
**SUMMARIES OF PAPERS PRESENTED AT THE 61st NATIONAL CONFERENCE ON TUBERCULOSIS
AND CHEST DISEASES HELD IN UDAIPUR FEBRUARY 23-25, 2007.**

**Impact of Status of Microscopy Centre on
Case Detection in Revised National TB Control
Programme at Pimpri Chinchwad Municipal
Corporation (PCMC), Pune**

*Kishore Khillare, Vikas Inamdar and Rajshekhar
Iyer*

This study was done to identify correlation between level of Health Care Services and case detection at its Microscopy Centre, to know contribution of referrals from participating private practitioners (PPs) and NGOs for case detection, and to find areas of improvement. A total of 15 Microscopy Centres in PCMC along with its health care services were studied for case detection from January to December, 2006. Health institutes having all diagnostic and supportive care services under one roof had higher case detection at its microscopy centre. Increased involvement of PPs/NGOs in microscopy areas helps to improve case detection.

A Follow-Up Study of RNTCP at Lucknow

*R. Prasad, P. Shrivastava, S.K. Verma,
Suryankant R.A.S. Khshwaha and S. Kumar*

An observational follow-up study on patients of tuberculosis who had been registered during June 2003 - June 2004 at DOTS Centre, Lucknow. The study of tuberculosis patients was done to know the follow-up status after completion of one year treatment in RNTCP in terms of clinical history and examination, three sputum smear examinations for AFB in symptomatic patients. And if smear for AFB is negative then culture and sensitively for *Mycobacterium tuberculosis* is required. All the patients also underwent chest X-ray. The study observed that majority of patients (88.9%) remain asymptomatic at the completion of one year of treatment under DOTS.

**Long term treatment outcome in Multi-Drug
Resistant Tuberculosis (MDR-TB)**

*R. Prasad, S.K. Verma, Sanjay K. Verma, A. Jain
and R.C. Ahuja*

Analysis of 53 consecutive patients with MDR-TB was done. All patients were admitted for an average duration of 66 (15-148) days and received a regimen chosen from Kanamycin, PAS, Ethionamide, Cycloserine, Fluoroquinolone and Clofazime. Isoniazid was used in all patients. Kanamycin was used for an average period of 4.45 (2.5-7) months till sputum smear conversion, rest of drugs continued for an average period of 20 months. Cure was defined when sputum culture was negative at the end of two year treatment. Out of 39 patients who completed the treatment, 36 were declared cured. Considering the best scenario (excluding the lost and expired patients) cure rate was 92.32% (36/39) and in worst scenario (considering the lost and expired patients) cure rate was 67.92% (36/53). MDR- TB can be cured successfully but it requires much effort from both patients and health-care workers.

Clinical Profile of Sarcoidosis

*Beena Thomas, P. Sukumaran and Raseela
Karunakaran*

Study was done to differentiate the clinical, radiographic and physiologic profile in patients with sarcoidosis. Eleven histopathologically proven cases of sarcoidosis were analyzed to determine the clinical presentation, lung function and the response to treatment. Laboratory data, chest X-ray and pulmonary function tests (PFT) were analyzed. In India, sarcoidosis is an under-diagnosed disease but recently we are diagnosing more and more cases due to the availability of diagnostic modalities such as HRCT, Bronchoscopy and Video assisted thoracoscopic surgery.

Video Assisted Thoracoscopy in Management of Thoracic Diseases

P. Rekha, P. Sukumaran and T.K. Jayakumar

This was a prospective interventional clinical study. 36 cases, who were subjected to thoracoscopy either as a diagnostic procedure or as a therapeutic measures, were included. Study concludes that all cases of Pleural diseases, diffuse perenchymal diseases and mediastinal pathologies remaining undiagnosed with usual line of investigation should be considered for video-assisted thoracoscopy for a definitive diagnosis. VATS can be effectively employed in the management of fibrinopurulent phase of empyema, peripheral pulmonary nodule and mediastinal masses.

Role of FOB in Lung Cancer -Sensitivity of Biopsy, Brushing and Washing Cytology

K.P. Venugopal and P. Sukumaran

The present study was conducted in the Department of TB & Chest Diseases, Government Medical College, Kottayam, which is a tertiary care centre to assess the diagnostic yield of fiberoptic bronchoscopy and to compare the yield of bronchoscopic biopsy, brushing and washings in endoscopically visible lung cancer. Patients admitted in the department of TB & Chest Diseases, with a probable diagnosis of central bronchogenic cancer, who can be subjected to FOB as a diagnostic procedure are enrolled in the study after obtaining written consent. Among these, all cases having bronchoscopically visible lesions are evaluated for the diagnostic yield of various interventions in FOB viz. brushing, biopsy and washing. Only cases which are confirmed as bronchogenic carcinoma at the end of diagnostic work up are considered for final analysis.

