

Multidrug-Resistant Tuberculosis – Sh. Nilica Devi

Global tuberculosis control is facing major challenges today. In general, much effort is still required to make quality care accessible without barriers of gender, age, type of disease, social setting, and ability to pay. Co-infection with *Mycobacterium tuberculosis* and HIV (TB/HIV), and multidrug-resistant (MDR) and extensively drug-resistant (XDR) tuberculosis in all regions, make control activities more complex and demanding.

Tuberculosis (TB) is a disease caused by bacterium *Mycobacterium tuberculosis* that are spread from person to person through the air. The general symptoms of TB disease include feelings of sickness or weakness, weight loss, fever, and night sweats. The symptoms of TB disease of the lungs may also include coughing, chest pain, and coughing up blood. Symptoms of TB disease in other parts of the body depend on the area affected.

WHAT IS MULTIDRUG-RESISTANT TUBERCULOSIS (MDR TB)?

Multidrug-resistant TB is TB resistant to at least isoniazid and rifampicin, the two most potent and commonly used drugs in the current four-drug (or first-line) regimen. WHO treatment standards requires at least four drugs be used to treat TB in order to avoid the development of further resistance. Isoniazid (H); Rifampicin (R); Ethambutol (E); Pyrazinamide (Z) and Streptomycin (S) are the first-line drugs. The stories of those living with drug-resistant TB are harrowing. Novel regimens are needed to treat MDR-TB on a global scale.

WHAT IS EXTENSIVELY DRUG-RESISTANT TUBERCULOSIS (XDR TB)?

Extensively drug resistant TB is TB resistant to Isoniazid and Rifampicin, plus any Fluoroquinolone and at least one of three injectable second-line drugs (i.e., Amikacin, Kanamycin, or Capreomycin). XDR TB is emerging as an even more ominous threat as it is resistant to the most potent TB drugs and patients are left with treatment options that are much less effective.

XDR TB is of special concern for persons with HIV infection or other conditions that can weaken the immune system. They are more likely to develop TB disease once infected.

Drug-susceptible TB and drug-resistant TB are spread the same way. TB bacteria propel into the air when a person with TB disease of the lungs or throat coughs, sneezes, talk or spits and very less bacilli are enough to cause infection when inhaled.

CAUSES OF DRUG RESISTANT TUBERCULOSIS

Drug-resistant TB has microbial, clinical, and programmatic causes. From a microbiological perspective, the resistance is caused by genetic mutation that makes drug ineffective against the mutant bacilli. An inadequate or poorly administered treatment regimen allows drug-resistant mutants to become the dominant strain in a patient infected with TB. However, it should be stressed that MDR-TB is a man-made phenomenon – inadequate treatment, inadequate drug supply or poor drug quality and inadequate drug intake leads to the development of MDR-TB.

RISKS FOR GETTING MDR TB

Drug resistance is common in people who:

- Do not take their TB medicine regularly and as prescribed by the doctor.
- Develop TB disease again, after having taken TB medicine in the past.
- Come from areas where drug-resistant TB is common.

- Spent time with someone known to have drug-resistant TB disease.

PREVENTION OF MDR TB

Good treatment is a pre-requisite to the prevention of emergence of resistance. Revised National TB Control Programme (RNTCP) recognises that implementation of a good quality Directly Observed Treatment, Short Course (DOTS) programme is the first priority for TB control in the country. Prevention of emergence of MDR-TB in the community is more imperative rather than its treatment.

The most important thing a person can do to prevent the spread of MDR TB is to take medications exactly as prescribed. No doses should be missed and treatment should not be stopped early. Patients should tell their health care provider if they are having trouble taking the medications.

Health care providers can help prevent MDR TB by quickly diagnosing cases, following recommended treatment guidelines, monitoring patients' response to treatment, and making sure therapy is completed.

Another way to prevent getting MDR TB is to avoid exposure to known MDR TB patients in closed or crowded places such as hospitals, prisons, or other such places.

THE FIGHT CONTINUES

Today, drug-resistant TB is quite common in India and China, as the two countries combined account for more than half of the global MDR-TB burden. Drug-resistant TB is often "found" by determining a patient's reaction to first-line treatment, which means that by the time they are identified as having drug-resistant TB, patients have become even more resistant than they were prior to their latest therapy. Treatment for MDR-TB is commonly administered for 2 years or longer and involves daily injections. Many second-line drugs are toxic and have severe side effects. The World Health Organization has issued a target of treating 80% of MDR-TB cases by 2015. Without new, simple, and affordable treatments for MDR-TB, this is not realistically possible.

It is estimated that 70% XDR-TB patients die within a month of diagnosis. The most recent drug-resistance surveillance data issued by the WHO estimates that an average of 5% MDR-TB cases are XDR-TB.

TB anywhere is TB everywhere. As an airborne disease that can be spread through the simple act of coughing, our decision makers have an obligation to heed to the evidence and speed up our fight against this ancient disease, before its control spins out of our grasp.

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