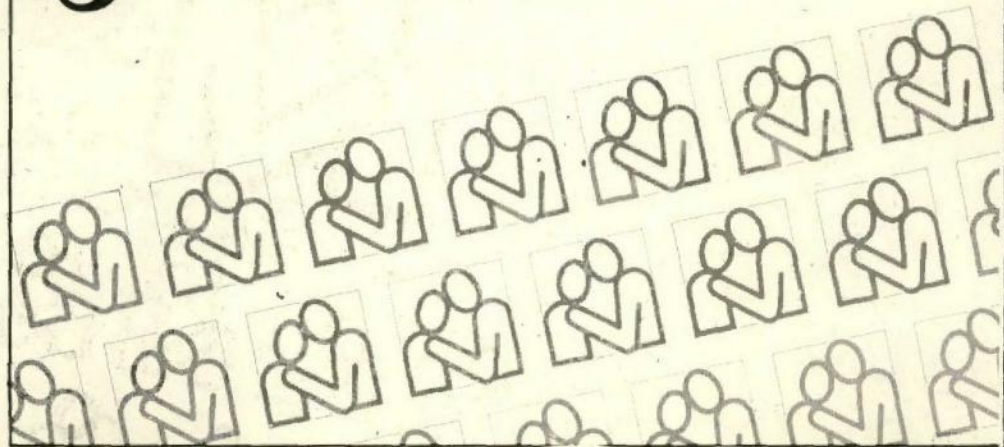


# AIDS Prime Messages

**1** AIDS is an incurable disease which can be passed on by sexual intercourse, by infected blood, and by infected mothers to their unborn and newborn children.

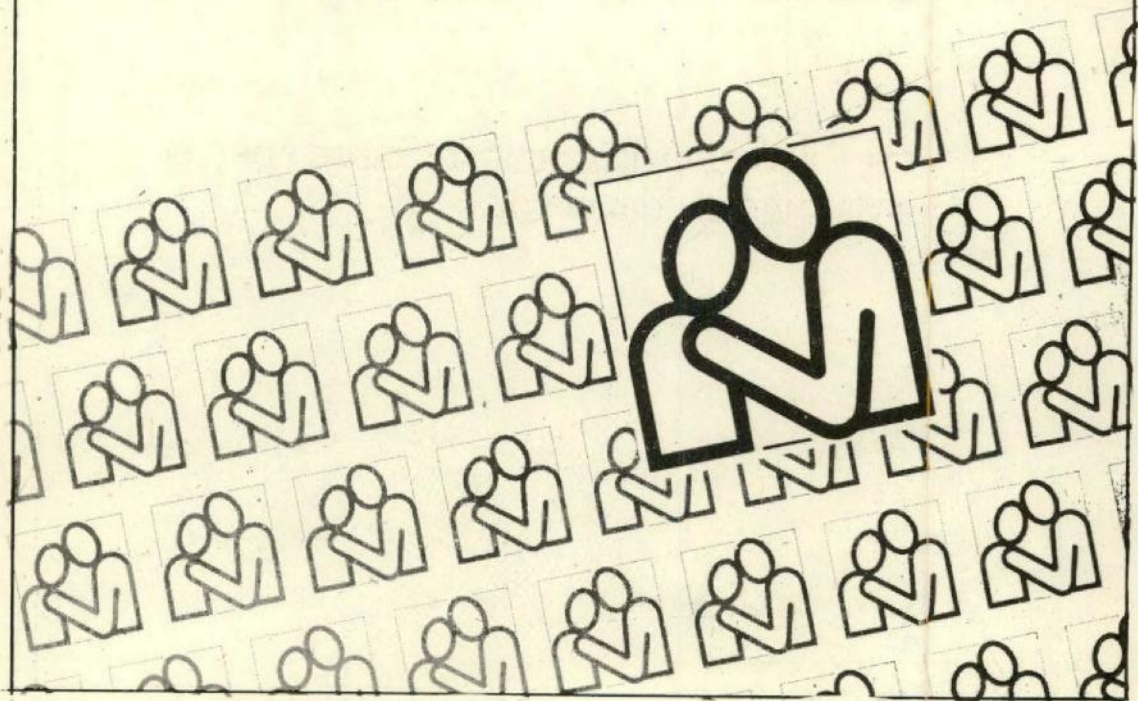
**2** Safe sex means being sure that neither partner is infected, remaining mutually faithful, and using a condom if in doubt.

**3** Any injection with an unsterilized needle or syringe is dangerous.



**4** Women with the AIDS virus should avoid becoming pregnant.

**5** All parents should tell their children how to avoid getting AIDS.



AIDS

# Supporting Information



1

**AIDS is an incurable disease which can be passed on by sexual intercourse, by infected blood, and by infected mothers to their unborn and newborn children.**

- AIDS is caused by a virus which damages the body's defence systems. People who have AIDS die because the body can no longer fight off other serious illnesses.
- Not everybody with the AIDS virus has developed AIDS. But anybody with the AIDS virus can infect others.
- There are no obvious signs that a person has the AIDS virus. They may look perfectly normal and healthy.
- Anyone who suspects that he or she may have the AIDS virus should seek out an AIDS testing centre. It is vital for those who have the virus to receive advice and to learn how to avoid passing it to others.
- The AIDS virus can only be passed from one person to another in a limited number of ways:-
  - By the blood or semen or vaginal fluid of an infected person passing into the body of another person. The AIDS virus can therefore spread by sexual intercourse. It can be passed from man to man, man to woman, and woman to man.
  - By the self-injection of drugs. The sharing of unsterilized needles or syringes for the purpose of injecting drugs is another common way in which the AIDS virus is spread, particularly in the industrialized countries.
  - By blood transfusions, if the blood used has not been tested.
  - By an infected woman to her unborn or new-born child.
- There is a remote risk from sharing tooth brushes and razors, though there are no known cases of the AIDS virus being passed on in this way.
- It is not safe to use unsterilized equipment for ear-piercing, tattooing, facial marking, or acupuncture.
- A mother with the AIDS virus should continue to breastfeed her baby.

There is a very small risk that the AIDS virus could be passed on to the baby by breastfeeding. But the risks of bottlefeeding a baby are known to be very much greater, especially in a poor community.

● It is not possible to get the AIDS virus from being near to or touching those who have the AIDS virus. Hugging, kissing, shaking hands, coughing and sneezing will not spread the disease. The AIDS virus cannot be transmitted by toilet seats, telephones, plates, glasses, spoons, towels, bed linen, swimming pools or public baths.

● National child immunization programmes use needles which are sterilized between each use and are therefore safe. All infants should be taken for a full course of immunizations in the first year of life.

● Other injections are often unnecessary as many useful medicines can be taken by mouth. Where injections are necessary, they should be given only by a trained person using a sterilized needle and syringe.

## 2

**Safe sex means being sure that neither partner is infected, remaining mutually faithful, and using a condom if in doubt.**

### **A guide to safer sex**

● The best way to avoid AIDS is to stay in a mutually faithful relationship with an uninfected partner.

● The more sex partners you have, the greater the risk of having sex with someone who is infected.

● The more partners your partner has, the greater the risk that you will be infected.

● Unless you and your partner have sex only with each other, and are sure you are both uninfected, you should protect yourselves by using a condom (a sheath or rubber).

● The following kinds of sex are much more risky than others: --

○ Anal intercourse (in which the penis enters the rectum or back passage)

○ Any sexual practice which causes even slight bleeding

○ Sex with male or female prostitutes

○ Sex with any persons who inject themselves with drugs

## 3

**Any injection with an unsterilized needle or syringe is dangerous.**

● Drug abuse, involving the sharing of unsterilized needles or syringes by

two or more persons, is one of the main ways in which the AIDS virus is spread in the industrialized countries.

- A needle or syringe can pick up small amounts of blood from the person being injected. If that person's blood contains the AIDS virus, and if the same needle or syringe is used for injecting another person without being sterilized first, then the AIDS virus can be injected.
- Self-injection with drugs is in itself dangerous. But because of the additional risk of AIDS, those who do inject drugs should never use another person's needle or syringe or allow their own needle or syringe to be used by anyone else.
- Those who inject drugs are therefore particularly at risk from AIDS. So are those who have sex with those who inject drugs.

## 4

**Women with the AIDS virus should avoid becoming pregnant.**

- Women with the AIDS virus have about a 50% chance of giving birth to a baby who will also have the AIDS virus. Most babies with the virus will die before they are three years old.
- Women who know or suspect that they have the AIDS virus should therefore avoid becoming pregnant.
- In some countries, tests are available to people who are concerned that they might have the AIDS virus. A woman who wants to have a baby, but suspects that she may have the AIDS virus, should try to have the test first. This is especially important if she lives in an area where many people have AIDS.

## 5

**All parents should tell their children how to avoid getting AIDS.**

- Apart from protecting yourself and your partner, you can also help to protect your children against AIDS by making sure they know the facts about how to avoid getting and spreading the disease.
- In this way, everyone can help in the world-wide effort to stop the AIDS virus from spreading to the new generation.



DR. R. C. JAIN

Dr. R. C. Jain, born in 1937 has been active in Pulmonary Medicine with special interest in Tuberculosis and Chest Surgery for last 25 years. After graduation from King George's Medical College, Lucknow, he spent 4 years in residency training and master's work in surgery. He had an extensive training in Chest surgery and fibreoptic bronchoscopy in United Kingdom - Liverpool, Harefield and Birmingham. He has also served as Thoracic Surgeon, R.B. TB Hospital, Delhi. He is a teacher for M.D. (Tuberculosis and Respiratory Diseases), D.T.C.D. of Delhi University. He has lectured on many topics in Pulmonary Medicine including surgical aspects. He has presented a large number of papers in National and International Conferences in India and Abroad. He is associated with various organisations - in various capacities. Presently, he is Medical Superintendent, and Senior Consultant in Chest Surgery, L.R.S. TB Hospital, Sri Aurobindo Marg, New Delhi - 110 030.

# A BRIEF ON : THE 1990 WORLD CONFERENCE ON LUNG HEALTH

DR. R.C. JAIN\*

The city of Boston, Massachusetts was the venue of the 1990 World Conference on Lung Health. The city combines old world charm with modern skyscrapers, fabulous restaurants and renowned museums. The conference was organised by the International Union Against Tuberculosis and Lung Diseases, American Lung Association, its medical section and American Thoracic Society in John B. Hynes Convention Hall, Boston from 20-24 May 1990. This conference provided an important opportunity for doctors, scientists and public health educators from around the world to discuss some of the most pressing yet preventable and treatable health problems. The conference was attended by about 10,000 delegates from all over the world.

Scientific programme was full of activity. The day would start from 7.00 A.M. with a Sunrise meet, the Professors seminars, plenary session, symposia, free communications, posters, symposia, slide presentation etc. Simultaneous interpretation into English, French and Spanish was provided daily for the plenary session and other important sessions.

The special plenary sessions on various themes provided a global look at the problems. Surrounding these plenaries, there were theme sessions. The clinical programme featured symposia covering lung transplantation, cystic fibrosis, critical care medicine, occupational and environmental lung disease, tuberculosis in adults and children, AIDS, respiratory infections, sleep apnea, smoking, lung cancer, long term oxygen therapy, asthma and were an update of current studies on diagnosis and treatment. The basic science sessions explained the latest research in airway muscles, leukotrienes, neuropeptides, lung epithelia, lung injury, respiratory genes and cell interactions. The public health sessions covered the economic, educational and social issues related to tuberculosis, smoking and Tobacco and adult and paediatric asthma.

Slide and poster sessions, developed from submitted abstracts, were also held each day and presented new scientific and behavioral research. Sunrise seminars and meet the Professors Seminars, which were breakfast and lunch sessions, provided an informal atmosphere for discussions on clinical, basic science, public health and management topics.

---

\* Dr. R.C. Jain, Medical Superintendent, Lala Ram Sarup TB Hospital, Mehrauli, New Delhi.

On tuberculosis, there were a number of symposia, one plenary session and poster sessions etc. Symposium on "Tuberculosis in the era of HIV infection" was focused on tuberculosis as a very common HIV - related opportunistic infection in many developing countries especially those in Africa and several US cities. Current data and future projections of the effects of HIV infection on the epidemiology on tuberculosis was presented.

Symposium on "Tuberculosis in children" was an over-view of the world wide epidemiology of tuberculosis in children and the continuing problems of diagnosis and treatment of tuberculosis in the developing and developed world and B.C.G. vaccination programme.

In the symposium "Basic Immunopathologic Mechanisms in Tuberculosis", leading investigators reviewed work in progress on characterization of mycobacterial antigens and the immune responses to these antigens of patients with tuberculosis. Both B cell mediated humoral and T cell-mediated cellular responses were considered. Diagnostic, therapeutic

and pathogenetic implication of new scientific knowledge were considered.

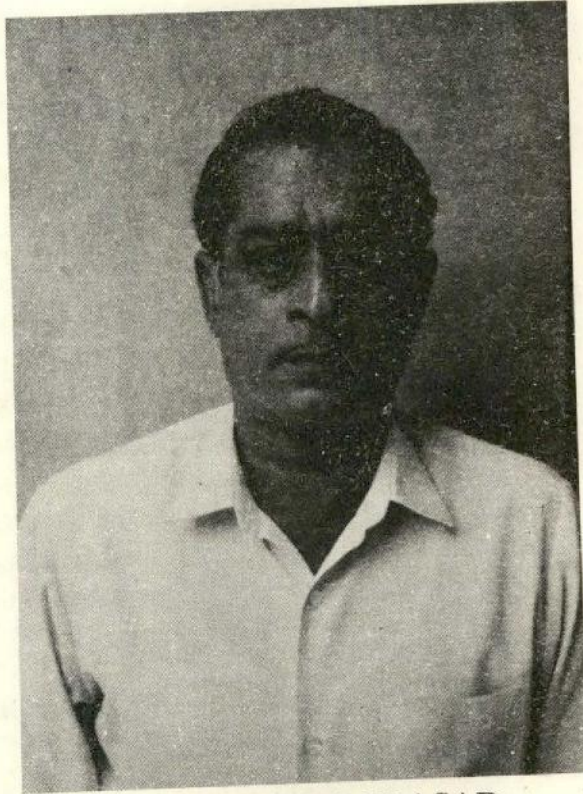
The purpose of the TB and AIDS plenary session was to focus world wide recognition on the increasing problems of tuberculosis in patients with AIDS and HIV infection.

The poster sessions, covered all the topics on Tuberculosis including control, epidemiology, prevalence, AIDS, methods of diagnosis, treatment, short course chemotherapy, rifabutin etc.

There was an excellent exhibition organised at the venue. The Exhibit Hall was located in the Hynes convention Center, adjacent to the auditorium and in the hub of meeting activity. The Exhibit Hall featured more than 200 booths and educational displays prepared by medical equipment and pharmaceutical manufacturers, medical publishers, and others, highlighting products of interest to all attendees.

There was a very good participation from Indian side. There were about 35 to 40 papers in the Poster Session and a paper in the symposium on Tuberculosis in Children.





**DR. GOVINDA PRASAD**

Born on 1st January, 1941, Dr. Govinda Prasad, Director, New Delhi TB Centre, New Delhi, had his M.B.B.S. in 1963 and D.T.C.D. in 1965 - both from the King George's Medical College, Lucknow.

Dr. Govinda Prasad joined the New Delhi TB Centre on 17th March, 1966 as a Junior Chest Physician. He took over as specialist Epidemiology on 29th May, 1981 and as Director of the Centre on 26th October, 1988. He was given the Junior Award by the TAI for his best paper on "Changes in pattern and behaviour of Pulmonary Tuberculosis" in 1968. He contributed several papers in the various National and International Journals.

**What  
You should know  
about  
Tuberculosis**

**THE DREADED SCOURGE-TB  
TB-IN AFFLUENT COUNTRIES**

Tuberculosis, a dreaded infectious disease, was a major public health problem in almost all the countries of the World. During the last fifty years, the technically advanced countries achieved spectacular success in the control of this killer disease, because of major strides in chemotherapy, large army of qualified manpower to handle this programme and enormous financial resources.

**TB IN DEVELOPING COUNTRIES**

Unfortunately, the epidemiological situation of this disease in most of the developing countries is a bit alarming, in spite of significant advances in the diagnosis and treatment of this disease. In fact, there has been an overall increase in the morbidity rate in the developing and under-developed countries because of one single factor-the population has doubled in the developing countries during the last four decades.

**“PLEASE JOIN HANDS IN OUR MASSIVE FIGHT  
TO DEFEAT AND CONTROL TB”**

## LAND MARKS IN THE HISTORY OF TB

During the first half of this century, tuberculosis was considered to be a messenger of death. There was no specific treatment for this disease. Millions of people who contracted this disease succumbed to it. Today the picture is different. Specific treatment is available to treat tuberculosis. Drugs have been discovered which are remarkably effective against tuberculosis. These drugs revolutionised the methods of treatment, transformed the fatal character of this killer disease and gave a new lease of life to the suffering community.

Similarly, another land mark in the treatment of this disease is the advent of domiciliary treatment. The self-administration of oral drugs by the patients themselves proved conclusively that domiciliary treatment is as effective as the traditional method of treatment in a hospital or sanatorium.

### TB IN INDIA

The main problem facing the developing countries today in the control of tuberculosis, is not the need for new regimens of treatment or new drugs, but how to administer, and apply successfully these innovations.

Let us candidly examine the

current status of the disease in our country. We have made enormous progress in industrial growth and self-sufficiency in agriculture. Our achievements in science and technology are spectacular. We have been giving technical assistance to a large number of developing countries in every walk of life. Even some of the developed countries are envious of our achievements.

The first scientific study on domiciliary treatment was conducted in India by our New Delhi T.B. Centre which paved the way to evolve a sound and technically feasible National Tuberculosis Control Programme in our country. Even the WHO policy on this programme is based on the principles of our National TB Control Programme. In spite of all these achievements, it is a pity and a paradox that Tuberculosis continues to be a major public health problem in our country. It is estimated that about twelve million people are suffering from this disease at any point of time. Twenty five percent among them are infectious and spreading this disease to their kith and kin and to the community.