Role of Surgery in Treatment of MDR TB

Rajesh Hyderabad

This presentation consists of experience of thoracic surgery in treating MDR and XDR TB patients over last 17years. MDR and XDR TB is present in up

to 15% patients. Each sputum positive patient infects 10-15 other people. Surgery in this sub-group can help in making these patients sputum negative.

Rapid Identification of Pathogenic Mycobacteria in Sputum Positive Pulmonary Tuberculosis by PCR-RFLP Methods

Shiv Prakash Bhardwaj, Rajesh Gupta, V.M. Katoch and Ashutosh Gupta

Study was done for characterization of mycobacterial isolates by PCR-RFLP targeting 1.8 kb 16S -23S r-RNA gene spacer region and hsp 65 kDa gene and to assess the application of these assays to sputum smear positive specimens provisionally diagnosed as pulmonary tuberculosis. In this study gene amplification restriction analysis of hsp65 kDa gene region and by targeting of 1.8 kb r-DNA spacer region showing 100% identification of *M. tuberculosis* while biochemical tests alone could clearly identify only 81.52% isolates. It was concluded that 1.8 kb 16S-23S r-RNA is a promising new method which identifies *M. tuberculosis*. Both PCR-RFLP assays offer an easy, rapid and cost effective method for exact identification of mycobacteria.

Effect of Mycobacterium W. Vaccine as an Adjuvant to Anti-tubercular Drugs in New Sputum Positive Pulmonary Tuberculosis (RNTCP)

G.Behera, P. Dutta, R. Manjhi, S. Pothal, R.K. Panda, M. Dash and P.Singh

Study was done to compare the sputum conversion rate of New Sputum Positive Pulmonary Tuberculosis, when treated with ATT alone and ATT with Mycobacterium W. (RNTCP-CAT-1 regimen). Out of 90 NSP PTB cases, 51 received *Mycobacterium W* 0.1 ml intradermal on both deltoids along with anti-tubercular treatment and followed by 0.1 ml intradermal on deltoid every 15 days interval up to two months. Sputum conversion rate in the group taking *Mycobacterium W* was 24%, 88% and 100% at 15th, 30th and 45th day respectively. With *Mycobacterium W* sputum conversion was 15 days earlier to placebo.

Diagnostic yield of CT guided biopsy in evaluation of thoracic mass

G. Behera, P. Dutta, R. Manjhi, S. Pothal, D. Gupta and P. Kumar

Study was done to correlate clinical and radiological findings with Cytohistological diagnosis. Clinically strongly suspected 50 cases of various age groups having mass lesion in plain CXR were subjected for CT thorax. CT diagnosis was correlated with fine needle aspiration cytology/FNAB under CT guidance. 53.84% of lung lesions were malignant, 16.67% of mediastinal lesions were benign, CT diagnosis was correct in 80.77% in lung lesion and 87.5% of mediastinal masses, Histopathology was correct in 83.3% of lung lesion, 73.68% of mediastinal mass, CT was incorrect in 7.6% of lung lesion 12.5% of mediastinal mass. Study concludes that CT guided biopsy is the answer for the diagnosis of all thoracic mass.

To study the pattern of Initial and Acquired Drug Resistance in sputum positive patients of Pulmonary Tuberculosis

Manoj Kumar Gupta, Rajesh Gupta, V.M. Katoch and Gaurav Singhal

Study was conducted to determine the initial and acquired multi-drug resistance in patients of pulmonary tuberculosis attending S.N. M.C. Agra and to study the drug resistance profile of patients who are sputum positive even after completing DOTS Cat II treatment under WHO. Study concluded that initial multi-drug resistance was seen in 5.88% patients and acquired multi-drug resistance was seen in 53.84% patients. There is urgent need of finding way for better implementation of DOTS and to identify areas with high burden of MDR-TB and it is high time to implement DOTS PLUS in these areas.

Normal physiological aspect of patients suffering from chronic TB

Anupama Gupta, Rajesh Gupta, K.B. Gupta and Sushma Sood

Study was done to observe 50 patients coming to MDR TB Clinic for their normal

physiological aspect. Chronic patients in whom treatment is ineffective are likely to suffer more. Because of chronic nature of disease and ineffective treatment, they are psychologically low too. Their suffering was for longer time but their symptoms were for shorter period. Similarly other aspects of the patients were studied.

