

Multi Drug Resistant Tuberculosis and DOTS Plus¹

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What is multidrug-resistant tuberculosis (MDR-TB)?

TB is caused by the organism *Mycobacterium tuberculosis*. In general, TB is considered **drug resistant** when the organism is not killed by anti-TB drugs during a laboratory test called drug susceptibility testing (DST). The laboratory reports resistance to the drug tested when 1% or more of the bacilli grow in the presence of the drug.

The bacilli can develop resistance to either one of the drugs or a few drugs or in some instances all the drugs prescribed for the particular patient.

Multidrug-resistant TB is a form of DR-TB in which the strain of *M. tuberculosis* is found to be resistant to at least the two most effective anti-TB drugs – isoniazid and rifampicin – with or without resistance to the other anti-TB drugs.

TB and MDR-TB are both spread in the same manner. When a person with pulmonary TB (TB affecting the lungs) coughs, sneezes, yawns or speaks, tubercle bacilli are spread into the air in tiny droplets. Other people who breathe in these droplets can become infected. Not all people who are infected with tubercular bacilli will develop TB disease. This depends on the immunity of the individual and the transition from the stage of infection to disease can take a few months to years or may not take place at all.

The symptoms of TB and MDR-TB are also the same. The main symptom is cough of two weeks or more, with or without fever, chest and/or back pains, haemoptysis, and weight loss. Other symptoms include sweating, fatigue, body malaise and shortness of breath.

However, managing MDR-TB is more complex than managing TB for the following reasons:

- Detection of MDR-TB requires quality-assured culture and DST in addition to sputum smear microscopy, or documented evidence of failure of a well supervised first-line TB regimen.
- Treatment of MDR-TB requires a greater number of medicines including second-line anti-TB drugs, which need to be taken for at least 18 months with strictly supervised treatment for 6 days a week.
- Second-line anti-TB drugs are more likely to cause adverse effects and are less active than first-line anti-TB drugs.
- Strategies to manage MDR-TB require more resources (logistic, human and financial) than drug-susceptible TB.

Drug resistance is caused by a number of factors but is essentially a man-made phenomenon.

Resistance is typically caused by inadequate or poorly administered treatment (retreatment cases) , although MDR-TB may also spread from person to person (new cases). Some of the many causes of resistance include:

- poor selection of treatment regimen,
- non-adherence to treatment,
- poor monitoring,

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- failure to directly observe treatment,
- poorly organized or funded TB control programmes,
- problems with drug quality and/or drug supply,
- barriers to treatment (social, adverse effects, transportation).

It is essential to manage MDR-TB in the proper setting to increase the chances of cure, to prevent the spread of all forms of TB (drug-susceptible and drug-resistant) and to avoid the amplification of resistance.

In India, the available information from the several drug resistance surveillance studies conducted in the past suggest that the rate of MDR-TB is relatively low. Although these cases represent a small minority of the overall caseload of TB patients in India, they are an important group from epidemiological and human rights viewpoint. Also, although small in relation to percentages and proportions, these rates translate into large absolute numbers.

Specific measures are being taken within the Revised National Tuberculosis Control Programme (RNTCP) to address the MDR-TB problem through appropriate management of patients and strategies to prevent the propagation and dissemination of MDR-TB.

DOTS-Plus refers to DOTS programmes that add components for MDR-TB diagnosis, management and treatment.

The first WHO endorsed DOTS-Plus programmes began in 2000. At that time, the Green Light Committee (GLC) was established to promote access to high quality second-line drugs for appropriate use in TB control programmes. DOTS-Plus pilot projects have demonstrated the feasibility and effectiveness of MDR-TB treatment in less affluent countries. In 2002, the Global Fund to fight AIDS, TB, and Malaria (GFATM) started financing TB control programmes, including MDR-TB, thus greatly reducing the economic barrier to MDR TB control. Since then, DOTS-Plus projects have multiplied rapidly. By the end of 2007, 67 projects in 52 countries approved by the GLC, with a cumulative total of over 30,000 MDR-TB patients, had been launched worldwide, many of them with financial support from the GFATM. Based on data and experience from these projects, practices and further scientific evidence have emerged regarding services for MDR-TB.

DOTS-Plus programmes can and should strengthen the basic DOTS strategy.

Well administered first-line treatment for susceptible cases is the best method to prevent the development of resistance in such cases. Timely identification of MDR-TB cases and adequately administered Category IV regimens are essential to stop primary transmission. DOTS/DOTS-Plus integration works synergistically to shut down all the potential sources of TB transmission.

The RNTCP – DOTS Plus services were launched in India in Gujrat state in 2007. By 2012, it is aimed to extend these services to all smear positive retreatment cases and new cases who have failed an initial first line drug treatment. And by 2015, these services will be made available to all smear positive pulmonary TB cases registered under the programme. It is intended to treat at least 30,000 MDR cases annually by 2012-13.

Ice box with ice-packs for maintaining cold chain to transport sputum samples to Culture and DST laboratory



Ice box being transported by NGO staff



One month treatment of DOTS Plus including injection vials, syringe-needles and distilled water.

Role of Inter Aide in DOTS Plus:

DOTS Plus was launched in Mumbai and Navi Mumbai Corporations, 2 areas where Inter Aide is implementing the TB Control Programme in 2010.

It is planned that the same will also be implemented in 3 of its other areas namely Thane, Kalyan-Dombivli and Ulhasnagar Corporations before the end of 2011.

For successful implementation of DOTS Plus it is essential that regular DOTS is well functioning. Inter Aide has been supporting the RNTCP to implement DOTS by improving access to the slum population to the RNTCP diagnostic and treatment services by operating Sputum Collection Centres, Microscopy centres, Treatment Centres within the slums and by improving knowledge of the community about TB and RNTCP services through awareness activities.

Inter Aide has been an integral part of the visits by review committees from State and National levels to decide upon starting DOTS Plus services. Staff of partner NGOs have been trained about the new guidelines of DOTS Plus. Inter Aide PM is also called upon by the RNTCP to provide training to other RNTCP staff.

The MDR suspects as per the programme guidelines will be identified from the DOTS centres run by partner NGOs and referred as per the referral mechanism to the Culture and DST lab for confirmation.

The important task of collection and transport of sputum samples to the Culture and DST laboratory within a stipulated time-frame while maintaining cold-chain has been given to two partners of Inter Aide.

Once the patients are diagnosed to be MDR and their treatment is started at the specialised DOTS plus site, they are referred to local DOTS centres for daily treatment. Wherever the NGO DOTS centres are convenient to the patients, their DOTS Plus treatment is started there and they are regularly followed up for 24-27 months including home visits in case of missed doses, individual and family counselling, referrals for adverse drug reactions, referrals for follow-up culture examinations etc.