Our technology, our technical resources and our health manpower handling this programme are in no way inferior to those available in the advanced countries, which have achieved a breakthrough. But our performance

in controlling this menace is far below our expectations Why?

The following two major deficiencies are held responsible for the short-fall in our achievements:

- \* Poor participation of the people in the implementation of the programme in both, urban as well as rural areas.
- \* The high percentage of illiteracy and stark ignorance among the people about the ravages of this disease.

What is the solution? The solution lies in education, educating ourselves, educating the illiterate and the ignorant about the deadly profile of tuberculosis, so that we protect, ourselves, our kith and kin and the community and fight this scourge individually and collectively.

### THE LEGEND ABOUT TB

For centuries, the literate and the illiterate, the rich and the poor believed that tuberculosis is hereditary and runs in the family. Because of this belief, the patients carried a stigma and they were scared to disclose this disease to the community.

A breakthrough came on the horizon in the year 1882. Robert Koch, an eminent German Scientist discovered that the specific cause of tuberculosis

was the "Tubercle Bacilli" a micro-organism, which could be seen only in a microscope. This discovery dispelled all age old beliefs and theories.

### HOW DOES TB SPREAD

Tuberculosis does not respect age, sex or socio-economic status of its victims. The tubercle bacilli primarily attacks the lungs, although almost all organs in the body can be involved. It is the patient suffering from "Tuberculosis of the Lungs" Who spreads the infection. When this patient coughs or sneezes, without covering his mouth, tiny particles of sputum called "Droplets" or droplet nuclei are expelled like a spray. These tiny particles carry the tubercle bacilli. They remain suspended in the air for a long period when a healthy person in the vicinity inhales these particles, the tubercle bacilli gains entry into his lungs.

A person suffering from tuberculosis may also spread the infection by indiscriminate spitting, spitting any where and everywhere. The dried particles of his sputum, ultimately, form part of atmospheric dust. This may be inhaled or injected with food. A healthy person thus gets infected.

Smoking from a common "Hooka" is a social custom in some parts of the country. This custom is also a source of infection.

An ignorant mother, who is suffering from tuberculosis, may directly transmit this disease to her healthy child when fondling or kissing. The disease does not always follow the entry of the bacilli into the lungs. The incubation period from infection to onset of the disease, may be weeks or years. Once infection takes place, the body's defence mechanism is set in motion. The mechanism fights the bacilli and keeps the infection at bay. If the body's defence is poor or there is further invasion of the bacilli, the infection may transit into the disease stage. It is only in about five percent of the people whose defence mechanism is poor, the bacilli multiply rapidly and cause the disease.

## SIGNS AND SYMPTOMS OF TB OF LUNGS

In the early stages, the signs and symptoms of lung tuberculosis are very vague and mild.

- \* It may be loss of weight
- \* The patient looks tired, exhausted
- \* He has no appetite for food
- \* He has no inclination or stamina for work
- \* He may be suffering from mild fever and persistent cough.

Most of these symptoms are common to many other diseases as well. Some patients may also develop chest

pain and others may complain of blood stained sputum. If these symptoms persist for 2-4 weeks, the patient should go to the nearest **Health Centre** or **Hospital** or **District TB Centre** immediately for check up as the infection may be T.B. Not only these services are free but the drugs are also given free.

## DIAGNOSIS OF TB OF LUNGS

The diagnosis of lung tuberculosis is based mainly on examination of the sputum of the patient. Some times an x-ray examination of his chest may also be required.

Every patient, who is suffering from persistent cough for 2-4 weeks, should get his sputum examined under the microscope. If the sputum shows the presence of the tubercle bacilli, it confirms that he is suffering from tuberculosis of the lungs.

If the sputum examination does not reveal the presence of the tubercle bacilli, it does not mean that he is not suffering from this disease. Sometimes, the bacilli are very few in the sputum, and they can escape detection. In such cases, further diagnosis is made by x-ray examination of the chest.

Another diagnostic tool is the tuberculin test. However, this is more applicable in the case of children. If a child below three years is found to be

positive for tuberculin test, it is an indirect evidence of an active tuberculosis lesion in the body, even if there are no other signs and symptoms. The child should be treated. But a positive tuberculin test in the case of adults is not of much help since the infection is not always followed by disease.

### **TREATMENT OF TB OF THE LUNGS**

The discovery of powerful drugs, effective in treating this disease, constitutes a milestone and one of the major medical advances of the century.

The patients do not have to languish in hospitals and sanatoria. There is no need for extra nutritious diet or special food or tonics or absolute bed rest. They can be treated at home in the family environment, as effectively as in a hospital or sanatorium.

The patients treated at home should take the drugs regularly and as long as advised by his doctor. They should visit the health centre or hospital regularly every month for drug collection and periodical check up.

The patients who take drugs regularly, in prescribed doses under doctor's advice, do not pose any danger to their family. Therefore, they do not need isolation even in their own home

from their family.

### **DURATION OF TREATMENT OF LUNG TB**

The nature of this disease is very peculiar. The symptoms disappear within a few weeks of taking the treatment, because of the effect of powerful drugs. The cough disappears. The temperature gets normal. The patients' appetite improves. Likely, his weight may also increase. The patient thinks that he is cured of tuberculosis and discontinues the treatment on his own. It is at this stage that the patient commits a great blunder.

Relief from symptoms does not mean that he is cured. The patient should continue taking the drugs regularly, in proper doses and without break. The doctor alone should decide the duration of the treatment. The duration according to the drug regimen varies from 6-12 months in normal cases and may extend to about 18 months in a few patients. The duration of the treatment is the same whether the patient is treated in the hospital or at home. Patients discharged from the hospital must complete the remaining period of treatment with drugs at home. Incomplete or irregular treatment or discontinuing the treatment against doctor's advice may be dangerous, to the patient himself, his family and to the community.

## TUBERCULOSIS IN CHILDREN

In a big country like ours, with a large number of TB patients living in crowded and congested localities in both urban and rural areas, the risk of infection is immense and starts as soon as the child is born. Therefore, they need special care. Children should be immunised against Tuberculosis by BCG vaccination. BCG vaccination, early in life, provides a high level of protection against tuberculosis. It is safe even to the new born.

BCG vaccination facilities are available throughout the country at all health centres, maternity hospitals and TB clinics. It is given free.

## PREVENTION OF TB OF LUNGS

During the early years of this century, tuberculosis was one of the most expensive of all diseases for diagnosis and treatment. The victims of this disease were a burden to the family and to the community. The worst part of it was, the TB patients were spreading the infection as long as they lived.

The picture is totally different today. Tuberculosis can not only be cured today completely but also the spread of infection can be prevented.

Prevention of tuberculosis is the

concern and responsibility of the entire population.

The Government of India, the State Governments, voluntary organisations together have been fighting a relentless battle against this disease right from the year 1962 when the **National Tuberculosis Control Programme** was launched. Howsoever sound and scientific a programme may be, it cannot be a success unless the people:-

- (i) understand and accept it wholeheartedly as their own;
- (ii) make use of the services and facilities available at their doorsteps and
- (iii) participate in the implementation of this National TB Control Programme.

## HOW CAN PEOPLE PARTICIPATE IN THE TUBERCULOSIS CONTROL PROGRAMME

Every citizen, living in the village, in the town and in the city has a vital role to play in our crusade against tuberculosis, in his own interest, in the interest of his family and community.

People could identify and educate suspected cases of tuberculosis, to go to the nearest hospital or health centre for examination of their sputum, and if necessary, for x-ray of the chest.

What are the predominant symptoms of this disease in suspected cases:

- \* Persistent cough for 2-4 weeks, with or without fever and
- \* Spitting blood tinged sputum.

If the sputum examination confirms that the suspected person is suffering from tuberculosis, he should be motivated to take drugs regularly, in proper doses and as long as he is advised by the doctor, who is treating him.

The powerful anti-TB drugs give relief from symptoms of tuberculosis within a few weeks of treatment. This does not mean that he is completely cured. The patient should be persuaded

to continue the treatment, uninterrupted and until such time he is finally checked and cleared by the doctor, who is treating him.

People can prevent the spread of this disease by themselves.

The first step in the community control of tuberculosis is to **break the chain of infection**. Persons suffering from this infection should cover their mouth while coughing and sneezing.

The second very important step is observance of "**Cough Hygiene**". TB patients should spit only in spittoon or covered container and dispose off the sputum collection either by burning or burying.

---

---

## STRENGTHEN OUR EFFORTS TO FIGHT AND CONTROL TB

---

---



FROM THE STATE (MAHARASHTRA)

## SOME INFORMATION ABOUT TUBERCULOSIS

BY

DR. S.A.JALEEL\*

I and the Citizens of Aurangabad are immensely pleased to inform that in 1967, Sixth All Maharashtra Anti-Tuberculosis and Chest Diseases Conference was held at Aurangabad with great success and villages of this area were greatly benefitted by it. It helped to remove the fear and misconceptions about the Tuberculosis from their minds. They became fully aware of nuisance of sputum and dangers of indiscriminate coughing and spitting by TB patients. They were also able to take preventive measures.

The Citizens of Aurangabad are overwhelmed with joy after hearing the news of 26th All Maharashtra Anti-TB and Chest Diseases Conference. The Mahathwada Region is thankful to the Government of Maharashtra, Deputy Director, TB & BCG and to the great pillars in the field of tuberculosis like, Dr. M.D. Deshmukh, Dr. T.B. Master, Dr. K.C. Mohanty, Dr. Gothi and others.

I am thankful to the dignitaries who have fixed the venue of Conference at Aurangabad even after

knowing the difficulties for holding such a conference at a place like Aurangabad. Ignorance and poverty is prevailing in this region offering easy ground for spread of diseases like TB.

After the conference-training at different places, most of the TB workers proudly said that we will eradicate TB in 10 years. But I feel sorry to say that our announcement was not correct and the entire responsibility, in my opinion, lies on us who make the rules and regulations in TB field. In my opinion, the following are the reasons:

### **I. BCG is losing its efficacy. The reasons are many-**

- (i) BCG vaccination technique is taught in three days with other vaccination techniques.
- (ii) BCG vaccine is not properly stored. Expiry dates are not adhered to.
- (iii) BCG induration is not properly seen.
- (iv) Lot of other work is forced on trained BCG workers. Hence the BCG work suffers.

I propose that special grade be given to the BCG workers considering their work.

\* Member, Dist. TB Association Aurangabad : Reproduction from Souvenir Maharashtra State Conference, Aurangabad 1990. Edited.

Remedy BCG team should be separate as before and house to house BCG vaccinations should be started from periphery to the centre. BCG technicians should undertake health education, case finding and defaulter checking apart from complete vaccination of their locality.

## II. Valuable drugs

Valuable drugs such as Rifampicin Pyrizinamide, Ethionamide and Cycloserine are available but at high prices. At one of the camps at Khultabad in the campaign of case finding undertaken by Anti-TB Association, Aurangabad, I had proposed to Honourable Minister Shri Abdul Azeem that prices of anti-TB drugs be reduced and be made available at all primary health Centres. We are thankful to the Government as also to the Anti-TB Association, Bombay for their untiring efforts for this cause.

Rifampicin was invented in 1962 and has turned the tables in favour of dying TB patients. In 1963 Rifampicin was available only in 119 districts of India and it was very costly. No doubt the drug is very very valuable but it is used in far-advanced and chronic cases on their death bed. I think this is a waste. It should be given to all cases which renders them noninfectious. Now resistance to these drugs is increasing and responsibility lies on the persons

(most of them from other systems of so-called medicine) who neither give proper dosage nor proper combinations. As per Sections 33 to 36 and 161 of the Medical Practitioners Act the so-called doctors cannot practice and are liable for punishment. Allopathic, Homeopathic, Unani, etc cannot use drugs of other systems.

## III. Appointment of District Tuberculosis Officer

Since the inception of Anti-Tuberculosis Association at Aurangabad, I am representing that the DTO should be a class I officer. Now, after a long period this demand has materialised. However, I am very sorry to state that instead of TB workers, health officers are posted at DTO, disappointing TB workers who are now reluctant to work. Now I propose again and request the conference to consider whole-heartedly the demand that the TB workers who are working in TB field and postgraduate in Medicine and Chest Diseases or years together, be posted as DTO. Present District Tuberculosis Officers can be posted as District Health officers in other fields but not in tuberculosis.

Officers working at DTC should be transferred in consultation with Anti-Tuberculosis Association. Anti-TB Associations command and demand respect by the public.

#### IV. Tuberculosis Bills

For counter-signature of the diet bills and of leave there should not be any administrative hurdles.

Anti-TB Association, Aurangabad, has done marvellous work in case finding, default checking, health education and encouraging the patients for taking regular treatment by rewarding them with various prizes. Anti-TB Association Aurangabad has rewarded BCG Technicians for BCG Vaccination and case finding and Pathology Technicians for sputum diagnosis and thereby motivating them for excellency in their work.

Anti-TB Association Aurangabad spends lot of time in talking with the TB patients till their doubts are cleared and solving their personal difficulties and that is why the TB Association Aurangabad is very very popular and commands respect.

Now I propose that one Taluka should be selected for TB eradication (control). Knowledge about tuberculosis, its spread preventive and control measures should be given to the villagers in villagers' own vernacular. The Police Patil of each village should have record of all TB patients in his village and should also keep record of movement of sputum positive TB patients in and out of his territory.

#### V. Progress of Tuberculosis Control

District Tuberculosis Programme

started from 1962. There are on an average 500 sputum positive cases in a district population of 1.5 million.

Symptomatic patients should come to us on their own we are doing very good work on paper but in reality we are going few steps backwards such as tracing symptomatic cases by house visits by our workers. Record keeping is very important because by the comparison of the record only the efficacy of the drug is judged.

Can I ask TB institutions and the dignitaries as to what improvement we have done in the control programme or are we at the same place as 30 years back?

The reasons are

- 1) Unknown, undetected patients.
- 2) Defaulters.
- 3) Irregular and inadequate treatment by unqualified persons (I do not say doctors).
- 4) Lack of health education programme (TB).
- 5) Lack of proper control by concerned officer on his institute and on TB patients in his district.

In a block there are 80 para-medical personnel. I propose two of them should be exclusively for TB work directly under the BCG technician. There should be one health volunteer for every 1000 population. Sputum

examination of each case having Cough for more than 15 days not relieved by cough mixtures, chest pain, fever and haemoptysis should be carried out religiously. It should be carried at least three times, if negative at first examination.

The symptomatics not coming to us for treatment must be approached by us for control of TB. We cannot eradicate TB unless we discover the unknown cases.

One respectable villager from each village should be requested to take care of the TB patients of his village and to see that they take the treatment regularly.

Health volunteers can visit 10 houses daily and complete the work in one month (200 houses, 1000 people). On who educates maximum villagers and collects maximum number of sputum samples should be awarded prizes and those whose work is not satisfactory should be punished by the officials.

One of the reasons for default is the long distance of drug collection centre from house of the patient. But now drugs are available at the door of the patients i.e. at the Primary Health Centre,. In my opinion, sending the drugs by paramedical workers is not justified because of many reasons such

as Drugs will not go in stomach of patient but it may go in the market, when patient brings the drug himself, he will take it but if he is provided drug at his door he will not consume it.

When the patients come for drug collection we have to spend some time with them, listening to their difficulties and try to solve them. When the patients gather we have to educate them about sputum nuisance and preventive measures of TB in their own language.

The timings of the TB centre are just like office timings and it is difficult for patients to collect drugs. Hence it should be kept open one hour in the early hours of morning and one hour in the late evening in addition to regular timings.

House to house survey and follow-up of all the cases is a must. This should be one of the important works of the District Tuberculosis Officer, besides blockwise Shibirs systematically.

Our Anti-TB Association work is appreciated by each and everybody. Collection of finance from the philanthropic personalities, distribution of Radio & Colour TV sets and sewing machines for earning livelihood, distribution of wheat, clothes and books to the TB patients and rewards for concerned personnel. We take personal interest in rehabilitation of the patients.

# TUBERCULOSIS IN DIABETICS

DR. S.A. INDURKAR\*

Diabetes is fifth fatal disease affecting Indian population, while Tuberculosis is biggest public health problem in our country. When they are co-existing, the management of the problem is difficult and requires patience of treating clinician and his patient.

In India various workers have mentioned incidence of pulmonary Tuberculosis to be ranging between 4 to 8%. At my centre of the first 500 cases of Diabetes 20 cases had pulmonary Tuberculosis (4%). It is obvious that in Diabetics the incidence is significantly more than Non-Diabetics.

The classical clinical features of Tuberculosis like fever, weight and appetite loss along with cough may or may not be present in Diabetics. Whenever a Diabetic who is well controlled suddenly shows hyperglycemia, suspicion of Tuberculosis is always made. A Diabetic should always be submitted for x-ray chest every year.

Tuberculosis may have few or no symptoms in Diabetic patients. Clinical examination may reveal unexplained weight and appetite loss, while exami-

nation of respiratory system may have some signs. But patient will have severe hyperglycemia. The radiological picture in Diabetics has many classical features. The lesions are extensive, active, parenchymal, cavitatory, bilateral, and atypically middle and lower segments of lungs are affected.

In view of high incidence of Tuberculosis in Diabetics, if it is suspected, diagnosed, and treated promptly and early, recovery is as good as in Non-Diabetics.

The treatment of Tuberculosis and Diabetes is to be done actively and simultaneously along any other nutritional disorders like anaemia, and hypoproteinemia.

Insulin should be even needed in all types of Diabetes, who has tuberculosis. There is no substitute for Insulin therapy. It helps to control Diabetes promptly and completely. The Tuberculous lesions heal almost completely with minimal resultant fibrosis. Insulin being anabolic in its property results into increase in appetite and weight of patient. None of the oral hypoglycaemic agent has all these properties. On the other hand use of these agents

\* Consulting Diabetologist, Pushpa Nagri, Auran-gabad. 431001.

may lead to reactant type of tuberculosis resulting into permanent morbidity. The diet of these patient has to be diabetic as usual but with high protein content and rich in vitamins and Iron.