Incidence of Tuberculosis in Prisoners

A.P. Kansal, Jai Kishan and Inderpreet Singh

The study was undertaken at Central Jail, Patiala, where 727 prisoners were examined to know the incidence of pulmonary and extra-pulmonary TB cases and to study the spectrum of factors affecting infection, disease and outcome of treatment. Out of 727 prisoners, 34 (4.67%) were identified as TB suspects as per RNTCP guidelines. Out of these suspects, 14 cases of TB were diagnosed, of which 11 (32.35%) were diagnosed by sputum microscopy and three (8.82%) were diagnosed by X-ray. Out of 14, three cases i.e. 21.42% cases were suspected to be having MDR. No extra pulmonary TB case was diagnosed. The cure rate of TB cases was 40%. The failure rate in the study was 10%. Overcrowding was the most important factor (present in 98.89% apart from poor general hygiene (67.26%), addiction (70.56%), mental stress (57.08%), pallor (11.41%), malnourishment (10.17%) and immunocompromise (2.33%).

Efficacy and tolerability of four-month thrice weekly gatifloxacin or moxifloxacin containing regimens in the treatment of patients with sputum positive pulmonary tuberculosis

M.S. Jawahar

TRC carried out a randomized clinical trial to study the efficacy and tolerability of thrice-weekly four month regimens using quinolones for the treatment of TB. Patients with newly diagnosed HIV negative TB who were sputum smear positive were randomly allocated to one of the following three regimens: (a) Gatifloxacin, Isoniazid and

Rifampicin thrice weekly for four months with Pyrazinamide for the first two months; b) Moxifloxacin, Isoniazid and Rifampicin thrice weekly for four months and Pyrazinamide for the first two months; or c) Isoniazid, and Rifampicin thrice weekly for 6 months with Ethambutol and Pyrazinamide for the first two months. Treatment was given under direct observation. Patients will be followed up for 24 months after completing treatment.

Characterisation of ancestral isolates of *Mycobacterium tuberculosis* which predominates South India

Sujatha Narayan

The study was done to understand the lineage of *M. Tuberculosis* in Southern India. The genetic information resulting from high prevalence areas such as ours would prove useful for defining phylogenetic links that exists with TB genomes and for constructing models of genome evolution. A number of genotypic tools like IS6110 RFLP, Spoligotyping, Deletion Micro array, and Deletion PCR were used. Results of study showed that the major clade present in Tiruvallur, S. India belongs to the group which is designated as the most ancient lineage of *M. tuberculosis*.

A report on TB patients treated by private providers (PPs) prior to treatment by public providers

K. Jaggarajamma, Sudha Ganapathy, Nirupa C, P.G. Gopi, M. Muniyandi and A. Thomas

Difference if any, in the proportion of patients discontinuing treatment from PPs and reasons for the same in the pre and post RNTCP era was studied. Of 1000 patients screened, 90 eligible were interviewed. The main findings in 1997 and 2005 were: (1) The proportion of patients giving a history of anti-TB treatment from a private, provider was 20% and 8%, $P < 0.001$ (2) There was a significant increase in the proportion of patients (45% and 62%, $P < 0.01$), who had undergone sputum examination, (3) 37% and 42% reported referral by PP to public facility.

Pharmacokinetics of Rifampicin during anti-retroviral treatment

A.K. Hemanth Kumar, Geetha Ramachandran, S. Rajasekharan, C. Padmapriyadarshini, G. Narendran, Pradeep Menon, P.R. Narayanan and Soumya Swaminathan

The pharmacokinetics of RMP was studied in 13 HIV-infected patients receiving anti-retroviral treatment consisting of NVP 200 mg bi-daily and 12 HIV- TB patients receiving EFV 600 mg once daily along with other drugs for a minimum period of two weeks, after administering seven doses of RMP (450/600 mg), Rifampicin was estimated by HPLC in blood collected at different time points (0,1,2,4,6,8 and 12 hours) after drug administration. The study concludes that NVP did not alter the bio-availability of RMP significantly. Estimation of RMP in samples collected when co-administered with EFV is in progress.

Optimization of Luciferase Reporter Phage Assay to improve its sensitivity for diagnosis of tuberculosis

N.S. Gomathi, Vanaja Kumar, Balaji S, Azger Dusthakeer and P.R. Narayanan

This study was carried out to improve the sensitivity of diagnostic LRP assay by modifying the assay format. like (i) Delaying the premature lysis of the infected host cell by subsequent infection by a lytic or temperate LRP construct to ensure continuous availability of cellular ATP and an increased copy number of the enzyme. (ii) Increasing the permeability of the cell membrane to enhance transport of the substrate D-Luciferin using Dimethyl sulfoxide (DMSO). (iii) Determination of ideal combination of reagents for preparing host cell suspension and phage lysate that provides ideal conditions for effective infection of the cell by the phage and expression of luciferase, thereby increasing the light out. The study concluded that all the three approaches lead to better performance of LRP assay by prolonging

the availability of mycobacterial ATP, facilitating the entry of D-luciferin into the host cell and by providing ideal environment for phage absorption and expression of luciferase gene, respectively.

