

Service Oriented Activities

Drug Resistant Surveillance projects for TB drug susceptibility in India

Preliminary site visit training and on-site evaluation for undertaking the Drug Resistant Surveillance (DRS) for TB in the state of Gujarat has been completed. The pilot phase of this programme has been completed as planned and we have received sputum samples from 100 patients and processed. The results are being analysed. The concordance between TRC and State TB Demonstration Centre (STDC) Gujarat for smear microscopy is good.

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DRS for TB drug susceptibility in two states

As per the global drug resistance surveillance programme, DRS in India is being undertaken in a phased manner. In this project, funded by the ICMR, two states in India, viz. Tamil Nadu and Sikkim have been selected. DRS for TB has already been undertaken in the state of Tamil Nadu in 1997, where the salient finding was a HR

resistance of 3.4%. This was before the implementation of the RNTCP. Now the resurvey in Tami Nadu is planned. The other state will be Sikkim, where preparatory work is in progress and the protocol is being finalized in consultation with Central TB Division and the State TB Officer of Sikkim.

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External Quality Assurance in TB drug susceptibility testing (DST) for the various national and international reference laboratories

TRC is involved in the Quality Assurance Programme in TB DST at the national level and the SAARC region. (Table XII).

The Centres involved in this program are:

- National Tuberculosis Institute, Bangalore,
- Lala Ram Swarup Institute of Tuberculosis and Chest Diseases, New Delhi,
- VP Chest Institute, New Delhi,

Table XII: Drug susceptibility testing

SITE	SM	INH	RIF	EMB
SEARO COUNTRIES				
National TB Reference Laboratory, Yangaon, Myanmar (2 rounds)	89 90	33 90	89 90	78 90
Mycobacteriology Laboratory ICDDR, Bangladesh (2 rounds)	40 80	80 100	80 100	80 100
NATIONAL LABORATORIES				
National Tuberculosis Institute, Bangalore (3 rounds)	100 100 100	100 100 100	100 100 90	100 100 100

- New Delhi Tuberculosis Centre, New Delhi,

The SAARC countries involved at present are:

- The National Tuberculosis Laboratory, Yangon, Myanmar,
- The Tuberculosis Laboratory, International Centre for Diarrhoeal Diseases, Dhaka, Bangladesh.

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Public-Private Partnership

The TRC in association with ACT, a division of Resource group for Education and Advocacy for Community Health (REACH), a Chennai-based NGO has undertaken the task of recruiting the private sector into TB control. During the year under review, several workshops were held for medical practitioners. At each of these workshops, which were well attended, private practitioners raised several issues regarding practical aspects of TB management and monitoring. Their questions were answered and innovative measures were employed to help them enlist more patients under the DOTS programme. A major feature of this year's activity was an attempt to enhance the awareness about TB diagnosis and treatment among the general public. In order to achieve this goal REACH enlisted the support of leading Tamil film and TV personalities to spread various messages regarding TB control. On the occasion of the World TB Day a walk/run for TB control was organized in which several schools and colleges participated. This project which is currently co-funded by the Global Fund Against AIDS, Tuberculosis (TB) and

Malaria (GFATM) is now developing indicators to assess success and sustainability.

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Standardization of antiretroviral drugs in blood by HPLC

Background:

Pharmacokinetic studies of antiretroviral drugs are being carried out at the centre. These studies are aimed at studying interactions between anti-TB and antiretroviral drugs and assess the absorption of antiretroviral drugs in HIV-infected individuals. Pharmacokinetic studies require accurate and specific methods to estimate antiretroviral drugs in blood.

Aim:

To standardize the estimation of efavirenz, nevirapine, zidovudine, lamivudine, stavudine and didanosine in blood by HPLC.

Methods:

Simple and rapid methods to estimate efavirenz and simultaneously nevirapine and zidovudine in blood have been validated. Both the methods involved extraction of the drugs into ethyl acetate and analysis using a reversed-phase C₁₈ column with UV detection. The mobile phase consisted of phosphate buffer (with varying pH and molarity) and acetonitrile in different proportions for both the methods. Internal standards were used in both the methods. The assays were linear from 0.0625-10.0 µg/ml for efavirenz, 0.05-10.0µg/ml for nevirapine and 0.025-10.0 µg/ml for zidovudine. The average recoveries of efavirenz, nevirapine and zidovudine were 98, 94 and 95% respectively. The methods

were sensitive, specific and reproducible and utilized a single step extraction. Due to the simplicity and small sample size, these methods can be used for pharmacokinetic studies and therapeutic drug monitoring.

Experiments are ongoing to validate a method that permits simultaneous estimation of lamivudine, stavudine and didanosine in blood.

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Mycolic acid analysis by HPLC for identification of Non Tuberculous Mycobacteria (NTM) species

Background:

Opportunistic infection due to *M. tuberculosis* is common among HIV +ve patients. However, infection due to NTM is on the increase in several parts of the world. Therefore, identification of NTM rapidly and accurately becomes important. HPLC offers a fast track method compared to other methods of identification.

Aim:

To identify the NTM species isolated from HIV infected and uninfected patients, selected as per the American Thoracic Society (ATS) criteria.

Method:

All the isolates were identified by standardized method for HPLC identification of

mycobacteria developed by the U.S Department of Health and Human Services, CDC, Atlanta.

Results:

During the year April 2004 to March 2005, a total of 236 NTM cultures from patients repeatedly excreting were selected as per the ATS criteria and identified. Of the 236 NTM cultures, 9 cultures were isolated from blood sample, 3 from peritoneal fluid and 4 from endometrium. Rest of the 220 cultures isolates were from sputum (Fig. 20). Among the patients infected, infection due to *M.avium* and *M.intracellulare* predominates followed by *M.kansasii* and *M.chelonae/M.abscessus*.

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Fig. 20. Samplewise NTM identified