Tuberculosis is to be treated aggressively and for long duration. Short term intensive therapy with 4 to 5 drugs initially for two months, followed by 3 drugs for about another 7 months which may be increased if necessary.

Patient should be clearly told regarding importance of use of Insulin and duration of treatment of Tuberculosis. During the treatment of the

Diabetes patient should be told regarding hypoglycaemia, as there is drop in requirement of Insulin with improvement of patient.

Once the treatment of Tuberculosis is complete and Insulin requirement is less (40 Units) then he may be shifted to oral hypoglycaemic agent, whichever is suitable.

In short it can be said that if Tuberculosis is treated with short term intensive therapy along with Insulin therapy for Diabetes, there is complete recovery of the patient, as good as non-diabetic and there is no morbidity like permanent respiratory disability.

---

---

*TB. Earlier Caught Easier Cured*

---

---

# “EXPANDED HEALTH EDUCATION PROGRAMME IN TUBERCULOSIS AND COMMUNITY INVOLVE- MENT AREA ESSENTIAL PACTS OF OUR NATIONAL TUBERCULOSIS CONTROL PROGRAMME”

*DR. M.D. DESHMUKH\**

The T.A.I. (Tuberculosis Association of India) showed 50 years ago that the key to Control of Tuberculosis was through Domiciliary treatment. It opened the first well equipped T.B. Centre specifically for this purpose in Delhi nearly 40 years ago. It was the only way to deal with this omnipotent deadly disease as the need for diagnosis was very high and facilities for hospitalisation too meagre. This thought had of course come to many Tuberculosis workers in other countries for at the International Tuberculosis Conference held at New Delhi in 1957, papers on Ambulatory chemotherapy from Europe, U.K. and U.S.A. dominated the Scientific Session.

To put the idea of domiciliary treatment on a Scientific basis in India the following three important steps were taken:

1. A national sample Survey was launched to find out the true facts of pulmonary tuberculosis

in urban and rural areas from 1955 to 1958-1959.

2. The Madras Chemotherapy Centre was started in 1959 with the co-operative efforts of I.C.M.R., B.M.R.C., Madras Government and Tuberculosis Association of India to find out a suitable oral drug combination for domiciliary treatment.
3. In 1960 the National Tuberculosis Institute was set up at Bangalore to find out from field work the most suitable and economic method of diagnosis and treatment applicable to our rural areas and also to train the necessary staff for it. The Scientific work at these centres helped us to formulate our National Tuberculosis Programme. The programme was good on paper but even after 2 decades of steady work, we were getting nowhere near our goal of achieving T.B. Control. In early eighties ICMR appointed a small committee of T.B. experts (of which I was member) to tour round selected

---

\* Hony. Technical Adviser, Maharashtra State TB Association and Project Director, Maharashtra State TB Association

parts of our country to make "On the spot study." The report submitted showed the main defects and made suggestions to correct them. The main defects were:

1. Of the estimated number of TB patients only few were being diagnosed.
2. Of those diagnosed only a small fraction (1/4) was cured.
3. The B.C.G. cover was also not satisfactory.

The experts realised that although the approach was correct the community was not taking full advantage of the facilities offered due to lack of health education and patients on drugs were not completing their treatment for the same reason.

In 1985 at the time of the Silver Jubilee Celebrations of our National Tuberculosis Institute, 25 districts were taken up for intensive Health Education to cover general practitioners, Government service doctors, paramedical workers, community in general and specifically community leaders and of course the suspected and diagnosed T.B. patients. All available educative media and specially prepared educative material, slide show, short films on T.B. etc. were used.

I should say it was a full dress rehearsal on a small scale of the Expanded Programme of Health Education Project, we have in hand for the

last 3 years. The results were satisfactory. Most of the chosen districts showed improvement in their work as compared to those which were not taken up. We should look forward confidently to success of the project in hand and work hard for its successful termination before the closing date namely 30th September, 1990.

I intend to give only a brief outline of the project and make some suggestion for its successful termination. But before I start, I want to make it clear that this one time effort is not going to get us to our goal of T.B. control. We will have to use this experience in future years and continue the health education for different sections of the community without foreign help by making it an integral part of our National Tuberculosis programme. Then only we can reach our goal if not by the end of the century, then atleast in early years of 20th Century.

## THE PROJECT

The difficulty in extending the experiment of NTP to all the districts was mainly financial. Neither Central Government nor I.C.M.R. were willing to put the estimated bill of more than a crore of rupees. Fortunately for us the USAID agency came to our assistance and offered monetary support of upto 75% of the total expenses of covering 250 of our districts. The



remaining 25% was to be taken up by the Tuberculosis Association of India and its State branches.

This was calculated as contribution of Rs. 6,000/- from each district taken up for project to be paid in 3 yearly instalments of Rs. 2,000/- each per year. The State also contributed in by way of time of experts and workers.

The other condition insisted upon by USAID and approved by the Central Government and accepted by TAI was that the project would have to be managed by T.B. Association and its State and District Branches of course with the full co-operation and help from official services.

In return the district received cash payment per year as follows.

For One doctor's Refresher Course per year	Rs. 3,000.00
For 2 reorientation courses for paramedical workers per year	Rs. 1,000.00
For the Seminars for Community leaders per year	Rs. 900.00
Total:	Rs. 4,900.00

Plus small sums for petrol and for travel and incidental expenses

The value of health education material and health propaganda material included Projector, Tape recorder, slides, short films on T.B., booklets come to nearly Rs. 25,000/-

The following specific items of work had to be taken up by the districts for the project.

1. One Refresher Course for the General Practitioners and Govt. Medical Officers once a year (in 3 years)

In big towns the number of doctors may be too large to be accommodated at one time. One may contact the local I.M.A. branch and request them to send only those doctors who are interested in helping the N.T.P.

2. Two Reorientation courses for paramedical workers totalling 6 in 3 years of the project.

Here too the workers chosen can be selective for in addition to the routine work. Promising workers have to be taught how to use the educative material and impart health education to the villagers when they pay their fortnightly visit.

In actual classes these workers should be encouraged to come forward to demonstrate the use of various items of health education. They should also act as volunteers to explain the health material put up in health exhibition to the visiting public.

3. Three Seminars for Community leaders per year totalling 9 in 3 years of the project.

These are considered very important for spread of health education in the community. Hence the selection of the leaders should be well planned, choosing important leaders in the community such as high officials of local self Government, political leaders, Bank Officials, School teachers, social workers etc. In bigger towns attention should be given to school, clubs such as Rotary, Lions, Youth Organisations, Women's organisations etc.

4. Health Exhibition should be rotated round the district Headquarter town as also taken to PHIs and Taluka places not forgetting schools and other places where large crowd gather such as fairs etc.

5. Organisation of casefinding programmes is also a must. These should be systematically held from time to time in different parts of the district so as to cover it throughly.

6. Attention should be paid to other media of communication such as newspaper articles, radio, T.V. etc. and lectures for the public, street plays etc.

General Medical Practitioners should be requested to put up well planned wall posters in their waiting rooms so as to give health education to the waiting patients on important aspects of health such as care of new-born

children, preventive inoculations including B.C.G. Nutrition, general health care and, of course, prevention of Tuberculosis.

As repeatedly pointed out above the closing date of the project is on 30th Sept. 1990 and very few districts have completed all items of the first 2 years. Both the District T.B. Association and the D.T.O. and their team must resolve to finish all work in time. D.H.O. and the Civil Surgeon should also note the performance of the team and report to D.D.H.S. (TB & BCG) who is also the Jt. State Director of the Project.

After all we have accepted a big donation from a foreign Country and with that the moral responsibility of completing the task in time.

Let us all, put our shoulders to the wheel and bring the project to a successful completion.

We have also to adopt this in our routine work in future and achieve control of tuberculosis if not by 2000 A.D. at least, in the first decade of the next century.

I hope our District Teams have taken up our suggestion to the team of experts to take 2-3 items in our trip to spread up the work.

# POINTS OF PONDER BEFORE DIAGNOSING PULMONARY TUBERCULOSIS

DR. P.Y. MULEY \* AND DR. P.S. JOSHI\*\*

Tuberculosis, which was number one killer of man before the advent of chemotherapy, now is curable but continuous to be number one in developing countries. It is very important to diagnose it correctly and early but at the same time, it should not be overdiagnosed, specially in a country like ours, where there is still high prevalence of tuberculosis.

Whenever patient presents with chronic cough, expectoration, fever, loss of appetite, loss of weight, haemoptysis, lassitude, pulmonary tuberculosis is a very likely possibility. But these symptoms are common to many non-tuberculous conditions and on the other hand symptoms may be absent even in advanced disease, symptoms even may persist after the lesion is healed as in residual bronchiectasis, fibrosis, chronic bronchitis, in overanxious and neurotic patients. The symptoms, therefore, can no longer be viewed only objectively. They have to be interpreted and evaluated in the light of the total clinical picture.

Physical examination of the chest

has its value as well as limitation. None of the observed physical signs is pathognomonic of tuberculosis. Physical signs give idea about gross structural morbid anatomy rather than information about its etiology and activity. In spite of these limitations physical examination of the chest has its own value and it cannot be omitted, for example to diagnose plural rub, bronchial spasm, stethoscope is essential.

So it is clear that to diagnose active pulmonary tuberculosis, help of laboratory is essential. Sputum examination for acid-fast bacilli (AFB), radiology, sputum for AFB culture are the important and widely used methods for diagnosis.

Sputum examination for AFB is an essential part of diagnosis. It is a very useful method of case finding in developing countries because it is relatively simple, cheap, can be done in areas where radiology is not possible, and it picks up the most infectious cases. The diagnosis of tuberculosis can be established within a few months and chemotherapy can be started immediately which is a great advantage in peripheral centre.

The chance of finding AFB in a

smear increases with the number of bacilli in the specimen. If bacilli are less than 1000/ml probability of finding AFB in a smear is less than 10%, and it increases to nearly 50% at concentration of 10,000 to 12,000/ml. To measure the reliability of the smear microscopy method reports of several microscopists were compared and it was observed that lowest frequency of agreement was on result reported as doubtful. Finding of at least THREE AFB in a smear is recommended as positive. The second spot specimen half an hour after the first, gives higher yield of bacilli.

Field studies have indicated that smear microscopy done by nonspecialized health workers is fairly reliable. Even though sputum examination for AFB is highly reliable, there are chances of false positive and false negative results. Food particles, precipitated stains, other AFB, scratches on slide, fibres, pollen, accidental transfer of AFB during staining, mistake in labelling can give false positive results. Inadequate sputum collection, exposure of specimen to direct sunlight or radiation, failure to select suitable sputum particles for smear preparation, inadequate preparation of smear or staining, inadequate smear examination, mistakes in labelling can give false negative results. So sputum examination must be considered in the total clinical context. Preferably

early morning sample collected after deep coughing in a wide-mouth container, the mucopurulent part of which when properly stained on a new slide will yield better results in the present situation.

If expectorated sputum is not readily available for examination, expectoration may be induced by tickling inner surface of epiglottis or trachea with swab or sample can be obtained by nasotracheal aspiration.

The introduction of radiology as a diagnostic tool was an important landmark in diagnosis of tuberculosis. It was used with great enthusiasm and it is still widely believed that tuberculosis of the lung can be diagnosed by radiology alone. There are many lesions which can be demonstrated radiologically long before their presence can be detected by usual means of clinical examination, e.g. tuberculous infiltration, early neoplasm etc. A normal chest x-ray almost, although not completely, excludes pulmonary tuberculosis. There are few provisions, observer error, localized post primary tuberculous bronchitis, acute phase of miliary tuberculosis. Chest radiology is very useful in localizing abnormalities in the lung, but is important to keep in the mind that similar radiological lesion can be caused by different etiological factors and to establish

the tuberculous etiology of an abnormality further examination is necessary, only bacteriology can provide the final proof.

Radiological reporting when done by same individual at different times (intra-individual variation) and reporting done by various observers at the same time (intra-individual variation) revealed average under-reading 21.8% and over-reading 19.5%, with intra-individual variation of 20%. So purely radiological criteria cannot give really satisfactory evidence of tuberculosis in the individual patient. There was consistently better agreement among smear readers than among X-ray readers.

Operational short-comings of radiography in developing countries are many. Equipment and its installation is expensive, specially trained technicians are required, machine may not be in working condition, shortage of x-ray films, spare parts etc. may be there. Result of x-ray may take a day or two, and few patients may not return to obtain reports.

If we consider the cases of tuberculosis diagnosed in Maharashtra during 1988-89, out of total 2,47,203 patients 23.35% (57,742) were sputum AFB positive, 76.65% (1,89,461) were diagnosed with the help of radiology alone. Majority of the patients re-

sponded to anti-tuberculous therapy. Even if we consider that few patients might have been overdiagnosed, many patients were diagnosed by radiology alone. If only sputum positivity would have been taken as criteria for diagnosis these patients would have been missed. So persons with symptoms of tuberculosis who are having radiological picture suggestive of tuberculosis, but are sputum AFB negative should be treated as cases of tuberculosis but they should be repeatedly followed. If they do not respond to therapy in a couple of months it can be omitted.

Sputum culture for AFB - the highest yield of cases discharging tubercle bacilli is achieved by culture. The technical superiority of culture over smear microscopy is largely due to quantitative factors, size of inoculum for culture is ten times more than that of part smear (0.1 ml and 0.01 ml respectively), usually 1-3% part of smear is examined by microscopy in test tube the whole yield of colonies may be seen at a glance. The probability of finding bacilli by culture is approximately 30 times as it is by smear microscopy. Obviously this is advantageous when sputum contains few AFB. The patients expectorating small number of bacilli differ in clinical, epidemiological and in type of lesion from that expectorating large number of bacilli. A cavity about 2 cm in diameter may contain 100 million bacilli whereas a nodular lesion of

same size may contain only 100-1000 bacilli and these are discharged sporadically in the sputum. Risk of contracting the disease for household contacts of culture positive with smear negative patient is about 1/6 to 1/10th as that for smear positive patient.

Various studies have shown that about 90% of patients positive by smear are culture positive. In remaining 10% culture negativity may be due to chemotherapy, exposure of specimen to heat or sunlight or fault in technique of culture. Therefore it is not necessary to do culture as a routine in patients who are smear positive.

Culture has number of disadvantages. It is costly, and special equipment, trained persons are required. Greatest shortcoming of culture is that atleast four to six weeks are required to obtain the result. Hence it should be performed only when there is strong doubt about diagnosis and where culture facilities are available.

There are large number of chronic non-tuberculous pulmonary diseases which are difficult to differentiate from pulmonary tuberculosis. Differential diagnosis becomes still more difficult in geriatric patients in whom toxic manifestations may be minimal or absent. Difficulties in diagnosis arise not only in the early stage of disease but may arise in advanced lesion.

The diseases which should be differentiated from pulmonary tuberculosis are many. Infections of upper respiratory passage may sometimes mimic tuberculosis, patient may bring mucopurulent sputum streaked with blood. Sometimes x-ray may reveal an area of pneumonitis due to post-nasal drip producing aspiration pneumonitis. Repeated sputum examination is useful in differentiation. Chronic bronchitis, bronchiectasis may be confused with tuberculosis, Absence of AFB in sputum, clearing up of non-homogenous shadows in x-ray after treatment with broad spectrum. antibiotics differentiates bronchiectasis from tuberculosis.

Acute bacterial pneumonia usually does not produce difficulty in differential diagnosis. Response to antibiotics and finding of organisms in sputum establishes the diagnosis. Chronic non-specific pneumonia, viral pneumonitis may be mistaken for tuberculosis. Such shadows usually disappear within course of few days or weeks without any specific treatment. When lung abscess is situated in upper zone and main symptom is severe haemoptysis, tuberculosis may be thought of Sputum in lung abscess is usually purulent and large in quantity with bad odour. Marked ? Leukocytosis, fever, early development of clubbing of finger favour diagnosis of lung abscess.

Fungal infections of lung like his-

toplasmosis and coccidiomycosis are not uncommon in our country. They produce x-ray picture similar to tuberculosis . Whenever patient do not respond to anti-tuberculosis therapy, fungal, infection should be suspected.

In a smoker who is about the age of forty, having symptoms suggestive of tuberculosis along with suspicious shadow in x-ray, possibility of malignancy should be kept in mind, Cytological examination of sputum, bronchoscopy etc. help in diagnosis.

Occupational diseases like silicosis, pneumoconiosis should be

considered in a patient with symptoms of tuberculosis with occupational exposure. Tuberculosis may develop in a case of silicosis. Hence repeated sputum examination should be done.

Parasitic infections of lung, sarcoidosis, mitral stenosis, haemosiderosis, chronic pulmonary disease of unknown etiology, though rare, should be considered in differential diagnosis.

Repeated sputum examination and response to broad spectrum antibiotics, presence of constitutional symptoms are important aspects which need to be considered before labelling a person having reactivation of tuberculosis.

---

---

*Fight TB - Control IT*

---

---

# NEWER DRUGS FOR BRONCHIAL ASTHMA

DR. S.H. TALIB\*

There has been an increase in the morbidity and mortality over the past 10 years from asthma. Despite the increase in sales of all classes of drugs for treating asthma, it has been suggested that optimal treatment has not been received by those who die from asthma. Too much reliance is being placed on the B adrenoceptor agonists, resulting in tachyphylaxis and arrhythmias to such drugs.

Important development in the treatment of asthma have been the improved delivery of anti-asthma drugs, such as spacer devices to increase the deposition of inhaled aerosols and the development of controlled release theophylline preparations. Ketotifen and Nedocromil sodium both being mast cell stabilisers have been introduced as asthma prophylactics. An anticholinergic, Ipratropium Bromide has been added to the asthmatic group of drugs. A xanthine derivative enprofylline, having larger margin of safety and fewer side effects than theophylline is being currently evaluated but is not yet on the market.

## DRUG DELIVERY

### *Slow Release Bronchodilators*

The introduction of slow release preparations of theophylline has given a new impetus to use methylxanthines in treating asthma. The rational use of these drugs has been made possible due to the understanding of pharmacokinetics and blood level estimations of theophylline. They are particularly useful in the treatment of nocturnal asthma. These sustained release preparations given twice daily have an improved compliance, greater efficacy and fewer side effects. More recently an ultraslow release theophylline, of 800 mgms, has become available. A single dose of this was also found to prevent nocturnal wheeze more effectively than the twice daily preparations.