Acid Fast Bacilli smear positivity by Auramine phenol and Ziehl-Neelsen staining methods for sputum samples transported in Cetyl Pyridinium Chloride

Gomathi Sekar, N. Selvakumar, Fathima Rehman and P.R. Narayanan

The study was carried out to determine the AFB positivity rates in both AP and ZN methods using centrifuged deposit smears of sputum transported in liquid CPC and powder CPC (Cetyl Pyridinium Chloride). Two direct smears were made from each of the sputum samples before treating with CPC. The sputum samples were preserved with 5 ml of CPC solution in method one, and the modified method of 75 mg CPC powder in method two. Two centrifuged deposit smears were made. One smear was allotted to AP method and the other to ZN method. Liquid CPC is more suitable to transport sputum for bacteriological investigation. The centrifuged deposits of sputum transported in liquid CPC yield more positives than direct smear when stained by ZN method.

Development of Luciferase reporter phages aiding diagnosis of latent Tuberculosis

V.N. Azger, Vanaja Kumar, S. Selva Kumar, N.S. Gomathi and P.R. Narayanan

This study was conducted to construct and evaluate LRPs from temperature mycobacteriophage Che 12 and TM4 derived temperature sensitive mutant, phAE 159. The ideal combination of LRP constructs are chosen for best results in TB diagnosis for sputum deposits. Refining the assay format further should lead to an ideal assay to diagnose TB, to differentiate the species and to do drug susceptibility testing.

Study of efficiency and safety of Ceftriaxone and Sulbactam in Lower Respiratory Tract Infections at K.J. Somaiya Medical College

K.C. Mohanty

Thirty-five Hospitalised patients suffering from Lower Respiratory tract infections were included in the study. These patients received Ceftriaxone 1 gm + Sulbactam 0.5g IV for 7-10 days and were monitored on day to day basis. This combination was found safe and effective in treatment of Lower Respiratory Tract Infections. This combination can be used empirically if facilities are not available for sensitivity or patients cannot afford.

Study the comparison of efficacy and safety of Cefepime + Amikacin FDC with Cefepime Alone in patients of Nosocomial Pneumonia at K.J. Somaiya Medical College

K.C. Mohanty

Thirty-four hospitalised patients suffering from nosocomial pneumonia were given either Cefepime + Amikacin FDC 2.5 gm (potentox. Inj) or Cefepime (2gm) IV for 7 to 10 days. Analysed at randomised basis. Monitoring done daily. This study conclude that combination has high success rates both clinically and bacteriologically as compared to Cefepime alone.

Acid fast bacilli in Indian AIDS Patients -are they always *Mycobacterium tuberculosis*?

P. Narang, Rahul Narang, A.P. Jain, A. Wankhade, R. Joshi and D.K. Mendiratta

A cross-sectional observational study was conducted to speciate and characterize mycobacterial species isolated from AIDS patients. The inclusion criteria were adult patient of any sex, HIV seropositivity, CD4 counts <200 cells/cumm or active TB with CD4 counts >200 cells/cumm. Complete blood counts and CD4 counts were done blood, sputum, stool and other extra-pulmonary samples were processed for mycobacteria.

BACTEC 13A medium was used for blood samples while Lowenstein Jensen and BACTEC 12B medium was used for other samples. For isolation of NTM a special medium using paraffin coated slides was used. A total of 16 mycobacterial isolates were isolated comprising *M. Tuberculosis* (9) *MAC* (3), *M. simiae* (3) and unidentifiable mycobacterial species (1). *Mycobacteria* were isolated from various samples viz. sputum, stool samples and blood.

Outcome of MDR-TB cases treated by individualized regimens at a Tertiary Level Clinic

V.K. Dhingra, S. Rajpal and Anshu Mittal

The study assessed the clinical, radiological, bacteriological and treatment outcome of MDR-TB patients treated at NDTB Centre. Twenty seven bacteriologically proven MDR-TB patients arranging their own anti-tubercular drugs (ATT) were registered at the outpatient MDR-TB clinic operated bi-weekly at the Centre by TB specialists. The drug susceptibility testing (DST) was done using the resistance ratio method for thirteen anti-tubercular drugs (first and second line) on all patients prior to starting their treatment. Individualized treatment regimens were tailored for each patient. The socio-demographic profile, previous history of ATT, DST patterns, radiological profile, regimens used, treatment outcome, side effects encountered, direct and indirect predictors of success of these MDR-TB patients were presented at the conference.

DOTS PLUS - AN URBAN EXPERIENCE

Rohit Sarin

The LRS Institute of Tuberculosis and Respiratory Diseases has been implementing the DOTS Plus Pilot Project since 2002 in its domiciliary treatment area covering a population of 1.8 million in South Delhi. The standardized treatment regimen of Kanamycin, Cycloserine, Ethionamide, Pyrazinamide and Ofloxacin is given to bacteriological proven MDR-TB Patients. Patients who have failed on Category-II under DOTS are subjected to culture

sensitivity and those who are resistant to Rifampicin and INH are enrolled after verifying their addresses and a written commitment from them regarding their acceptability of this treatment for a period of two years. The results of the past five years and operational issues in implementing the strategy were presented.

Role of Sputum Induction in Diagnosis of Smear Negative Tubercular Pleural Effusion

K.B. Gupta and Puneet Chopra

The present study was planned to find out yield of sputum induction with hypertonic saline in diagnosis of smear negative pleural effusion cases. 5ml hypertonic saline was administered through ultrasonic nebuliser for a maximum of 30 minutes. Out of 50 patients of tubercular pleural effusion who were smear negative/no sputum were studied, forty-eight patients produced adequate amount of sputum after hypertonic saline induction. Four patients were found positive for AFB on direct smear examination. The study concluded that hypertonic saline induction produces adequate amount of sputum, is very safe and effective method of diagnosing patients of tubercular pleural effusion particularly if they had parenchymal lesions on CT thorax in upper lobes.

Efficacy of DOTS (Anti-TB Treatment) in HIV-TB Patients on Anti-Retroviral Therapy

S. Rajasekaran, Vijila, Devanand, S. Kumar and C. Chandrasekar

In this study six hundred and twenty-two HIV-TB patients are placed under both ATT (DOTS) and ART. While 444 patients are continuing their ATT, details of the remaining 178 patients are provided. 132 patients (74%) completed successfully their ATT. 44 patients (25%) expired and only two patients (1%) were treatment defaulters. Linking HIV patients on ART to their nearest DOTS centers for treating tuberculosis is feasible. Reasons for high mortality rate and issues of linkages were discussed and suggestions made.

Role of Chemoprophylaxis in preventing immune-reconstitution Tuberculosis in HIV patients on Antiretroviral Therapy

S. Rajasekaran, Gomathi, Rabeetha, A Mahilmaran and K. Raja

In this study two hundred eighty-seven of 21 previously treated tuberculosis patients, on ART, were selected randomly and placed under Isoniazid and Ethambutol Chemoprophylaxis for 6 months. Occurrence of tuberculosis was recorded both in Chemoprophylaxis and non-chemoprophylaxis groups. Tuberculosis is the most commonly occurring Immune Reconstitution Manifestation in HIV patients within 6 months of starting Antiretroviral Therapy (ART). Nine (3.1%) of 287 HIV-TB patients on chemoprophylaxis developed tuberculosis. On the other hand, 234 (12.7%) of 1845 HIV-TB patients, who were not on chemoprophylaxis, developed tuberculosis after ART. The study concludes that six month chemoprophylaxis of Isoniazid and Ethambutol is safe and prevents Immune Reconstitution TB in significant number of already treated tuberculosis patients on ART.

Utilization pattern of RNTCP services in rural areas of Bellary district - study of age, gender and spatial differentials

Jameel Ahmed

A study was conducted in Samdur Tuberculosis Unit (TU) in rural areas of Bellary district, Karnataka, to find out the utilization pattern of Revised National Tuberculosis Programme (RNTCP) services by age-group, gender and distance to the microscopy centers (MC) and treatment centres. Out of 2,046 chest symptomatics subjected to sputum microscopy, 62% were males and 38% females. One-third of chest symptomatics and smear positive cases resided within 4 kms of MCs, another 1/3rd between 5-19 kms and remaining 1/3rd at >19 kms. Of 232 cases detected, 43 (18.5%) were initial defaulters. Higher success of 88% was observed among females compared to 78% among males. Death rate was 13% among males and 7%

among females. Utilization pattern in relation to distance needs further investigation. High proportion of initial defaulters demands urgent action.

Implementation of External Quality Assessment (EQA) for Sputum Smear Microscopy by National Tuberculosis Institute, Bangalore

National TB Institute, Bangalore

EQA of sputum smear microscopy laboratories for diagnosis of tuberculosis is an important goal under RNTCP. EQA involves - On site evaluations (OSE), Panel Testing (PT) and Random Blinded Crosschecking (RBRC). EQA network involves National Lab. Committee Supervision at CTD, National Reference Lab (NRLS), Intermediate Reference Lab (IRLS) and peripheral lab. In this study NTI has evaluated 10 states for EQA implementation. Training and OSEs by NTI strengthened the IRLs for EQA implementation. Panel testing provided an effective proficiency testing tool for lab supervisors. RBRC helped to identify and correcting the centres with high false errors.