The occurrence of side effects do not seem to be always related to therapeutic concentrations. They are found to occur with subtherapeutic concentrations also and can be minimised by increasing the dose gradually. Recently theophylline has been found to be associated with learning difficulties and sleep disturbances. So the inhaled bronchodilators are to be used in children than oral theophylline preparations. Sei-

---

\* Associate Professor, (Medicine), Medical College, Aurangabad.



zures and cardiac arrhythmias occur when concentrations go above 30 micrograms per ml. Due to the inter-individual and intra-individual variation in the absorption and clearance of theophylline the dose of sustained release preparations should be adjusted according to clinical response and serum blood level concentrations. The clearance may be also affected by smoking, age, diet and drugs. The different slow release preparations differ in their characteristics of release and so it is unwise to change from one preparation to another without careful monitoring.

#### **INHALATION DEVICES :**

The elderly patients and children could not master the use of metered

dose inhaler (MDI), which requires co-ordination between actuation of (directly stimulate adenylate cyclase) have not proved clinically useful. Calcium antagonists have been disappointing with a weak bronchodilator response and they have only a weak protective effect against induced bronchoconstriction.

Corticosteroids induce the synthesis of a new protein, lipocortin which inhibits phospholipase A2 and thus preventing the generation of prostaglandins, leukotrienes and platelet activating factor. Lipocortin, may represent the forerunner of a new generation of anti-inflammatory drugs, useful for several diseases including asthma.

---

---

*Tuberculosis is preventable and curable*

---

---

## PREVENTION OF AIDS

DR. ANIL S. JOSHI\*

"AIDS" the disease which was not existing till 1981, has attracted the attention of scientists all over the world due to its dreaded clinical picture and outcome. AIDS stands for acquired immunodeficiency syndrome. It is characterised by breakdown of body's immune system, making it vulnerable to opportunistic infections and rare forms of skin malignancies.

India was free of AIDS till 1985; but now AIDS has embedded its roots and it is spreading its arms rapidly in our country. Till October 1989, there were 1650 seropositive individuals and 40 full blown cases of AIDS. At present there is no curative treatment for AIDS, whatever treatment is available is very costly. Treatment of one patient of AIDS amounts approximately to yearly budget of one Primary Health Centre, a country which is still trying to control malnutrition, tuberculosis, leprosy, malaria; cannot afford disease like AIDS.

There are many difficulties about vaccination. Hence prevention is the key word of AIDS. Causative organism is Human Immunodeficiency Virus (HIV) which is RNA virus. It can

be considered as nature's microbiological bomb. Mortality rate of 80% within two years of diagnosis and almost 100% afterwards explains the severity of disease.

Though a dreaded disease it is not a disease of common person. One cannot catch AIDS like common cold or Typhoid. There are definite high risk groups like homosexuals, heterosexual promiscuous behaviour, intravenous drug abuser, haemophiliacs, blood transfusion recipients, sexual partners and newborns of AIDS patient, laboratory workers, prostitutes etc.

Transmission of disease occurs only through blood, blood products and semen. It is not transmitted via air, food, faeco-oral route, casual contacts. It is not transmitted via kissing. Heterosexual promiscuity is the most important risk factor, AIDS is price which mankind is paying for its behaviour against nature's rules.

If we wish, we Indians can still control spread of disease. This can be done by reducing sources of virus from foreign countries and by mass education regarding spread of AIDS.

Millions of foreigners visit our

\* Member, Anti-TB Association, Aurangabad.

country and seed the infection. All foreigners should be screened and unless they are negative for HIV, they should not enter our country. The blood products which are imported should also be free of HIV. For prevention of further spread of disease extensive health education via mass education media is necessary.

To reduce the transmission via sexual intercourse people should understand that our cultural practices are the best one. Sexual relationship with only one faithful individual is the best. If one decides to have sex with someone regarding whom one is not absolutely certain, then use of condom is necessary from start to finish of the sexual activity.

Surveillance of patients with sexually transmitted disease (STD), and prostitutes should be done regularly. To reduce transmission via blood and blood products following measures are useful:

- Indiscriminate use of blood should be avoided.
- As far as possible blood from a relative or a known person should be used.
- Testing for HIV before giving blood; if not possible for all, at least donors who are positive for hepatitis-B, cytomegalovirus and

professional donors should be screened.

- Motivation for voluntary blood donation.
- Proper processing of blood products and use of products from small pool donors.
- Avoidance of unnecessary skin pricks and injections.
- Avoidance of use of shared needles.
- The laboratory workers, doctors should use appropriate barrier to prevent skin and mucous membrane exposure. They should take care while using needles and sharp instruments to avoid accidental prick.
- The persons who are HIV positive but are asymptomatic are capable of transmitting the infection. They should avoid pregnancy, should take precautions during sexual intercourse, should not donate blood or semen. But they can stay with other people at home and maintain normal social life.

Surveillance and health education is very important aspect of control. Establishment of Surveillance centers at different places and few reference centres is essential.

Health education can be done via attractive slogans like;

**“To remain free of AIDS  
you need to understand it”**

**“AIDS is preventable if  
we modify our behaviour”**

**“Condomsense is common sense”**

**“Blood Bankers ‘AID’ the  
patient**

**but no ‘AIDS’ please”**

**“Let our blood supply be a life-  
saving fluid  
and not a messenger of death”**

Still we can control AIDS. Late  
will be too late.

***Tuberculosis is diagnosed by examining the sputum to  
find out whether TB germs are present in it.***

***If the sputum does not contain these germs, the person  
is sent for X-Ray examination to the nearest health  
centre after doing one more sputum examination, if  
necessary.***

***If X-Ray facilities are not available, the patient is kept  
under observation and sputum is examined again once  
or twice.***

***Sputum examination is the best available test for TB.  
Tuberculin test helps in diagnosing TB among children.***

**EXCERPTS FROM THE PRESIDENTIAL ADDRESS DELIVERED BY  
DR. S.P. TRIPATHY AT THE 43RD NATIONAL CONFERENCE :  
CALCUTTA**

1. Inclusion of Tuberculosis in the revised 20-Point Programme of the Government ensures provision of adequate funds and other resources. What is therefore needed is a deployment of the available resources in a cost-effective manner so that the maximum dividends are obtained.
2. Resource allocation by some of the States has not been to the extent envisaged by the planners. This allocation has to be stepped up.
3. Individuals make an institution and contribute to its outputs. There is immense scope for research in the field situation. Given the will, tuberculosis workers in the field can plan and effectively participate in operational research projects.
4. Leprosy programme has shown that patient's compliance in treatment is much better if the drug delivery system is convenient. A study should be conducted to find out the most effective yet economically and operationally feasible system of drug delivery either through the multi-purpose workers, school teachers or other agencies.
5. Our National Tuberculosis Programme has been proved to be extremely satisfactory and practical in many developing countries. Adoption of a vertical approach is no solution. Existing facilities have to be improved in the integrated programme supplemented by operational studies to improve the performance under the programme.
6. The incidence of tuberculosis in tuberculin positive subjects was 20 times higher than in tuberculin negative subjects in the Tuberculosis Prevention Trial. Even though there is evidence of slight decline in the trend of disease in our country, elimination of the sources of infection will take long time to make its impact on the incidence of disease, since new cases will continue to arise by endogenous reactivation from amongst the approximately 400 million tuberculin positive subjects in the country.
7. Training programmes at the NTI should be further strengthened in terms of the number of trainees and the contents of training programmes. The latter need constant revision in the light of experience gained in the programme, especially, the introduction of short-course chemotherapy.
8. Computer facilities should be provided at the district and taluka levels to take care of data entry, monitoring, analysis of health care data and feed back.
9. There is need of application of scientific methods to the study of causes of non-compliance and involvement of social scientists in their planning. Conduct of such studies would be rewarding.
10. Since persons infected with Human Immune Deficiency Virus (HIV) are more prone to develop tuberculosis, there is need for regular check-up of HIV positive subjects.

## ADDRESS

BY

R. VISWANATHAN\*

24th March, 1882 was a most significant milestone in the history of medicine in general and of tuberculosis in particular. It was a cold humid evening when Robert Koch presented a crisp, concise and clearly worded paper at a meeting of the Physiological Society in Berlin, on his monumental discovery of the causative organism of tuberculosis.

Koch's contribution to tuberculosis and to general bacteriology will be dealt with by others. I have been asked to tell you about the man behind these epoch-making discoveries.

Robert Koch was born on 11-12-1843 in Clausthal, a village in the Harz mountains in the State of Hanover. His father was a mining engineer and Robert was one of a family of eleven. Obviously, there was no family planning in those days! After his schooling in the local gymnasium, Koch went to Jotting University for studying medicine under the distinguished Professor Freidrich Gustav Jacob Henle, who was a very eminent micro-anatomist and who

among other things had described the loop of Henle in the kidney. Koch qualified in medicine with distinction at the age of 23. In the next two years, he tried to gather varied medical experience as Assistant in anatomy at Göttingen University and subsequently working under such famous teachers as Ludwig and Vircho. He returned to his native village and started private Practice. Subsequently, he obtained a hospital appointment in Hamburg. In 1867, he married Emily Fraatz, a friend of his childhood in Clausthal. In the beginning, the marriage was a happy one, resulting in having a daughter Gertrude in 1868. He went back from hospital practice to general practice in Rikwitz, a small town of 4000 inhabitants. In 1870, Franco-Prussian War broke out and being a very staunch nationalist, he wanted to join the army. On the first occasion, he was refused army service because of his eyesight. Later, he was accepted when he again volunteered for second-line duties. On discharge from the army in 1872, he obtained diploma in Public Health and accepted the post of District Medical Officer in Wollstein. His duties as Medical Officer included public health activities like vaccination against smallpox and reporting on epidemics.

\* Late Dr. R. Viswanathan, Emeritus Scientist, Valabhbai Patel Chest Institute, Delhi. Address delivered on 24th March, 1982, on the occasion of Centenary Celebrations of the discovery of Tubercle Bacillus by Robert Koch.

This stimulated interest in him in the field of infectious diseases. With the help of a microscope presented by his wife on his birthday, he set up a primitive laboratory in his own house. One flamboyant fanciful medical historian wrote that Koch used his kitchen-table as his laboratory bench and the pots and pans used for cooking his own food were used for making food for the bugs he was cultivating. One of his first discoveries was the cultivation of the Anthrax bacillus and studying the life cycle of the organism. He again went back to private practice as City Physician in Breslau. He, however, continued his bacteriological researches which by that time became an obsession for him. One wonders how a scientist of his eminence could have engaged himself in varied activities, principally private practice before setting down and devoting his entire attention to research. This happens not unoften with many scientists of repute. Ramanujam, for instance, was a clerk when he made his remarkable discoveries in the mathematics of numbers. C.V. Raman was in the audit service before he entered his academic and scientific career. It only shows that scientific work can be performed under any situation so long as the individual concerned, young or old, man or woman, is really interested in research.

Koch's work on Anthrax, attracted the attention of eminent scientists like

Cohn and Conheim from Berlin and he was soon absorbed in the Imperial Health Institute in that city. It was here that he discovered the tubercle bacillus and instantly became world famous.

The story goes that when a young admirer asked Koch, how long should a slide be heated for staining T.B., he with his dry humour answered "as long as it takes you to say "Robert Koch is a great man". some say Koch was arrogant and dictatorial. Intellectual intolerance is not uncommon among eminent scientists and can be mistaken for arrogance.

In 1885, the German Government appointed him Professor of Hygiene and Bacteriology in the University of Berlin. In less than a year, the Government established Koch's Institute of Infectious Diseases. The Institute attracted eminent pupils like Von-Bering, the discoverer of diphtheria organism, Pffifer who discovered influenza bacillus, Welsh from United States of America, Kitasato from Japan and Erlich who laid the foundation for immunology.

Coming back to his personal life, in 1890, he bought his own parental home in Clausthal. By this time, he had made his name in the scientific world. His fellow citizens, therefore, placed a tablet of honour on the wall of his house. In 1893, after 21 years of married life,

some unfortunate thing happened. Because of the fact that Koch was wholly absorbed in the field of bacteriological research which involved visiting other countries, his wife felt neglected and decided to divorce him.

The historians are rather divided in their opinion as to whether the husband divorced the wife or the wife divorced the husband. Some say he had started going to the local theater alone and getting intimately acquainted with a young actress. This had made his wife wild. The result was a divorce. Who divorced who is purely an academic question.

Two months after divorce, Koch married Fraulein Freiburg, the young actress. While Koch was 50, she was only 21. The conservative stiff-necked Prussian gentry in Berlin indulged in unwarranted social ostracism. Even his fellow-citizens in Clausthal pulled down the tablet of honour from his house. Some medical biographers have said that it was more due to professional jealousy on the part of the academicians in the Universities who looked upon Koch with contempt, as a mere private practitioner dabbling in scientific work. This virtual social boycott was one of the main reasons why in his later years, he spent most of his time travelling abroad, no doubt, with his young wife. He visited Japan, Egypt, India, Indonesia, Africa, New Guinea

and other countries, chiefly for the purpose of studying diseases caused by bacterial infections, and trying to isolate the causative organisms. When he visited the United States, he was feted. After he visited the world famous Trudeau Sanatorium, Trudeau was reported to have remarked "You could not blame Koch, but what on earth could the young woman see in him"?

When he visited Japan, Kitasato, one of his own disciples, arranged an elaborate reception for him and a Shinto Shrine was erected in his honour. When the social prejudice gradually began dying down in his own country, he was elected a member of the German Academy of Sciences. In 1905, he received the Nobel Prize for his work on tuberculosis, after a lapse of 23 years. It often happens in the scientific world that the man's work is not immediately recognised however important his discovery might have been. This is due to various causes, the most important being professional jealousy which is found as much among scientists as among others including artists and politicians through the centuries.

Koch had enjoyed good health till March, 1910 when he developed anginal symptoms and cardiac failure. He had his wife went for rest to the Spa at Baden-Baden. On 27-3-1910, when he was sitting dressed, in the balcony



of his hotel observing a beautiful sunset, his chin dropped and he died quietly. He was aged 67.

I would like to end this short sketch biography with the words of Andrew Carnegie at the time of Koch's visit to United States. After saying that he was

hero of civilization and peace, far greater than a hero in war, he concluded by saying "Every age has its ideologies and the savants and saviours of mankind are our present day ideals, for I firmly believe that service to mankind is the highest service to God."

***The patient must collect and consume drugs regularly. If treatment is stopped prematurely or medicines are not taken regularly in the prescribed doses, the treatment will be a failure and the patient's life will be in danger. Then, he will also be a source of danger to the community by continuing to infect others.***

***Do not stop medicines on your own. The doctor will tell you when to stop them.***

***Visit PHC/hospital at regular intervals as desired by the doctor for drug collection and follow-up examinations.***

## PROBLEMS OF TUBERCULOSIS IN CHILDREN

H.B. DINGLEY\*

Year 1882 has special significance in the history of Tuberculosis since in that year, Robert Koch announced the discovery of the causative germ of this public health enemy No. 1. This discovery completely revolutionized the problem of tuberculosis in respect of its treatment as well as diagnosis and control. Identification of the bacillus in the sputum of the patient by microscopic examination helps in establishing the diagnosis in an individual with symptoms and signs which may not be specific, though failure to detect the presence of the bacilli in the sputum may also not completely rule out the possibility of the disease.

Subsequent research has made it possible to treat the disease with highly potent and effective drugs. Treatment with effective drugs helps the patient to be completely free of symptoms and restores quickly the sufferer's normal health and working capacity. Quick killing of the bacilli breaks the chain of infection and transmission, thus making the patient safe for the community in general and the children in particular.

Of the total population of 600 million of our country, 42 per cent or nearly 232 million are children under the age of 14. There are 115 million children under the age of six years. The women in the child bearing age constitute 21 per cent of the total population. Thus any welfare and health plan for the child population must cover 63 per cent i.e. nearly 2/3 of our population.

The number of children suffering from malnutrition is estimated at between 40 and 120 million and every month nearly 100,000 children die as a result of malnutrition. Nearly 92 million children in India live below the poverty line and in socio-economic environments which are unfavourable for their survival. Further, 90 per cent of the school going children in India weigh 10 to 40 per cent less than those in affluent countries. Besides low birth weight, malnutrition is also responsible for 17 per cent of premature births, leading to poor resistance to disease and stunted growth, both physical and mental. It is estimated that 22 per cent of school going children show one or more signs of nutritional deficiency. In our country nearly 14 per cent of children die before they reach their

---

\* Late Dr. H.B. Dingley, ex-Medical Superintendent, L.R.S. TB Hospital, Shri Aurobindo Marg, New Delhi-30 - TAI publication March, 1982-Marking Centenary Celebrations of the discovery of Tubercle Bacillus by Robert Koch.

first birth-day. Another 40 per cent are unable to complete even four years of age. Of every 1,000 babies born, nearly 120 die during the first year. Infant mortality rate in urban population is 81 per thousand. Pre-school age mortality is also very high. About eight to ten per cent of deaths could be prevented, if children were immunized against communicable diseases. There are over three million children suffering from some kind of handicap or other. There are 17 million birth a month. Out of every 100 children, who enter primary class less than one half complete class fifth and only 24 complete class eighth.

The child is precious not only to his parents but to the community and the nation as well. The interest and well being of children should be the main concern of every welfare state and India committed to the philosophy of social welfare, particular care is being taken to provide for protection, training, education, maintenance and rehabilitation of children.