External Quality Assessment for Sputum Smear Microscopy: Validation criteria for Random Blinded Re-checking (RBRC)

National Tuberculosis Institute, Bangalore

This retrospective study is based on the records and documents of the district TB centers verified during OSE visits. Criteria for RBRC data validation were: type, quantity and pattern of distribution of errors. Udaipur (Rajasthan), BMP and Tumkur (Karnataka) districts were selected as they have reported maximum high false errors. RBRC involves cross-checking a satisfactorily valid sample of smears based on LOT Quality Assurance sampling introduced by RNTCP for Routine OMC slides to monitor performers of the lab. RBRC effectively identified the poor performance centers and satisfactorily corrected the quality shortcomings, including the proficiency of L Ts and supervisors.

Perception of DOT providers regarding TB and directly observed treatment in Vellore District

National Tuberculosis Institute, Bangalore

In this study perception of DOT providers regarding the disease and supervised drug administration was analysed. Ten per cent of DPs were selected randomly in each of the TUs of Vellore district and interviewed using a pre-tested questionnaire. Information regarding the training status, Knowledge of TB, perception regarding DOT and their experiences as DOT providers was elicited during the interview. Majority of DPs (95%) were aware of duration of treatment. 10% came across adverse drug reaction and 10% faced problems related to patients behaviour. The study findings emphasize the importance of regular supervision and on-job training of DPs to fill the gaps in the perception and practices of DOT providers.

Gender Distribution and Treatment Outcome of TB Cases Registered in Geographically Diverse RNTCP Districts

National Tuberculosis Institute, Bangalore

This study was undertaken to find out the gender distribution of registered TB cases and compare their treatment outcomes in different geographical settings. Earlier studies have shown gender differences in the accessibility and utilization of services provided under RNTCP and better treatment success among female TB patients compared to males. India is a vast country and health seeking behaviour may vary with in different geographical regions - plain, hilly, coastal, desert, tribal and metropolitan areas. According to the number of new smear positive cases registered in a quarter and the districts (1 or 2) with the highest number of cases registered were selected for the study. The data generated from the study will provide important inputs for assessing the programme performance in different geographical settings with special reference to gender disparity for necessary corrective actions.

A project to strengthen TB-HIV collaborative activities at district level

National Tuberculosis Institute, Bangalore

A project was undertaken to augment co-ordination between TB and AIDS control programmes. This at the district level, a collaborative project of WHO, South East Asia and NTI, Bangalore. The activities outlined in the action plan were - To constitute TB-HIV co-ordination committee in the district, To ensure streamlining of the VCTC-RNTCP cross referrals, Sensitization programmes for service providers involved in the TB and AIDS control programmes, To conduct a study on the HIV sero-prevalence among new smear positive TB patients, To conduct IEC activities on TB-HIV. The experience from this project indicates that minimal financial inputs are required for the implementation of the TB-HIV collaborative activities.

Tuberculosis infection among school children in Bangalore Rural District

R.K. Srivastava

A total of 2459 children between 5-14 years of age were tuberculin tested in 25 selected schools in Devanahalli taluk of Bangalore rural district during 2005-06. The injections were made using 1 TU PPD RT23 with Tween 80, on the mid-volar aspect of left forearm and maximum transverse diameter of induration was measured at 72 hours. The estimated prevalence of infection was 5.8% and the ARTI was computed at 0.6%. This denoted 3.8% per annum decline in the risk of infection, compared to 1.1% during an earlier house-based survey in 1992-1994. The observed decline may be attributable to improvement in epidemiological situation and the impact of RNTCP.

Virulence of a mutant and complemented strain of M.TB In Guinea pig animal model

Vijay Kumar Challu

The IAEC approved collaborative project was undertaken with the objective to evaluate and compare virulence of *M.Tuberculosis* wild type, devR mutant and complemented strain in NTI bred albino

guinea pigs. Three groups comprising often animals each and one control group of our animals were injected subcutaneously with coded suspensions in the BSLIII facility at NTI. Necropsy examinations were carried out at three-time points. Spleen, liver and lung tissues were assessed for gross tuberculous lesions, besides processing for microbial enumeration, assessment of complement function and expression was analysed. Findings from the first phase of experiments revealed that the virulence of devR mutant strain was marginally lower to that of H37Rv while the complemented strain was significantly attenuated. Complemented strain is ideal in further investigation which will pave the way for development of better vaccine and newer drug against persistens.

Study of Tuberculosis among patients with collagen vascular diseases

C. Ravindran, T.S. Dhanya and Binoy J. Paul

The study was conducted to know occurrence of tuberculosis in patients with collagen vascular diseases attending a tertiary care hospital. To describe the clinical profile of tuberculosis in collagen vascular diseases. To evaluate the radiologic features of Pulmonary Tuberculosis. Diagnosed cases of RA, SLE, MCTD and systemic sclerosis were included in the study. As patients with CVD are exposed to high dose of steroids and immuno suppressive therapy leading to impaired host immunity pre-disposing to TB. The study conclude that Patients with collagen vascular diseases are at high risk for re-activation of tuberculosis. Both pulmonary and extra pulmonary forms of tuberculosis are more in patients receiving long term corticosteroids. High index of clinical suspicion of tuberculosis required in this group of patients.

Incidence of MDR TB in remote area at Indo-Nepal Border and its management locally - the ground reality

R.A. Sharma

This study was done to find out the incidence and possibility of management under the local conditions. A careful drug history and clinical exam and failure of three months regular S+H+R+Z+E

formed the basis of diagnosis of MDR clinically. Sputum of all such patients were subjected to sensitivity testing to SHRZ&E suitable regimen was prescribed as per sensitivity, which they took for one year to 18 months and outcome was analysed. Study concludes that MDR can be diagnosed on clinical grounds in remote areas by careful detailed drug history and failure of SHRZE for 3 months and managed locally at their home.

Newer Strategy for Diagnosis of Pulmonary Tuberculosis – A case control study

K. Venugopal, R.S. Nisha and N. Seema.

The study is trying to evaluate the efficiency of evening, morning and spot sample examination on the very next day of consultation. The Govt. sector has OP only in the morning. But majority of the patients under RNTCP are referred from evening consultation of Govt./private doctors. Thus first spot sample is taken only on next day of consultation when the patient attends the microscopic centre and the morning (2nd) and 3rd spot sample on the subsequent day. All the TB suspects consulted during the evening consultation of the District TB Officer were given two sputum cups and instructed to take an evening sample and one morning sample and to report the microscopic centre next day. 3rd spot sample will be taken at Microscopic Centre. Study concludes that providing sputum cups to the referring consultants/practitioners will result in more yield in TB case detection, helping early detection (one day), increase patient compliance, reducing patient expenditure and helping to prevent spread by early institution of the treatment.

Daily Vs Intermittent Therapy in Paediatric TB - A Comparative Study

P.R. Sreelatha, K. Venugopal, Sairu Philip and Girjia Mohan

The study was conducted with the following aims:

To compare the treatment outcome of daily and intermittent therapy in paediatric TB, To assess the default rate in patients on daily therapy, To assess the reliability of mother as the DOTS provider.

Paediatric TB cases registered at DTC, Alappuzha from 01.07.2004 onwards were selected for study. Response was assessed on clinical improvement, chest X-ray and weight gain. Study concludes that intermittent treatment is as effective as daily treatment in paediatric TB, default rate is in paediatric TB in Kerala, daily treatment is more acceptable among mothers. Mother is an effective DOTS provider.

Drug susceptibility profiles and molecular epidemiology of an unbiased community based sample of *Mycobacterium Tuberculosis* strains from Mumbai and proximal rural areas

Yatin Dholakia, Nerges Mistry, Desiree D'souza, Anirvan Chatterjee, Tina Vira, Pura Bhatte and Sachin Atre

This is an epidemiological study design to capture the extent and rate of clustering (transmission) of MDR strains and to delineate the primary and acquired status of drug resistance. The overspill of drug resistance to proximal rural areas is also examined with correlates of migration. This interim presentation describes the drug sensitivity and fingerprinting of strains from fresh and Category I treatment failure cases. Seventy-eight percent of Cat I failures are multiple drug resistant. Amongst fresh urban and rural cases, primary MDR was high as 57% and 53% respectively. Forty-two per cent of cases pansensitive/monoresistant at diagnosis showed multiple drug resistance at the fifth month.

Management of TB and HIV/TB Co-infection in the Private Medical Sector I of Hyderabad City, Andhra Pradesh

Solomon Salve, J. Subbanna, B. Vijaykrishnan, P. Jayaram, T. Aparna, Abhay Kudale, Karina Kielmann, John Porter and Sheela Rangan

The study examines private medical providers' practices in the management of TB and HIV/TB co-infection. Following diagnosis, more than two-thirds of them refer their TB and HIV patients to the public sector for further management. Very

few of the PMPs who see HIV (6%) prescribe ART. A third of the PMPs screen their TB patients for HIV and HIV patients for TB. A third of their TB and HIV patients have co-infection. After detection of co-infection less than 10% PMPs continue to manage their co-infected patients in their own clinics. This study concludes that private sector plays an important role in the management of TB, HIV and co-infection in Hyderabad.

Building a Partnership between the Public and Private Sectors for Management of HIV-TB Co-infection: A Feasibility Study in Hyderabad City, Andhra Pradesh

B. Vijaykrishnan, Abhay Kudale, Solomon Salve, Sheela Rangan, Arunabala Chaudhury, Karina Kielmann, John Porter and P. V. Ranganandha Rao

A cross-sectional survey of all private medical practitioners (PMPs) practising in Musheerabad TB Unit was conducted to assess mechanisms for developing partnerships between the public and private sectors for management of TB and HIV. Almost all PMPs felt a public-private partnership was feasible. A little more than a third was aware about the public-private mix (PPM) in the RNTCP though only 11% were presently participating.