The prevalence of tuberculous infection in children in India is about two per cent in 0-4 year age, about eight per cent in the 5-9 year age group and 16 per cent in 10-14 year age group. The annual attack rate of infection is about one per cent in the 0-4 years age group, 1.4 per cent in 5-9 year age group and 2.1 per cent in 10-14 year age group. Reliable estimates of the prevalence of

disease in children are not available because of the difficulties in diagnosis. Tuberculin test only indicates infection and not disease. X-ray appearances are not always pathognomonic. Clinical features are not specific and sputum often does not contain bacilli because the lesion is predominantly glandular as against parenchymal in adults. Even less is known regarding tuberculous mortality rate in children. Postmortem examination on a large scale could be the most accurate method for specific mortality rate, but this is not possible due to lack of resources and due to deep rooted, social and religious taboos. Children in the 0-4 year age group with large tuberculin reaction have significantly higher risks of death than older children. Finally, tuberculosis among children remains an important problem for the individual patient and the community and accounts for nearly 7 per cent of total admissions in the hospital.

Tubercle bacilli can attack all people irrespective of caste, creed, sex or age. It may attack the older and aged or its victim may be an infant in the cradle. The younger the infant, the more menacing the infection. Tubercle bacilli may invade any organ or system of the body. The main source of the bacilli is the human being himself and the chief mode of transmission is social contact. The new born immediately after birth is free of any infection and subse-

quently may get infection at any stage. Infection is always after birth and is not hereditary. The first entry of the germ into the body produces infection, but not necessarily the disease. It is only when the signs and symptoms appear that we can say, the child has the disease. Therefore, the first infection may be entirely symptomless. It may be emphasized again that tuberculous infection is not necessarily followed by disease, but disease must be preceded by infection.

The chief reservoir of the bacilli is the cavity in the destroyed area of the lung of a patient. Every time the patient coughs, sneezes, laughs without covering the mouth, these bacilli are excreted sticking to the droplets of sputum and enter another person's lungs through the inhaled air. Dried particles of sputum containing bacilli can also cause infection but not so often as droplets. Similarly, infection can take place through the gastrointestinal system and skin also but it is rare.

Droplet infection is the most important source of infection, but it does not produce infection in all the cases. Infection depends on conditions such as distance of the healthy child from the patient. If the distance is more than one meter, bacilli soon settle down and may cause infection only when carried

by an air current. Bigger droplets settle down sooner than smaller ones. The portals of entry and the site of disease are most commonly the lungs but it could be in the intestines, nose, tonsil, conjunctiva, skin, bone, joint, meninges, etc.

According to Fishberg, the number of tubercle bacilli coughed out by a tuberculous patient are as many as to cover a distance of 18 to 20 kilometers when these bacilli are placed end to end. But under favorable conditions even 100 bacilli may be sufficient to produce the disease. An individual's response depends on the number and virulence of the inhaled micro-organism, the individual's general condition, etc. and the age at which the infection occurs.

Emphasis in developing countries with large rural population and rudimentary health services should be on health rather than illness. B.C.G. vaccination of newborns and of tuberculin negative children at school entry as well as household contacts is likely to be more beneficial. Greatest emphasis must be placed on prevention of infection by identification of infectious cases in the community and rendering them non-infectious by chemotherapy as the main bulwark against disease in children.



## DO YOU KNOW ?

Tuberculosis is an infectious disease and still a **major** public health problem.

Four out of 1,000 persons are suffering from infectious tuberculosis disease, coughing out tubercle bacilli.

About 500,000 persons die of tuberculosis in our country every year.

Persons with **cough, chest pain, fever** for more than 2 weeks with or without haemoptysis may be suffering from tuberculosis. Finding tubercle bacilli in sputum establishes diagnosis.

All tuberculosis cases are curable if properly treated. Most of them need not be hospitalised for treatment.

Treatment is much simplified by giving **standard chemotherapy regimens** which are very effective. Tuberculosis cases must never be treated with single drug.

Infectious cases can be rendered non-infectious within a short time by giving short course regimens of 6-8 months. These regimens are capable of killing the three sub-populations of tubercle bacilli.

Government of India supplies anti-tuberculosis drugs including injection and short course drugs free of cost to the States.

With adequate, regular chemotherapy, prescribed duration of treatment and patient compliance, almost all patients can be cured.

The National Tuberculosis Programme (NTP) was evolved by the Government of India to tackle the problem of tuberculosis in the year 1962. The NTP finds the sick, treats the patient, restores him to useful life, prevents spread of the disease, keeps the family together. Today it has 371 District Tuberculosis Centres providing leadership and managerial support with a net work of more than 14,000 rural and urban health centres, dispensaries, hospitals rendering anti tuberculosis services throughout the country. Case-finding activities in the Peripheral Health Institutions have increased from 31% (1978) to 51% (1988).

Reproduced from NTI Bulletin

**JOIN HANDS TO FIGHT AND DEFEAT TUBERCULOSIS**



## **THE DOUBLE-BARRED CROSS**

### **INTERNATIONAL EMBLEM OF THE CAMPAIGN AGAINST TUBERCULOSIS**

At the time of the crusades, Godefroy de Bouillon, Duke of Lorraine, had placed the Double Red Cross on his standard when he took possession of Jerusalem in 1099, and, after his return to France, it became the emblem of the House of Lorraine.

The Double Red Cross was considered singularly appropriate as the rallying sign for the crusade against the most deadly Scourge Tuberculosis - which afflicts mankind. Proposal for its adoption as the International Emblem of the campaign against tuberculosis was moved by Dr Serson, on October 23, 1902 at the International Tuberculosis Conference in Berlin. The proposition was adopted unanimously.

The Council of the International Union Against Tuberculosis, Paris, in September, 1928, decided that National Associations which are members of the Union should adopt this emblem with a recommendation to the effect that it be legally registered in order to prevent its use for commercial purposes.

In 1957, the Tuberculosis Association of India requested the Ministry of Commerce and Industry, Government of India, to patent the Double-Barred Cross in favour of this Association and against fraudulent use of this emblem by others. The Central Government by their notification No. 4 (3) -TMP/57, dated 13th July, 1959, included in the section of the Emblem and Names, the Double Barred Cross as the emblem of the Tuberculosis Association of India.



**FOR PHILANTHROPISTS  
AND  
WELL-WISHERS**

**DONATE GENEROUSLY**

Donations to the Tuberculosis Association of India are exempt from payment of Income Tax under Section 80-G of the Indian Income Tax Act, 1961.

Donations for specific research work in tuberculosis and allied diseases of the chest, given to the Tuberculosis Association of India, are exempt from income-tax under Clause (ii) of sub-section (I) of Section 35 of the Income Tax Act, (43 of 1961) *vide* Notification No. 107 F. No. 10/46/IT (AI), dated the 23rd September, 1967 published in Part II Section 3 (ii) of the Gazette of India.

## LOYALTY

IF YOU WORK FOR AN MAN - IN  
HEAVEN'S NAME WORK FOR HIM  
SPEAK WELL OF HIM AND STAND  
BY THE INSTITUTION HE REPRESENTS.  
REMEMBER.....LOYALTY IS WORTH  
MORE THAN CLEVERNESS.

IF YOU MUST CONDEMN, UNDERMINE  
AND ETERNALLY FIND FAULT...  
RESIGN YOUR POSITION AND WHEN  
YOU ARE OUT OF THE ORGANIZATION,  
DAMN TO YOUR HEARTS CONTENT.  
BUT AS LONG AS YOU ARE A PART  
OF AN ORGANIZATION, DO NOT  
CONDEMN IT. IF YOU DO .....THE  
FIRST HIGH WIND THAT COMES  
ALONG WILL BLOW YOU AWAY....  
AND PROBABLY YOU WILL NEVER  
KNOW WHY.



*With  
Best Compliments  
From*

## **MYCOBUTOL**

A Potent Tuberculostatic  
Eliminates Chances of Resistance  
Suitable for Initial and Retreatment  
Convenient for Administration  
Safe with Virtually no Toxicity  
Well Tolerated  
Economical

Mycobutol makes Ethambutol Within the Reach of  
Tuberculosis Patients in Four Strengths

MYCOBUTOL Tablets of 200 mg. Ethambutal  
MYCOBUTOL Tablets of 400 mg. Ethambutal  
MYCOBUTOL Tablets of 600 mg. Ethambutal  
MYCOBUTOL Tablets of 800 mg. Ethambutal

Availability : Strips of 10 Tabs.

**CADILA LABORATORIES, LTD.**

Ahmedabad 380008.

# NATUROLAX

instamix

For gentle care of the  
intestinal system

1-3  
times  
a day

\* Ensures  
strain-free  
& smooth  
evacuation

\* Normalises  
bowel  
movement

\* Non-systemic



**Composition:**

100 gm jar : Each heaped spoonful, contains 3.5 g (approx) Psyllium Husk (Isapgol) powder.

**Dosage:** 1 to 3 times a day. Continued use for 2 to 3 days may be necessary for optimal effect. Naturolax is to be taken with water only.

**Indications:** Wherever fibre supplementation is needed, like in chronic constipation; prophylactically, in patients where straining during evacuation should be avoided, such as haemorrhoids, fissures, following anorectal surgery, episiotomy or post-myocardial infarction, etc.; diminished colonic motor response in elderly patients.

**Contra-Indications:** • Obstruction of bowels due to growth, adhesion and other causes. • In presence of abdominal pain, nausea and/or vomiting



**INFAR (INDIA) LTD**  
38, Chowringhee Road  
Calcutta 700071



Reaching new high in corporate excellence

The last six years saw the beginning of a new golden era at FACT. The resurrection of the multi-faceted, multi-divisional institution, thanks to the dramatic improvement of overall performance. The achievements include:

- Making profits for the past six years in succession.
- Highest ever production of both primary and complex fertilisers.
- Sales turnover reached all-time high.
- The National Productivity Award for 1985-86
- The prestigious Award for Excellence in Performance from the Government of India for 1986-87.
- International acclaim through Europe Award 1988.
- Indira Gandhi National Award for Excellence in Public Enterprises 1989
- Award for better environmental control in FACT Cochin Division from the Kerala State Pollution Control Board 1989.

**Now FACT is ready for the future, with the confidence of winning more and more laurels.**

 **FACT**  
PIONEERS IN PROGRESS

**The Fertilisers And Chemicals Travancore Ltd**  
(A Government of India Enterprise)  
Udyogmandal 683 501  
COCHIN

..... HELLO  
----- Allo  
~~~~~ हेलो  
>>>> ഹലോ  
----- ಹೆಲೋ  
===== Hallo  
~~~~~ هالو

**Hello! This is ITI.**

**I** ITI is fast becoming a language expert!

Through all its innumerable international customers. From the UK, Kenya, Tanzania, Uganda, Yemen, the UAE, Sri Lanka, Nepal, Bhutan, Singapore, Australia ... and through its international collaborators, like Alcatel of France who've opted for ITI's

**T**elecommunications excellence.

ITI India's first Public Sector Undertaking, is a pioneer in telecommunications and manufactures the entire range of telecommunication equipment, from simple telephones to modern fibre optic systems and satellite communication systems.

**I** Backed by some of the most talented engineers and scientists in the country, ITI can design, develop and manufacture equipment tailored to meet your specific needs. ITI can also undertake turnkey jobs for complete telecom networks

*ITI. The centre of telecommunications.*



**INDIAN TELEPHONE INDUSTRIES LTD.**

*Not just telephones - total telecom networks*

Corporate Office: 45/1, Magrath Road, Bangalore 560 095 Tel: 566116 Telex: 0845-8222 Fax: 0819-567188

Manufacturing Units: Bangalore • Naini • Srinagar • Rae Bareilly • Palghat • Mankapur  
Regional and sub-offices all over India.

# There are many drugs to treat tuberculosis. Too many!

Why confuse your patients with long and complicated regimens when tuberculosis can be successfully treated in six months with just two combination tablets? Rifater for two months followed by Rifadin—INH for four months.\*

Compliance can be improved substantially and development of resistance minimized.<sup>1,2</sup> Therefore the cure is completed with little chance of relapse.<sup>3</sup>

What's more, as the duration of treatment is reduced, so is the total cost.

Take the confusion out of tuberculosis treatment. Prescribe Rifater and Rifadin—INH and make life less complicated for your patients.

And for you.

**RIFATER®**

(rifampicin, isoniazid and pyrazinamide)

**RIFADIN®—INH**

(rifampicin and isoniazid)

**MAKING TB TREATMENT MORE PRACTICAL**



**Merrell Dow**

An all-out commitment to the eradication of tuberculosis

References: 1. Khan MI. *New clinical evidence—The role of six-month short course chemotherapy in the control of tuberculosis.* Hong Kong: Excerpta Medica, 1985.

2. Kecharananta P, et al. *New clinical evidence—The role of six-month short course chemotherapy in the control of tuberculosis.* Hong Kong: Excerpta Medica, 1985.

3. Kleburg HH, et al. *SA Medical Journal* 1983; 64: 693-696.

Full prescribing information available on request:

TATA PHARMA Navsari Bldg., Dr. D.N. Road, Bombay 400-001, India.

\*Registered trademark of Gruppo Lepetit S.p.A., Milan, Italy. A subsidiary of Merrell Dow Pharmaceuticals Inc. U.S.A.

\*Full dosage recommendations available in prescribing information & on request.

**C B**

*Whether it is a book of thousand pages or a million copies of multi-colour pamphlets, whether it is security printing or wrappers and labels or computer business forms in lakhs--*

**FOR ALL THESE--**

*We have excellent printing facilities with modern machinery -- both Letter-Press and Offset.*

*Monotype Composing and Phototype-setting-- Kannada, English and Devanagari -- with air-conditioned Plate-making and Photo-processing sections.*

*We have been printer for TB SEALS for the past seventeen years successively.*

## **MANIPAL POWER PRESS**

**PRINTERS OF REPUTE**

**MANIPAL-KARNATAKA**

**Phones: 20831, 20832**

**With the best compliments of**



**THE ANTI-TUBERCULOSIS ASSOCIATION OF TAMILNADU**

259-61, Anna Salai, D.M.S.Campus, Madras-600006  
Phone ; 450389

and

**ALL THE DISTRICT TUBERCULOSIS ASSOCIATIONS OF TAMILNADU**

Winners of I Prize Rolling Shield for the highest TB  
Seal Sale Collections

in

1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1979, 1980,  
1984, 1985, 1986, 1987 and 1988

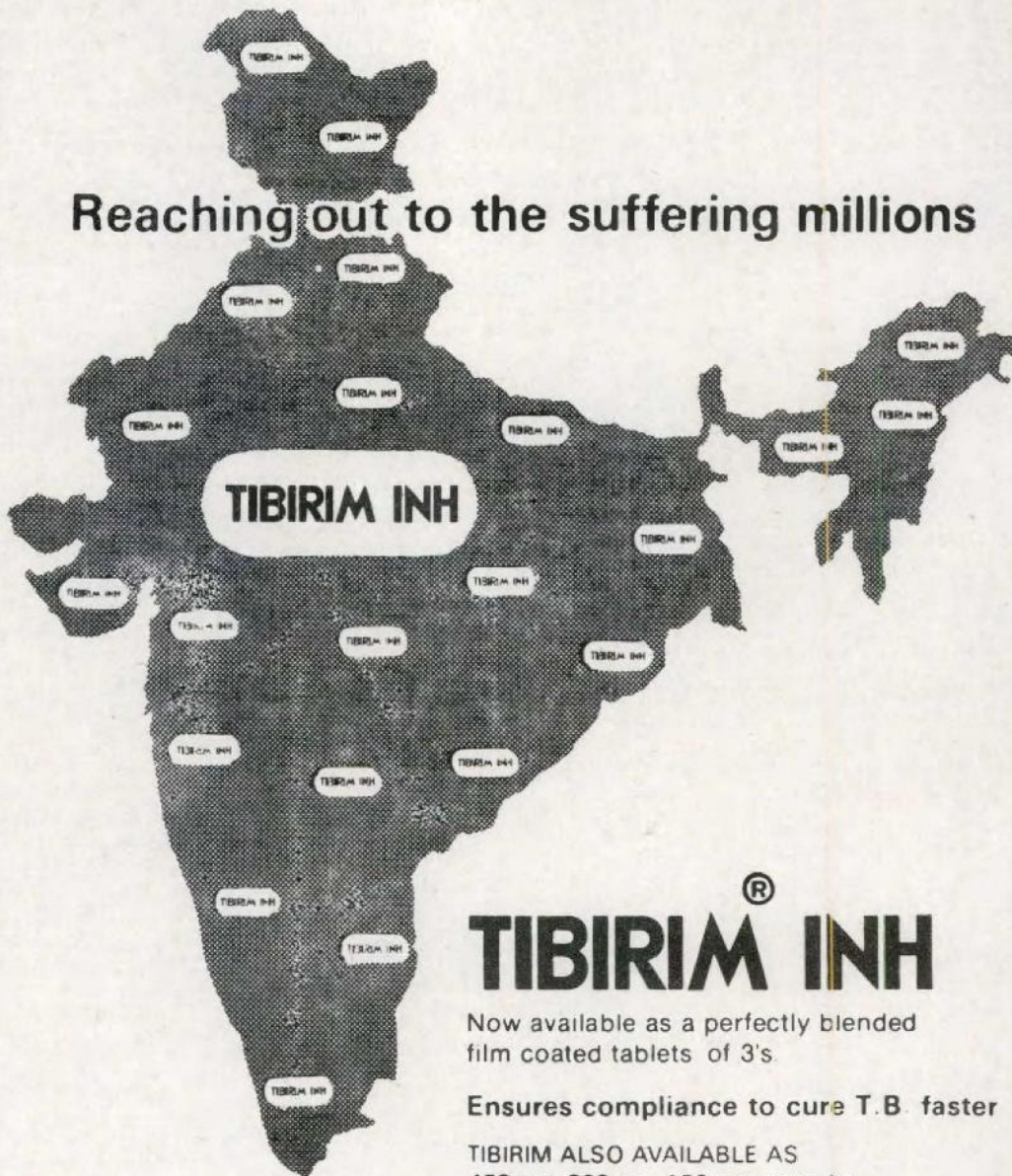
2nd Prize Runner-up  
in 1977, 1978, 1981, 1982, 1983

For outstanding Anti-TB  
Work :

Kushiram Shield-I Prize : 1977 and 1983

Bhai Mohan Singh cup II Prize : 1981, 1982, 1985 and 1987

Reaching out to the suffering millions



# TIBIRIM<sup>®</sup> INH

Now available as a perfectly blended film coated tablets of 3's.