Profile of Drug Resistant Tuberculosis in Ghatampur Tehsil of Kanpur District, Uttar Pradesh, India

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This study was done on patients of pulmonary tuberculosis. The standard RNTCP algorithm was used to identify these patients and they were put on DOTS. Culture and sensitivity results (using conventional proportion method) of all patients who were enrolled during last one year were analysed. Among the Cat I patients 85.6% strains were sensitive to all the drugs, 12.5% had mono resistance to Isoniazid and 1.78% had resistance to both Isoniazid and Streptomycin. No

MDR strain (WHO definition) was found in this group. In CAT-II, 18.57% were Multi Drug Resistant (RH), 31.43% were mono-drug resistant to Isoniazid and Streptomycin and 12.14% were resistant to two or more drugs but not MDR by definition. The remaining 38% were sensitive to all drugs.

Do we need to pay special attention to Mono INH Resistant TB Cases? : Experience of Treating Cases with DOTS at Ghatampur, Kanpur District, Uttar Pradesh

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This study compared response of Cat II patients mono resistant to Isoniazid with patients who were sensitive to all the drugs. Study concluded all the patients who were sensitive to all drugs became sputum smear negative at the end of treatment whereas in mono-INH-resistant cases 62% of the cases became sputum smear negative and 38% were still smear positive at the end of treatment.

Patterns of Initial Drug Resistance (IDR) among new sputum positive cases of pulmonary tuberculosis in two districts of North India

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This study was carried out in Kanpur Nagar and Agra districts as a part of DRS (Drug Resistance Surveillance) studies initiated by Central TB Division (CTD). All new smear positive pulmonary TB patients reporting to all designated microscopy centres (DMCs) functioning under RNTCP were included. Three sputum specimens were collected for diagnosis of tuberculosis. Two specimens were processed and subjected to mycobacteria culture in Lowenstein-Jensen medium, identification by standard biochemical

methods; and anti-mycobacterial susceptibility was done by proportion method for first line drugs i.e. Rifampicin (R), Isoniazid (H), Ethambutol (E) and Streptomycin (S). Study showed that the levels of initial MDR in these two districts are within the expected range.

Diagnostic yield of fiberoptic bronchoscopy in sputum smear negative under RNTCP and radiologically suspected cases of Pulmonary Tuberculosis

Shubhakaran Sharma, N.K. Gupta, S.K. Luhadiya, A.B. Srivastava and M.L. Ved

The present study was carried out on 100 sputum smear negative cases (under RNTCP) with radiologically suspected cases of pulmonary tuberculosis, to evaluate diagnostic yield of fiberoptic bronchoscopy. Radiologically bilateral lesion were present in 49% while unilateral in 51% of patients. The diagnostic yield of overall bronchoscopic procedures for tuberculosis in this study was 15%. Non-tuberculosis conditions were diagnosed in 10% including malignancy in 4% and suppurative lung disease in 6%. Considering this, overall diagnostic yield of fiberoptic bronchoscopy was found to be 25%. Study concluded that fiberoptic bronchoscopy is relatively safe and useful procedure and highly recommendable diagnostic aid in all sputum smear negative under RNTCP and radiologically suspected cases of pulmonary tuberculosis.

Comparison of Montelukast and Ketotifen as an add-on therapy in diagnosed cases of Bronchial asthma

Gaurav Chhabra, S.K.Luhadiya and N.K. Gupta

Present study was done to assess role of Montelukast and Ketotifen in asthma management; comparing efficacy of Montelukast and Ketotifen as an add-on therapy to ICS and LABA and the safety profile of Montelukast and Ketotifen. The study was carried out in 75 patients of asthma, attending the department of Chest Diseases and Tuberculosis, RNT Medical College, Udaipur. After diagnosis patients were randomly kept in following

three groups, 25 patients in each:

Group A - 25 patients in ICS and LABA
Group

Group B - 25 patients in Montelukast along
with ICS + LABA

Group C - 25 patients in Ketotifen along with
ICS + LABA

Follow-up was done at 15th and 30th day
after starting therapy. On each follow-up PEFr and
Asthma control test was done.

Shri G.B. Pai, Honorary Legal Adviser and the Third Trustee of Tuberculosis Association of India since 1962, passed away on 6th October, 2007. Shri Pai was a Senior Advocate of Supreme Court of India, an avid philatelist, a gifted artist, a prolific author and an inspiration to many. Mr. Pai was closely associated with the Association and its associated bodies in various capacities. In his demise, the Tuberculosis Association of India has lost a true guide and has created a void, difficult to fill.