Ensures compliance to cure T.B. faster

TIBIRIM ALSO AVAILABLE AS  
450 mg 300 mg, 150 mg. capsules

**TIBIRIM INH COMMITTED TO EARLY ERADICATION OF TUBERCULOSIS**



**RANBAXY**

LABORATORIES LIMITED

PHARMA MARKETING  
DEVIKA TOWER, 11TH FLOOR  
6, NEHRU PLACE, NEW DELHI, 110 019



# TOWARDS A HOME

## HDFC

Housing Development Finance Corporation Limited (HDFC) is a financial institution which provides finance to individuals, co-operative societies and companies for new residential housing anywhere in India.

### Highlights of the loan

#### Amount

Between Rs. 7,000 and Rs. 2,50,000 depending on your repayment capacity.

#### Rate of Interest

Between 12.5% and 14.5% p.a.

#### Terms of repayment

Repayment in equated monthly instalments with a maximum period of 20 years.

#### Security

Mortgage of property financed.



### HOUSING DEVELOPMENT FINANCE CORPORATION LIMITED

#### REGISTERED OFFICE:

##### Bombay

Ramon House, 169, Backbay Reclamation,  
Bombay 400 020.

Phone: 220265, 220282, 220908, 231054, 231146

**Branches in:** Ahmedabad, Bangalore, Bhubaneswar, Bombay (Parel), Calcutta, Chandigarh, Cochin, Coimbatore, Guwahati, Hyderabad, Indore, Jaipur, Lucknow, Madras, New Delhi, Pune, Vadodara, Vashi (New Bombay).

**HOUSING LOANS MADE SIMPLE**



**WITH BEST  
COMPLIMENTS  
FROM**

**torrent**

**TORRENT GROUP OF COMPANIES**

**PHARMACEUTICAL MANUFACTURERS**

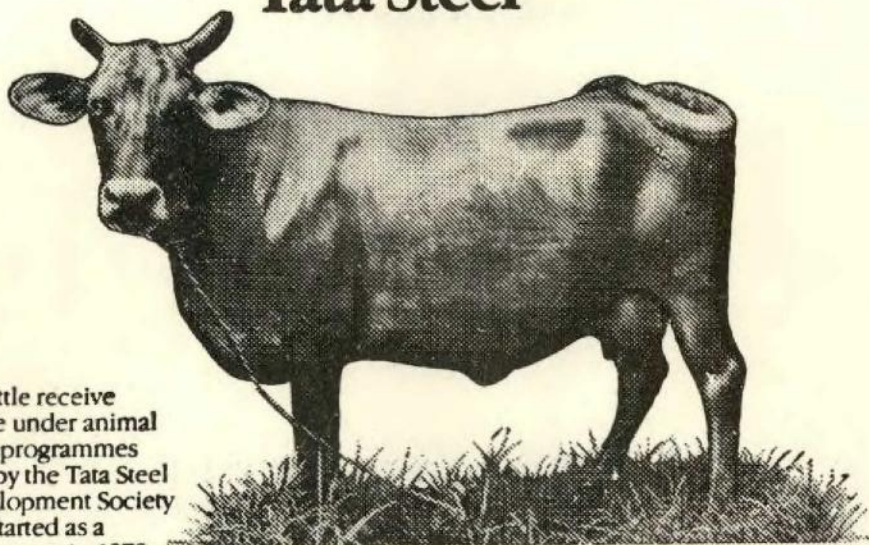


CORPORATE OFFICE :

"TORRENT HOUSE", NEAR DINESH HALL, ASHRAM ROAD, AHMEDABAD-380 009. INDIA

# TISCARE

## A quality product from Tata Steel



Milch cattle receive special care under animal husbandry programmes organised by the Tata Steel Rural Development Society (TSRDS). Started as a voluntary agency in 1979, TSRDS today covers 120 villages around Jamshedpur and 110 villages in Tata Steel's mines and collieries. People's participation plays a vital role in this ambitious venture that extends beyond animal husbandry to other areas of rural life as well.

### **Two crops where there was one**

TSRDS entered a mono-crop area with very low irrigation facilities. Realising that rabi cultivation could revolutionise rural economy, it undertook field-based training programmes and started demonstration farms. Today, hundreds of families are reaping second crops, thanks to cash crop cultivation over vast acreages.

### **Helping people help themselves**

Rural industries are encouraged so that traditional skills and craftsmanship may be gainfully employed to augment family incomes. On-going schemes include cane furniture making, cocoon rearing and tussar silk weaving.

Community forestry has also been given an impetus by Tata Steel. A concerted programme of afforestation, through plantation and introduction of new and useful species of plants, has helped turn vast stretches of barren land into green areas.

The rehabilitation of fast-vanishing tribes like the Birhores, building of link

roads and irrigation projects, the supply of clean drinking water, the establishment of schools and health services, are some of the other TSRDS schemes that have helped change the face of rural areas around Jamshedpur.

**Tiscare has come to mean hope in so many areas. Ranging from health services to sports programmes. Employee welfare to community service. Rural development to relief and rehabilitation. Tiscare means many different things to many different people.**

**To Tata Steel, it is a continuing commitment to improving the quality of life.**

## **TATA STEEL**

**With Best Compliments From**

**MAYA EXPORTS CORPORATION**

(Government Recognised Export House)

B-273, OKHLA INDUSTRIAL AREA,  
PHASE-1, NEW DELHI-110020.

Telephone : 631608, 635339, 6845874 (PERS.)

Telex : 31-75098 MAYA IN

Telefax : 11-6835762

Cable : 'CRAFTEXPO'

**IAG**

**A REVOLUTIONARY RANGE  
OF GLASS FOR  
DOMESTIC/COMMERCIAL/  
INDUSTRIAL USES**

- \* **Sheet Glass** - Manufactured by the highly advanced Asahi and PPG processes to give superior quality glass. Ranging from 1.1 mm to 12 mm thickness. For use as mirrors, table tops, clock and meter dials, picture framing, micro-slides and toughening for automobiles.
- \* **2 mm Figured Glass** - Low fragility decorative glass in attractive Japanese designs. Also available in 3 mm and 4 mm thicknesses.
- \* **Wired Glass** - For additional strength and durability.
- \* **Tinted Glass** of international quality.
- \* **Ophthalmic Lenses** that meet world standards.

**IAG**

**THE INDO-ASAHI GLASS CO. LTD.**

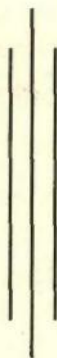
Regd. Office : 3, Hungerford Street, Calcutta-700017

Phone: 444017/448341 (4 Lines)

Telex: 218142, IGCA IN

Cable: AsahiGlas.

**With Best Compliments from**



**CHINAR EXPORTS LIMITED**

**World Trade Tower, Barakhamba Avenue,  
New Delhi - 110 001**

**TEL : 3316637, 3316641 TLX: 031-66972/61277/61571  
CABLE : VILPANA FAX: 3310256**

**Branches : Bombay, Calcutta, Madras, Bangalore,  
Cochin, Kandla, Moscow.**

## **PURULIA PHOS**

A natural phosphatic fertiliser for direct application recommended by the Ministry of Agriculture, Government of India for direct application.

An ideal source of  $P_2O_5$  for Acid Soil.

Releases Phosphorous slowly and regularly that keeps the land fertile every year.

Particularly effective for long duration crops like Tea, Coconut, Cardamom, Rubber, Coffee etc.

**PRODUCER**

**West Bengal**

**Mineral Development & Trading Corporation Ltd.**

(A Government of West Bengal Undertaking)

13, NELLIE SENGUPTA SARANI (2nd Floor)

(LINDSEY STREET)

CULCUTTA-700087, WEST BENGAL

## **ENVIRONMENT AND EXCELLENCE**

Our Prime Concerns

### **GUJARAT ALKALIES AND CHEMICALS LIMITED**

P.O. Petrochemicals 391346

Dist. Baroda

Telephone: 72681-82

Telex: 0175-216 Gram: GALWORKS

#### **PRODUCT RANGE:**

Rayon Grade Caustic Soda Lye & Flakes, Liquid Chlorine, Mercury Free Commercial Hydrochloric Acid, Mercury-Free Compressed Hydrogen Gas, Sodium Cyanide and Chloromethanes consisting of Methylene Chloride, Methyl Chloride, Chloroform & Carbon Tetrachloride.



*With  
Best Compliments  
from*



**BOMBAY SUBURBAN ELECTRIC SUPPLY LIMITED**

*Registered Office:*

Nagin Mahal (6th Floor)  
82, Veer Nariman Road  
Bombay 400020

*With  
Best Compliments  
from*

## **TEXTOOL COMPANY LIMITED**

*Manufacturers of*

- ★ Carding Frames
- ★ Speed Frames
- ★ Ring Doubling Frames
- ★ Ring Doubling Frames
- ★ Worsted Ring Spinning Frames
- ★ Wollen/Shoddy Ring Spinning Frames
- ★ High Speed Cone Winders
- ★ Doubler Winders
- ★ Hank to Cone Winders
- ★ Cots Grinders
- ★ Metal Cutting Machines
- ★ Agents for Savio Automatic Winder

### **TEXTOOL COMPANY LIMITED**

Ganapathy Post, Coimbatore-641006  
Phone : 44271, 44320, 44370, 44421, 44470, 44521.  
Telex : 0855353 TXT IN  
Grams : 'TEXTOLCO'

*With  
Best Compliments  
From*

## GOM GROUP OF COMPANIES

*Manufacturers, Exporters and Importers*

Fortune International Limited (Trading House)

Gom Overseas Pvt. Ltd.,

Eastern Leather Products Pvt. Ltd.

Abhinav Engineers Pvt. Ltd.

Fortune Polymer Industries Pvt. Ltd.

Eastern Engineering Industries.

*Regd Office : C-2, Community Centre,  
Naraina Vihar, New Delhi-110028.*

*Phones : 5454211-12-13-14, 5432119, 5450718, 5450721,*

*Cable : Export House*

*Telex : 031-62292 GOM IN, 031-76153 EES IN, 031-61989 FIPL IN*

*Fax : 5454948*

**A**s we keep spewing effluents mindlessly into the atmosphere the rest of nature has to work harder to absorb them.

But nature can do only that much. Particularly nature that we've already tampered with. And soon the earth begins warming up.

The snow line shrinks, the polar caps start melting and the waters in the oceans rise.

When the snows have thus been totally and meticulously destroyed coastal cities will be submerged.

There will be no Sydney, no Miami, no Monte Carlo, no Bombay.

# Bombay used to be here.

In their place will be the brooding calm of the seas.

And once-vibrant cities will lie in permanent silence.

It will look something like this.  
If that frightens you do your bit.  
If won't be a day too soon.

*Protect the earth.  
It's the only world we have.*

The Minerals and Metals Trading  
Corporation of India Limited  
"Scope Complex", Core No. 1,  
7 Lodi Road,  
New Delhi-110003.

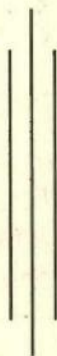
## ***Born to lead***

*"A man is but the product  
of his thoughts;  
what he thinks,  
he becomes."*

*-Mahatma Gandhi*

**Lucas-TVS**  
*Leaders in Auto Electricals*

**With Best Compliments from**



**FANCY DYEING & PRINTING WORKKS**

L-42, Connaught Circus  
New Delhi-110 001

Tel: 3320580/3321764/3329821

## Salt free water for drinking/process applications

Desalination is the process of reducing the salt or ppm content in water to the level required for specific applications, be it either for

1. drinking or
2. process water for boiler feed/cooling towers/beverage/food/electronic/electroplating/plainting industries etc.

**DeSALIN** is the process of removal of salinity by passing a regulated electrical current through ion selective membranes.

**DeSALIN** is the product of extensive research put in by Nuchem's R & D Centre which has already been granted 12 patents based on original research.

**DeSALIN** is used where water is saline and unfit for drinking/process applications. Nuchem is an approved contractor to the National Technology Mission on Drinking Water for these systems.

### Advantages Over Conventional Technology

- \* removes harmful salts without any chemical additions
- \* low capital investment
- \* low operating cost (1-4 paise/Litre)
- \* low power consumption (only 1-2.5 kW/Kg of salt removed)
- \* no pH control required
- \* no chemical pre treatment required for membranes
- \* extremely simple to operate & maintain
- \* specially treated membranes are highly resistant to fouling by bacteria
- \* long life of membranes
- \* membranes being indigenously manufactured are cheaper and easily available
- \* highly flexible to change in feed water salinity.

### Customer Support Centres:

Ahmedabad, Bangalore, Baroda, Bombay, Calcutta, Churu, Coimbatore, Faridabad, Hyderabad, Madras.

# DeSALIN

## FOR SALT FREE WATER

For detailed information please contact:

### DeSALIN

Water Technology Division, Nuchem Plastics Limited.

20/6, Mathura Road, Faridabad 121006.

Tel: 8125401, 8125402, 8125703. Tlx: 0343232 NUCH IN. Grams: HYPRESS.

**Representation enquiries welcome.**

**We provide full range of Anti-T.B.  
Drugs in alleviating human sufferings at competitive rates.**

|              |   |                        |
|--------------|---|------------------------|
| Rifamicin    | - | 150 mg, 300 mg, 450 mg |
| Inh          | - | 100 mg, 300 mg,        |
| Ethambutol   | - | 200 mg, 400 mg, 800 mg |
| Pyrazinamide | - | 500 mg, 750 mg,        |
| Thiacetozone | - | 50 mg, 150 mg,         |
| Thiacetozone | - | 37.5 mg + INH 75 mg    |
| Thiacetozone | - | 75 mg + INH 150 mg     |
| Thiacetozone | - | 150 mg, = INH 300 mg,  |

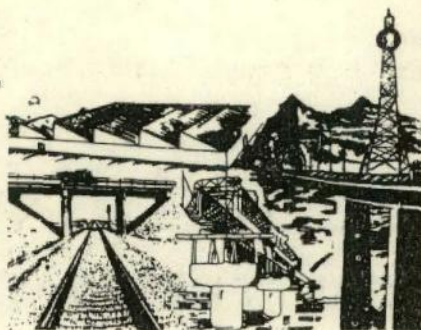
### GRATUS PHARMA

71/5, Shivaji Marg,  
New Delhi - 110 015

## ***The Success Story of Bridging Continents***

*In just one decade, Indian Railway Construction Company Ltd. (IRCON) a Public Sector Enterprise under the Government of India, has grown into one of the most highly diversified, skilled and competitive construction companies in India.*

*Experienced management, exceptional quality and cost controls, and an established record of on-time completion of construction projects in India and abroad have contributed to our dramatic growth in civil, electrical, signalling and telecommunication systems, mechanical engineering for railways, roads and highways and urban transport systems.*



*We have earned Rs. 160 crores of foreign exchange for the nation and have already paid a dividend to the exchequer greater than the paid up share capital of the Company. In a continuous record of profit making we have met our social obligations and met them well.*

*We have achieved the unique distinction of completing projects ahead of schedule in Iraq, Algeria and Bangladesh. Our credentials have led us to spread our wings on Middle-East, South-East Asia and Africa. Malaysia, Zambia, Turkey, Indonesia, USA and USSR are our new horizons.*

*IRCON is the established leader with a bright future.*

**INDIAN RAILWAY CONSTRUCTION COMPANY LTD.**

(A Government of India Undertaking)

Patika Bhawan, Sector XIII, R.K. Puram, New Delhi-110066

Tel. PABX: 609970-73 (4 Lines) 602518-21 (4 Lines)

Telex: 031-66408, 031-62697, 031-61368

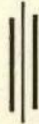
Cable: RAILCONST Tel. FAX: 011-679165

***IRCON***

**Reaching Indian construction, beyond the frontiers.**



**With Best Compliments from**



**OVERSEAS CARPETS LTD.,**  
85, Bharat Nagar,  
New Friends Colony (D Block)  
New Delhi - 1100 65  
Tel : 6847441, 6847442, 6839008.

**With Best Compliments from**



**HIRA LALL & SONS**  
20, East Park Area  
Karol Bagh  
New Delhi - 1100 05

**With Best Compliments from**



**MALLADI DRUGS & PHARMACEUTICALS LTD**

B-211, 11th Avenue, Ashoknagar

Madras 600 083

*Manufacturers of:*

· ANTIBIOTICS  
ANTI-TUBERCULER DRUGS  
HAEMATINICS

**With Best Compliments From**

**BINNY**

For Generations  
One name has stood for quality  
in fabrics -BINNY

Today, Binny makes fabrics of every kind -

**Suitings Shirtings Saress**

**Dress Material**

**Dhoties**

**Printed Sheets and**

**Furnishings**

**In Cotton, Silk and Blends**

Binny ; a part of the heritiage of South India

With Compliments from



**MOHAN ROCKY SPRINGWATER BREWERIES LIMITED**

**Factory :**

Mohanwadi, Khopoli-410203,  
Dist. Raigad, Maharashtra.  
Phone : 403, 458, 459, 460, 461,  
567 & 600.  
Grams: Mohanrocky

**Regd. Office:**

7-7B, Nesbit Road,  
Mazgaon, Bombay-10  
Phone : 865743 & 863432  
Grams : Mohanrocky

**CTR**

**TAPCHANGERS**



On Load unit also suitable for Off Circuit application. Compact, port flange mounted, comprising of driving mechanism and high speed selector switch.

Suitable for manual/local electrical or remote electrical operation.

Optional equipment includes conservator. Remote control cubicle with indicating apparatus, Parallel operation control using Group Simultaneous scheme, Automatic control with or without Line Drop Compensation, etc. Fitted with devices to prevent malfunctioning. Designed for unidirectional power flow but can be used for bi-directional flow under certain combination of current rating and step voltage. Range 11 KV to 66 KV

**CTR MANUFACTURING INDUSTRIES LTD.  
NAGAR ROAD, POONA 411 014, INDIA**

**With Best Compliments from**



**CONTINENTAL DEVICE INDIA LIMITED**

C-120, NARAINA INDUSTRIAL AREA,  
NEW DELHI - 11 0 028.

PHONES : 536150-53 FAX : 11-5410592  
CABLE : 'PREET' NEW DELHI INDIA  
TELEX : 031-66570, 031-61249.

**With Best Compliments from**

**AMRUT DISTILLERIES LIMITED**  
(A JAGDALE GROUP OF COMPANY)

MANUFACTURES OF INDIAN MADE FOREIGN LIQUORS

ADMINISTRATIVE OFFICE ;  
36, SAMPANGI TANK ROAD,  
BANGALORE 560 027

Telephone : 221987 (3 lines)  
224640 & 224641  
Grams ; "AMRUT"  
Telex ; 0845-8213

With Best Compliments From  
**Punjab Chemicals & Pharmaceuticals Ltd.,**

*Regd. Office* : SCO : 371-72, Sector 35 B Himalaya Marg,  
CHANDIGARH-160036 Phone : 24955, 33121 Gram : PUNJXEL  
Telex : 0395 288 PXEL IN Fax : 0172-43620

*Works* : BHANKARPUR, Distt. Patiala (Pb.) Phone : Derabassi-70, 82, 86, 87

*Bombay Office* : Excel Estate, S. V. Road, Goregaon (West), BOMBAY-400062  
Phone : 6723865, 6723866, 6723021 Telex : 011-70064 STS IN:

Gram: Estyes: Fax : 022-6725119

*Delhi Office* : 107, Ansal Bhawan, K.G. Marg, New Delhi-110001 Phone : 3314867  
Telex : 031-62314 PCPL IN Fax : 011-3314890

*Hyderabad Office* : 8-2-293/A/89, Road No. 9, Jubilee Hills, Hyderabad-500034 A.P.  
Phone : 248288 Fax : 0842-238817

**Manufacturers of:**

1. DIETHYL OXALATE
2. OXALIC ACID
3. SODIUM NITRITE
4. SODIUM NITRATE

With Best Compliments from



**ELECTRIC LAMP MANUFACTURERS (INDIA) LIMITED**

1, Taratolla Road,  
Calcutta-700 024  
Phone: 45-2321

**With Best Compliments From**



**NAVCHETAN PHOTASET (PVT) LTD.  
PHOTOTYPESETTERS**

\*

**NAVCHETAN PRINTERS  
OFFSET PRINTERS**

\*

**1-E/2, Jhandewalan Extn.,  
New Delhi-110055.  
Phone:529157.**

**With Best Compliments From**

**SOMANI FABRICS**

**TONK ROAD, DURGAPURA  
JAIPUR-302015 (INDIA)**

**India's Leasing Manufacturers And Exports of Hand Printed Readymade Garments and Scarves for Men, Women and Children.**

**JAIPUR OFFICE**

**Tonk Road, Durgapura,  
Jaipur-302015 (India)  
Tel. No. 77582  
Telex: 365-2244 FABS IN  
Gram: Blockprint  
Fax No. 0141-67072**

**NEW DELHI OFFICE**

**1001, Chiranjiv Tower,  
43 Nehru Place,  
New Delhi-110019 (India)  
Tel. No. 6419708, 6430963  
Gram: Blockprint**



**MEDICINES  
YOU CAN TRUST**

**SARABHAI CHEMICALS**  
A Division of Ambalal Sarabhai Enterprises Ltd.  
BARODA 390 007

† Trademark of ASE Ltd.

Deadly white ants?  
**Quick** fight them  
effectively with  
Dhanuka  
**ALDRIN**



IS : 1307



Marked



**Northern Minerals Limited**

19-A, Rajendra Mansion, Ansari Road, Darya Ganj, New Delhi Ph. 261771, 272634.

जिस दिन आपकी फरमाइश वो मान जाएं..



## हाजमोला से- दावत पर दावत पेट रहे सही सलामत

हाजमोला दूरल की गोमियां साब हों वो  
बाप जब मन चाहे, वो पन चाहे,  
भाइए...साभा साते के बाद बस वो  
गोमियां...बोर बटहवनी, पेट के  
मारीपन, बरुधि, कम्ब की शिकायत के  
बेकिक हो जाएए।

यही नहीं, हाजमोला का स्वाद बहुत ही  
मजेदार है। तभी तो बच्चे इसे इतने  
प्यार से खाते हैं। जकरल हो न हो, बाप  
इसे जब चाहे बेकिकी से खाए।

मजेदार तो यह है ही, बतरदार भी है,  
क्योंकि हाजमोला पेट की आम शिकायतों  
के लिए एक मानी पुरानी  
आधुनिक औषधि है।



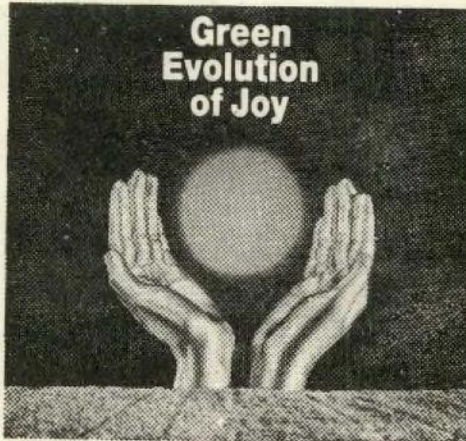
चटपटा स्वाद भटपट आराम

### Putting a smile on the face of Jagdishpur

Committed to the development priorities of the Nation, Indo Gulf Fertilisers has set up one of India's largest and most advanced fertiliser plants in a relatively unknown territory - Jagdishpur.

### Ahead of schedule and well within budget :

This gas based fertiliser complex of Indo Gulf Fertilisers & Chemicals Corporation Limited, with an installed capacity of 7.26 lakh tonnes per annum of Urea, commenced production within just 38 months of the zero date, a record achievement in the industry.



This complex has been built at an approximate cost of Rs. 715 crores, Rs. 25 crores less than the original estimate. Located at a distance of 80 kms east of Lucknow at Jagdishpur, District Sultanpur, a "No Industry District" of Uttar Pradesh.

The commissioning of this fertiliser complex has added a new para to the history of the green revolution, by making available its quality SHAKTIMAN UREA at the door steps of the farmers of Uttar Pradesh, Bihar and other states, at an appropriate time.

Today, at the grassroots there's a smile. Joy! A harvest of hope. And the backward go forward.



INDO GULF FERTILISERS

INDO GULF FERTILISERS - A SUCCESS STORY

MILESTONES/IG/303b En R



## Performance that fulfils promises.



At PPCL, successful adaptation of new generation technology to convert vast deposits of multiple grade Sulphur Pyrites at Amjhore into Sulphuric Acid has been a trendsetting achievement. Having triumphed, PPCL developed a unique Single Super Phosphate Fertilizer named 'Sone Ganga Khad' based on indigenously produced Sulphuric Acid. Fully commissioned in November 1989, the Amjhore Unit is estimated to save about Rs 9.2 crores in foreign exchange annually by way of reduced import of Sulphur.

With 'Agriculture Grade Pyrites' an effective amendment, PPCL has reclaimed 1.2 lakh hectares of Alkali soil in U.P. and Bihar, as a result producing 6 lakh tonnes of additional food grain every year.

PPCL has set a new trend in the usage of 'Mussoorie Phos', a unique Phosphatic Fertilizer and a product of Dehradun Unit, as an import substitute, saving about 60 Million Rupees in foreign exchange every year.

PPCL's Saladipura Project, possessing extensive deposits of Pyrites, is also on the take-off stage.

Indo-EEC Fertilizer Educational Project initiated with the help of EEC, has been launched to take modern scientific agricultural practices to grass-root level.

PPCL celebrates the triumph of new generation technology.

पीपीसीएल  
PPCL

PYRITES, PHOSPHATES & CHEMICALS LTD.

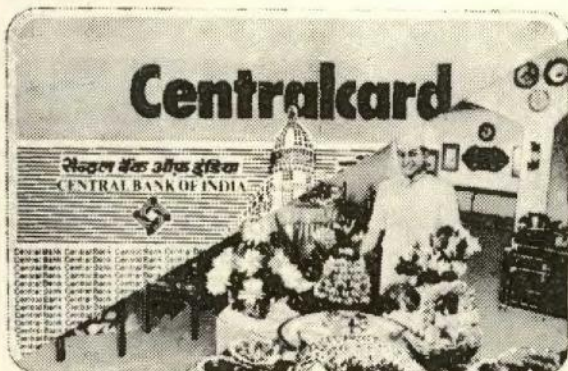
(A Government of India Undertaking)

507, Hemkunt Tower, 98, Nehru Place  
New Delhi-110 019 (INDIA)

SWAIN

## Watch your credit-rating go up...

(9)



## at over 15,000 places simultaneously with Centralcard...

Over 15,000 of the most respected, sought-after establishments in India and Nepal offer you free credit if you are a Centralcard-holder.

- Shop, dine, travel, and avail of a lot more facilities with your Centralcard.
- Get instant and easy cash withdrawals at any of Central Bank's 2900 branches.
- A special add-on membership for spouses.
- A Corporate Membership Scheme for organisations.
- Railways accept Centralcard at Bombay, for bookings.

Centralcard offers merchant establishments a wide customer base in India. Coming from India's largest nationalised bank, the Central Bank of India, Centralcard is also issued by the Vysya Bank and the United Bank of India.

To date, there are over 60,000 Centralcard-holders and the numbers are increasing rapidly.

Centralcard's international tie-up with the world's two largest credit card chains, Mastercard and VISA, offers a huge potential clientele of over 536 million. That means greater business prospects for Centralcard merchant establishments.

And a great credit-rating for Centralcard-holders!



# Centralcard

For details contact your nearest branch of Central Bank of India

Interpub CBI/4/90

**With Best Compliments From**

**ESTER INDUSTRIES LIMITED**

**MANUFACTURERS OF**

**HI-TECH POLYSTER FILM, POLYSTER CHIPS**

**AND**

**POLYSTER FILAMENT YARN**

**Regd. & Head Office**

75-76, Amrit Nagar,  
Behind N.D.S.E. Part-I  
New Delhi-110003

Phone : 690461/690462/690463

**With Best Compliments From**

**COMMAR & ASSOCIATES PVT. LTD.**

**A-215-217, ANSAL CHAMBERS-I.**

**3, BHIKAJI CAMA PLACE, NEW DELHI-110066.**

Tel : 604856/604869/600952  
Telex : 31-72244 CAPL IN /31-72241 COMR IN  
FAX : 91 11 674791  
Cable : COMADVICE-110057 New Delhi.  
Exports : All kinds of brushes including Household brushes.  
Sports goods.  
Household Chemicals.  
Detergent.  
Soap  
Soyabean Meal.  
Dyes-Intermediates.  
Pharmaceuticals-Bulk & Formulations.  
Leather goods.  
Bicycle Parts.  
Handmade Carpets (Woolen).

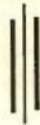
**With Best Compliments From**



**RADNIK  
LASTANGO TREASURES**

OSIAN BUILDING  
4th Floor  
12, Nehru Place  
New Delhi-110019.

**With Best Compliments From**



**TUBERCULOSIS ASSOCIATION OF GOA**

403, Nizari Bhavan  
Menezes Braganza Road  
Panaji (GOA) 403001

Tel. No. 3358.

With Best Compliments From

## ASHAPURA MINECHEM PVT. LTD.

THE ONLY BENTONITE PRODUCING HOUSE  
RECOGNISED AS EXPORT HOUSE BY GOVT. OF INDIA.

81/82 'C' MITTAL COURT, POST BOX NO. 11632, NARIMAN POINT,  
BOMBAY-400021.

Tel : 223069/233108 GRAM : CHEMUDS

Telex : 011-81399 AMEE IN  
011-8203 ASHA IN

WORKS = BHUJ, BHAVNAGAR (GUJARAT)

With the Best Compliments of

TAMILNADU DADHA PHARMACEUTICALS LIMITED  
(A Joint Venture with TIDCO)

Regd. Office : 260-262, Royapettah High Road,  
Madras-600014

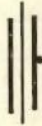
Telephone : 867815  
Telegram : TAMILDADHA, MADRAS  
Telex : 41-7312 TDPL IN  
Telefax : 866441

Factory : Dadhanagar, Madras-600074

Telephone : 401126  
Telegram : CISPLATIN, MADRAS  
Telex : 41-26066

Sales Depots : Madras, Vellore, Coimbatore,  
Madurai, Trichy & Tirunelveli

**With Best Compliments from**



**LEDERLE DIVISION**

**CYANAMID INDIA LIMITED**

**"NYLOC HOUSE"**

**254-D2, Dr. Annie Besant Road,  
Worli-Bombay-400025.**

**With Best Compliments from**



**LAKSHMI CEMENT**

**(A Divn. of Straw Products Ltd)**

**P.O. Jaykaypuram, Dist: Sirohi**

**(Rajasthan)**

**Portland/Pozzolana Cement**

**Once Built, Lasts for generations**

**With Best Compliments from**

**MAHARANI OF INDIA  
GOVT. RECOGNISED EXPORT HOUSE**

**Show Room :** C-154 Mayapuri Industrial Area Phase-II  
New Delhi-110064

Telephones : 591544, 591562, 591035

Telex : 31-63088 MOIN IN

FAX : 91-11-5436845

Telegram : Speciality, New Delhi

**Factories :** A-3/1 Mayapuri Industrial Area Phase-II,  
New Delhi-110064

C-3/5 Mayapuri Industrial Area Phase-II,  
New Delhi-110064

**Boutiques:** Hyatt Regency Hotel, New Delhi - Phone : 609911-1862  
Maurya Hotel, New Delhi - Phone : 3010101/1939  
Ashoka Hotel, New Delhi - Phone : 600121/2150  
Clue 20  
12/48 Malcha Marg, New Delhi - Phone : 3011937.

**WITH BEST WISHES**

**FROM**



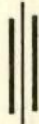
**BASF INDIA LIMITED**

**RHONE POULLENCE HOUSE**

**S.K. AHIRE MARG**

**BOMBAY-400025.**

**With Best Compliments from:**



**SUITI EXPORTS LIMITED  
'TOBACCO HOUSE'**

4th Floor  
1 & 2, Old Court House Corner  
Calcutta : 700001.

Phone: 20-5331 (3 Lines), Telex: 021-2443 MEPC, Fax: (9133) 28-0500

**Social Forestry**

- \* Plant suitable trees in homesteads, waste lands, road and canal sides and along with agricultural crops.
- \* They benefit us by purifying the atmosphere and tempering the climate.
- \* Besides they assure supply of timber fuel, green manure, fodder etc.

Co-operate with Social Forestry

(Kerala Forest Department, Publicity Wing).

**With Best Compliments From**



**THE BOMBAY DEYING & MANUFACTURING CO. LTD.,**

Regd. Office: Neville House  
J.N. Heredia Marg,  
Ballard Estate,  
Bombay-400038

Tele No. : 602990/602561  
TLX No. : 72010/BDMC IN  
FAX No. : 673491 BDMC Delhi

E-64/2, Vasant Marg,  
Vasant Vihar,  
New Delhi-110057.

**With Best Compliments from**

**SHRI NATARAJ CERAMIC AND CHEMICAL INDUSTRIES LTD.**

**Pioneers in the manufacture of** \_\_\_\_\_

- \* All qualities of Refractory Bricks for Cement, Mini Steel, Chemicals and Fertilisers, Sugar, Ceramics, Aluminium Industries, Ordnance Factories, Thermal Power Stations, Foundries and other Engg. Industries.
- \*\* Our New Range include Castables for all applications in varied working conditions.
- \*\*\* Salt Glazed Stoneware Pipes & Fittings.

**Works & Regd. Office**

DALMIAPURAM 621651, Trichy Dist., Tamilnadu  
Phone: 19, 72 & 67 Grams: CERAMICS Telex: 455-297.

**Works. II**

JAMKHAMBHALLIA 361305, JAMNAGAR Dist., Gujarat  
Phone: 2728, 2471 Grams: CERAMICS Telex: 0161-257.



**With Best Compliment from**



**KEN ELECTRICALS LIMITED**

Post Box No. 14  
Rani Baug  
Rewa (MP)

**FIRST IN THE COUNTRY TO MANUFACTURE  
AND SUPPLY SILVER BEARING COPPER  
COMMUTATOR SEGMENT & BLANKED SEGMENT  
WHICH ARE IMPORT SUBSTITUTION,**

**To M/S. B.H.E.L.  
We also undertake**

**FABRICATION (JOB WORK) OF ELECTRICAL  
GRADE COPPER STRIPS, FLATS, ROUNDS,  
SECTIONS & CONTACT TIPS.**

**With Best Compliments from**



**Neyveli Lignite Corporation Limited,  
(A Government of India Enterprise)  
Neyveli-607801.**

## **VISION INTEGRITY INDUSTRY**

**WE BUILT OUR HOUSE ON IT  
AS OUR FOUNDER DID  
FOR SERVICE**

**INDUSTRIAL PERFUMES LIMITED  
(A TATA ENTERPRISE)**

**MAKERS OF**

**PERFUMERY COMPOUNDS, AROMA CHEMICALS,  
ISOLATES, RESINOIDS, OLEORESINS ETC.,**

**HAY BUNDER ROAD,  
TANK ROAD P.O.  
BOMBAY 400033**

**Tele: 8511001, 8511003, 8511004  
Telex: 1176695 INPF IN**

### **Give Your T.B. Patients a Fresh Lease of Life**

**ISOCALDIN LIQUID / TABLETS**

**CONTAINS: EACH TAB/5ml  
ISONIAZID 300 mg  
VITAMIN B<sub>6</sub> 3 mg**

**RETORIF 300/150/450 mg**

**CONTAINS: EACH CAPSULE  
RIFAMPICIN 450mg  
INH 300 mg**

**ELTIN**

**CONTAINS : EACH CAPSULE  
RIFAMPICIAN 300/150/450mg  
INH 300mg**

**MANUFACTURED BY  
RETORT LABORATORIES  
MILK COLONY ROAD,  
MADHAVARAM,  
MADRAS 600060.**

With Best Compliments from

M/S WILLARD INDIA LIMITED


*Manufacturer of*

**FACE BETTER BATTERIES**

**Willard India Limited**

73-74 Nehru Place,  
New Delhi-110019

Telex - 031-62986 WIL IN  
Telephone - 6412924 & 6413124



The  
**GROMOR FARMER**  
wishes prosperity  
to  
**all GROMOR farmers**



**COROMANDEL FERTILISERS LIMITED**

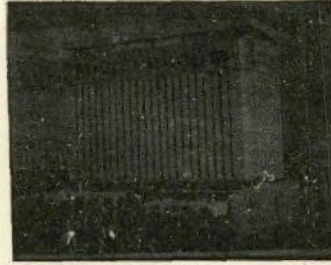
- \* प्रदेश के कृषकों, ग्रामीण कारीगरों, बुनकरों, अनुसूचित जाति, अनुसूचित जनजाति एवं पिछड़े वर्गों के विकास के लिए विभिन्न कार्यक्रमों के संचालन हेतु निरंतर प्रयासरत ।
- \* प्रदेश के लगभग एक करोड़ ग्रामीण परिवारों की प्रतिनिधि प्राथमिक सहकारी संस्थाओं, जिला सहकारी केंद्रीय बैंकों तथा कृषि उत्पादन और उनकी प्रक्रिया एवं विपणन से संबद्ध प्रतिनिधि एवं वित्तदायी संस्था ।
- \* मध्य प्रदेश में कृषि साख प्रदाय में अनेक कीर्तिमान स्थापित ।
- \* कृषि उत्पादन में निरंतर वृद्धि के लिए भरपूर सहयोग ।
- \* प्रदेश में औद्योगिक क्रांति लाने में सहकारी संस्थाओं की भूमिका को सक्षम बनाने हेतु निरंतर प्रयासरत ।
- \* प्रदेश में सहकारी शक्कर कारखाना, सहकारी सूत मिल आदि की स्थापना में वित्तीय सहयोग ।

प्रदेश के ग्रामीणों के आर्थिक उत्थान के लिए हम निरंतर कटिबद्ध हैं

मध्य प्रदेश राज्य सहकारी

बैंक मर्यादित,

तात्प टोपे नगर, भोपाल



With best Compliments from



M/S HMM LTD.

**With Best Compliments From**



**MODI ALIKALIES & CHEMICALS  
LIMITED**

**Regd. Office & Factory**

SP 460, Matsya Industrial Area  
Alwar-301030 Rajasthan  
Tel. 361562 (MIA) 563424.

**With Best Compliments From**



**M/S S. ATAM SINGH KOHLI  
& BROS.**

Mahesh Chambers,  
391, Narsi Natha Street,  
Bombay-400 009.

**With Best Compliments From**



**EASUN REYROLLE  
RELAYS AND DEVICES LIMITED**

**Regd. Office & Factory**

Plot No. 98  
Sipcot Industrial Complex  
Hosur-635 126, TAMILNADU  
Grams : EASREY  
Phone : 6995, 6895 & 6966  
Telex: 0458-206

**With Best Compliments From**



**RAJASTHAN TELEPHONE  
INDUSTRIES LIMITED**

40-41, Community Centre  
Bhilwara Bhawan  
New Friends Colony,  
New Delhi-110 065

**Regd. Office:** Plot No. SPL 314, A & B,  
RIICO Industrial Area, Bhiwadi,  
Dist. Alwar (Rajasthan)

With best Compliments from



**RAMESH BAWRI**

Dhanketti, Shillong

With best Compliments from



**Holiday Inn**

Balrej Sahani Marg,  
Juhu, Bombay - 400 049

Tel : 620 4444 Telex: 011-78411  
HOLI-IN; 011-78404 HINN IN  
Cable : HOLIDAY INN, BOMBAY  
FAX : (91-22) 620 4452

With best Compliments from



**DRIPLEX WATER ENGINEERING  
PRIVATE LTD.**

1, Panchsheel Commercial Centre,  
New Delhi-110 017

With Best Compliments from:



**ECONOMIC MEDICAL HALL**

Chemists & Druggists  
POLICE BAZAR,  
SHILLONG-793001.

*Sister Concern*  
**ECONOMIC MEDICAL  
WHOLESELLERS**

POLICE BAZAR,  
SHILLONG-793001.

# Waterbury's Compound Red Label



**Your trusted cough and cold guard.**

Parke-Davis (India) Limited,  
Nirlon House, 254-B, Dr. A.B. Road,  
Worli, Bombay-400025.

**With best Compliments from**



**Haryana Sheet Glass Limited**  
61/29, Ramjas Road,  
Karol Bagh, New Delhi-110 005.  
Tlx: 031-61947 \* Grams: GlassHouse  
Ph: 5728883, 5728884, 5723335

**Regd. Office: F-24, Desh Bandhu  
Gupta Market, Karol Bagh,  
New Delhi-110 005  
Ph: 778437.**

**With best Compliments from**



**Ramanath Iyer Consultants Pvt. Ltd.**  
BL-4, Shalimar Bagh  
(Paschimi)  
Delhi-110 052.

**Tel : 7118517 - 7234904**

**With Best Compliments From**

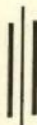
## **KAVIKA PRODUCT RANGE**

1. Power & Distribution Transformers upto 3000 kVA, 33kV;
2. Completely Self Protected Transformers upto 315 kVA, 11kV;
3. C.S.P Oil Immersed Circuit Breaker for use in completely self Protected Transformers;
4. L.V. Distribution Boxes;
5. H.V. Metering Cubicle;

### **KARNATAKA VIDYUTH KARKHANE LIMITED.**

(A Karnataka Government Undertaking)  
P.B.NO. 2610 MYSORE ROAD  
BANGALORE 560 026 INDIA  
Phone ; 601224, 601274, 601574.  
Telex: 0845-2704

With best Compliments from



**EID-PARRY (INDIA) LTD.,**

Farm Inputs Division,

"Dare House"

P.B.No. 12,

Madras--600 001

*Manufacturers & Marketers of*  
Fertilisers, Plant Protection Chemicals,  
Hybrid & High Yielding variety seeds  
and Animal Feeds.

**GRADE-O-CASTING LIMITED**

(A subsidiary of KSB Pumps Ltd.)

*Manufacturers*

Grey Iron and Alloy Cast Iron castings for  
Industries like Pump, Compressors, Gear  
Boxes, Machine Tools and other General  
Engineering Sectors.

For Your requirement

Please contact

**Grade-O-Castings Ltd.,**

Bombay-Pune Road,

Pimpri, Pune-411 018.

Phone; 420006-9/83684-5

Gram : KAYESBE Telex : 146-228

**Grade-O-Castings Ltd.,**

Vambori-413 704, Tal. Rahuri

Dist. Ahmednagar (M.S.)

Phone : 50

Gram : GRADOCAST

Tele: 0143 215

With best Compliments from



**BAJAJ CAPITAL INVESTMENT**

Centre PVT. LTD.

United India Life Building,

F-Block Connaught Place,

New Delhi- 110 001.

With best Compliments from



**GLOBE AUTO (GUJARAT) LTD.  
GLOBE SCOTT (MOTORS) PVT.LTD.**

'D' Shivsagar Estate,

Worli, Bombay-400 018

*Manufactures of*

|             |            |
|-------------|------------|
| Auto -      | Transport  |
| Electricals | AC & R     |
| Brushless   | Electronic |
| D.C. Motors | Controls.  |

Permanent magnet  
D.C. Motors & Alternators



**With Best Compliments From**



**ASAHI INDIA SAFETY GLASS LTD.**

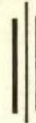
**Regd. Office : 12, BASANT LOK,  
NEW DELHI-57.**

Phone Nos. 609404, 6873536

Telex : 031-72107 Etex-in

Fax : 011-6873435

**IN THE SERVICE OF AUTOMOTIVE  
INDUSTRY AND TRADE**



**With the best Compliments  
of**

**AMREP**

**AMALGAMATIONS REPCO LIMITED**

G.N.T. Road, Ponniamman Medu

Madras 600110

**Manufacturing and Marketing Amrep Clutch  
Products**

**With Best Compliments from**

**Bhartiya Bootee Bhawan  
Manufacturers of Ayurvedic  
Veterinary Medicines.**

Our some economical and effective products:

1. Herminsa (Tonic & Stomachic Power)
2. Diadisco (Astringent Powder)
3. Rasol (Galactagogue Powder).
4. Banjhna (Ovulatory heat inducing capsules).
5. Hepacin (Liver tonic powder) and Other Products.

**OFFICE :**

21, Mangal Nagar,  
Saharanpur-247 001  
(U.P.)

**GRAM ; HERMINSA**

**BRANCH OFFICE**

P.B. No. 18, Goriatoli,  
Near Chirayatar Bridge,  
Patna-800001 (Bihar).

**With best Compliments from**



**PEARL SALES CORPORATION  
WHOLESALE & RETAIL ELECTRICAL  
DEALERS**

**Show Room No. 36-A, Madhya Marg,  
Sector 7-C, Chandigarh  
Phone: 27808, 21805**

With Best Compliments from:



**NESCO LABS.**

Pharmaceutical Distributors,  
No. 13, Nyniappa Naicken st,  
1st Floor,  
Madras-600003.  
Phone: 561054.

**EDDY CURRENT CONTROLS (INDIA)  
LIMITED**

**Regd. Office:**  
P.B. No. 40,  
Eddypuram,  
Chalakudy-680307  
Phone: 2882

**Coimbatore Works Unit:**  
KNG Pudur Rd.  
Somayampalayam  
Coimbatore-641025  
Phone: 42138  
Grams: Electrons

Manufacturers of Variable Speed Eddy Current  
Clutches with Electronic Controllers

Now we Bring You High Quality

**"EDDY FANS"**

**BEST WISHES**



FOR THE NOBLE CAUSE BEING  
PERSUED BY YOU

**BiZ-TECH Consultants**  
77, National Park  
New Delhi: 110024.

**With Best Compliments From  
AGROCARGO TRANS-  
PORT LIMITED**

'East Coast Centre' IV Floor, 553 Anna  
Salai, Teynampet, Madras 600 018.

Grams : 'AGROCARGO'

Telephone Nos. : 454529, 454579

**BULK CARGO TRANSPORTERS  
AUTOMOBILE ENGINEERS AND  
TECHNICAL CONSULTANTS.**

**Branches at :** Madras, Tuticorin, Salem,  
Hosur, Bangalore, Coimbatore, Madurai,  
Hyderabad, Trichy, Vellore & Bombay  
and Parcel Agency offices all over  
Tamilnadu.

**Transporters for :** Benzene LAB, Am-  
monia in insulated tankers. AHF Acid in  
specialised ISO Containers. Ethylene  
Oxide in specially designed and con-  
structed refrigerated tankers.

**With Best Compliments from:**



M/s. Rama Phosphates Ltd.,  
100, Chetak Centre, RNT Marg,  
Indore.

Manufacturers of 'GIRNAR' brand single  
Super Phosphate.

**With Best Compliments from:**



**CROWN SCIENTIFIC SUPPLIES**  
Manufacturers, Exporters & Importers:  
Scientific & Surgical Instruments,  
Laboratory Glassware

**Postal Address:**  
D-101, Ashok Vihar  
Phase-1  
Delhi-110052.

Grams: Paints  
Telex PYNT IN  
0486-247

Phone Off: 23831  
CMD: 22396

**MYSORE PAINTS & VARNISH LTD.**  
**MYSORE**

(A Karnataka Government Undertaking)  
In Technical Collaboration with  
A.I.K. of West Germany

**Manufacturers of**

Quality Paints, Distempers, Polishes,  
Industrial Paints & Sealing Waxes,  
Indelible Ink etc..

(Please Note: The name of the Company  
has been changed from the Mysore Lac &  
Paint Works Ltd., to Mysore Paints & Var-  
nish Ltd., from 1.1.90)

**"DEDICATED FOR THE CAUSE OF NA-  
TIONAL HEALTH"**

**Makers of:**

|                   |                                 |
|-------------------|---------------------------------|
| Aminovin Tonic    | Erythrolate Tablet              |
| Vitaphor          | Disabac Tablet &<br>D.S. Tablet |
| Penzime Tablet    | Sonacillin Capsule              |
| Sonamizole Tablet | Saljon Tablet                   |

**SMITH STANISTREET PHARMA-  
CEUTICALS LTD.**

(A Government of India Enterprise)

**Registered Office:**

18, Convent Road. Calcutta-700014.  
Telephone : 245461 (6 Lines)  
Telegram: STANSTREET  
Telex: CA 7878

With Best Compliments From



**MAYAR PRINTERS**

Providing  
Top Class Printing Facilities  
Under One Roof

F-83, Okhla Industrial Area Phase-I,  
New Delhi.

With Best Compliments From



**HIMALAYAN ENTERPRISES**

EXPORTER-IMPORTER  
CONSULTANT AND  
COMMISSION AGENT.

1679, Dakhni Rai Street, **K.C. SHARMA**  
Darya Ganj, New Delhi.

Phone : 3272556,  
Res. 869233.

With Best Compliments From



**S.K. DASS,**  
Eee Cee Restaurant,  
Jail Road, Shillong-1.

With Best Compliments From



**AMRIT EXPORTS**

A-39, East of Kailash,  
New Delhi-110065

**Factory : 1877, Uday Chand Marg,**  
Kotla Mubarakpur,  
New Delhi-110003 INDIA

**Phone : 635739**  
**Fac : 615260**

**With Best Compliments From:**



**RANA & SONS**

Manufacturer & Exporters of Plastic  
Machine, Moulds & Dies

128-A, Government Industrial Estate,

Kandivli (West), Bombay-400067

Tel:6050408, 6053897, 6055244

Telex:11-78207 RANA IN Gram: RANA MACHIN

**With Best Compliments From:**



**M/S ROLLATAINERS,  
FARIDABAD**

**Tuberculosis is not hereditary.**

**It is caused by a minute "germ" called Tubercle bacillus which can be seen only under a microscope.**

**Tuberculosis can attack all organs in the body but only persons suffering from tuberculosis of the lungs can spread the infection to others.**

**When such a person coughs or sneezes or spits, germs of the disease come out with small particles of sputum and enter other person's lungs through the air in which the particles of sputum float about.**

**A person suffering from tuberculosis can also transmit infection to a child by kissing, etc.**

**TB can be prevented.**

**TB can be prevented by BCG vaccination. BCG should be given before the infection takes place. Infection taking place after BCG vaccination has much less chance to develop into disease.**

**Every child should be vaccinated before one year of age. In villages health workers give BCG to children in their homes or it is given in health centre.**

**In big cities children are vaccinated soon after birth in the hospital before mother and child are discharged.**

**BCG is harmless and can be given safely soon after birth.**

### **TUBERCULOSIS:**

**Risk of Infection can be reduced by**

- covering the mouth while coughing or sneezing
- not spitting here, there and everywhere
- TB patients by getting diagnosed early and completing full treatment, help in preventing infection to healthy people.



---

**Soaring high on national  
& International horizons**

# LUPIN

**With business ideas reflecting the  
commitment to enter areas of  
state-of- art technology and  
national priorities**

- Well diversified activities in Pharmaceutical formulations, bulk drugs, agro-chemicals, herbal products, bio-technological preparations, polymer coated fabrics, urological products and cardiac valves etc.
- Largest exporter of Ethambutol HCl in the world
- Consulting services and joint ventures abroad
- Besides the above diverse activities, conscious of its responsibilities to society, LUPIN has undertaken an integrated Rural Development Programme at Bharatpur, Rajasthan.

**LUPIN**  
**IMPROVING HEALTH**  
**WORLD - WIDE**



**LUPIN LABORATORIES LTD.**  
159, C. ST. ROAD, KALINA,  
SANTACRUZ EAST,  
BOMBAY 400 098.



---

**COMPOSED & PRINTED BY APCON, GREEN PARK, PH. 686 3359, 666 847**

---

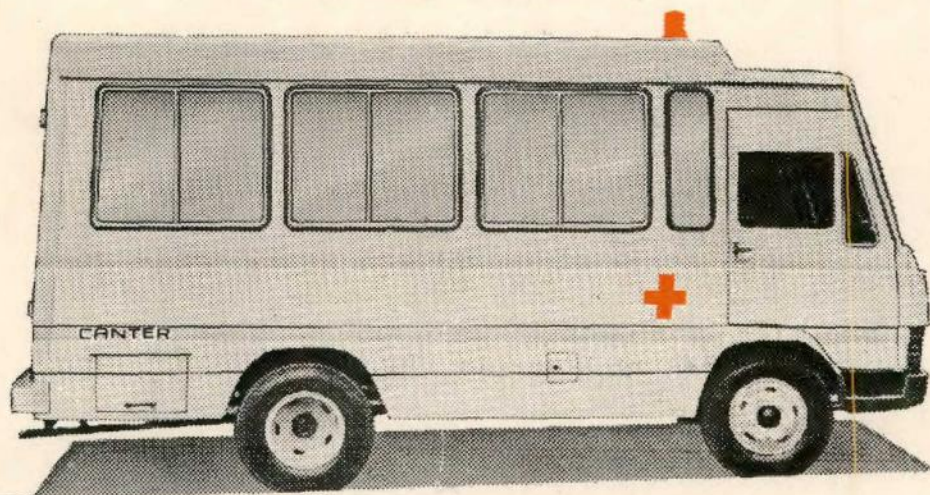
# What makes a perfect ambulance?

**I**t needs an engine that has the power to ensure high acceleration and speed. It needs a manoeuvrability that can help cut through heavy traffic with ease. It needs a suspension that is superior enough to smoothen out the bumps on the roads.

And, most importantly, it needs a design that can accommodate several stretchers, seats for doctors and attendants, oxygen cylinders, medicine cupboard, special lights and fans (and air-conditioning, if needed), a wash-basin and a whole lot more.

All these have been put together to create a perfect ambulance. The Canter Ambulance.

Also available in the form of Mobile Clinic, Air-conditioned Cardiac Vehicle, Emergency Care Vehicle and Mass Evacuation Vehicle.



**CANTER**  
*The largest-selling LCV in its class*



**EICHER MOTORS LIMITED**  
102 Industrial Area No. 1, Pithampur, Madhya Pradesh.