In 1992, the World Health Organization declared tuberculosis (TB) as a global health emergency, and despite strenuous efforts to control the spread of this disease, TB remains the seventh leading cause of death globally.¹ In Pakistan, the incidence of TB is 175/100,000 which gives it eighth ranking in the world.² Of the 9.5 million cases of TB reported globally, nearly half a million are multidrug resistant (MDR) and WHO projects prevalence of over a million cases of MDR.³

The problem of MDR TB in Pakistan is creeping steadily, and although there are no accurate studies, TB experts concede that there is an alarming trend. MDR is a laboratory diagnosis, i.e., in vitro resistance to at least both isoniazid and rifampicin – the two most powerful agents against Mycobacterium tuberculosis - and possibly to other first line drugs as well. An even more sinister problem is that of extensively drug resistant TB (XDR), which is defined as MDR plus resistance to an injectable (usually kanamycin or amikacin) and quinolones. Both these groups are powerful bactericidals, whereas other second line medicines are not as potent. Since TB is transmitted through respiratory secretions, both MDR and more so XDR, pose a serious threat to public health.

Drug resistant TB is an iatrogenic disease propelled by bad treatment of drug sensitive TB. Wrong prescription writing by clinicians, improper dosing, insufficient time spent on counseling, patient default due to poverty or ignorance and spurious anti-TB drugs are responsible. For decades the problem of drug resistance was either denied and no attempt was made to identify its extent or to seek solutions. Drug resistance is strongly associated with previous treatment. In patients who have received previous treatment, the probability of resistance more than 4-fold higher, and of MDR-TB over 10-fold higher, than for untreated patients. From a molecular biologist’s perspective, drug resistance results from genetic mutation that make a drug ineffective against the mutant bacilli. These then become the dominant infecting organism.⁴ Ongoing transmission of the infecting strain in a household also becomes the source of “primary” drug resistance and may spread into the community.

DR-TB must be diagnosed correctly before it can be treated effectively. TB laboratories are handicapped in isolating the Mycobacterium, and particularly, in performing drug sensitivity testing, which compounds the problem of diagnosing MDR-TB both for the individual patient as well as for epidemiological purposes. Laboratory constraints relate to infrastructure, equipment, quality assurance and biosafety.⁵ The establishment of functioning TB laboratories in each of the provinces would help enormously in alleviating the pressure on the few private laboratories in the country.

Treating the patient with second line agents is an enormous challenge: their cost is in excess of Rs. 250,000 over 24 months. Five or more drugs including an injectable aminoglycoside are required till at least sputum conversion and cultures need to be done 12-15 times over the course of 2 years, costing upto Rs. 25,000. The additional cost of ancillary tests and supportive care drugs, physician visits, hospitalization and transportation sum up to a formidable amount. Surgical lung resection may be necessary under certain circumstances, but few lung surgeons have the experience or ideal hospital conditions. Twenty-four months of toxic drug intake leave many patients deaf, anorectic, sleep deprived and even psychotic. It is no surprise then that all but the most committed patient defaults. This perpetuates the disease not only in the patient himself but also raises the risk of transmission to family members and the community. There have been families where five or more members are afflicted with this devastating disease. Maintaining a supply of quality anti-TB drugs, correct dosing, managing side effects and preventing defaults should be done under a programmatic scheme that addresses all facets of treatment. The role of a supporter and health worker whose gentle, caring and listening attitude will help the patient surmount difficulties and reach the goal of achieving cure is also of of immense value.

Patients with MDR and XDR TB pose a threat to the healthcare workers also.⁶ These patients generally have advanced lung disease because of their prolonged course and late diagnosis, and hence their bronchial secretions are heavily infected with bacilli.⁷ Institutions where such patients are seen should institute state-of-the-art infection control measures for prevention of disease transmission to personnel. Particulate respirators or the N-95 mask, ultraviolet light irradiation, HEPA filters, positive air pressure flow are some of the
recommended measures. As no single measure is infallible, a combination of measures must be undertaken. The most ominous scene of transmission is within the household where a home is overcrowded and natural ventilation poor. The most comprehensive TB control guideline for healthcare facilities published to date is the CDC document, “Guidelines for Preventing the Transmission of M. tuberculosis in Health-Care Settings 2005.”

The only way to stem the tide of MDR-TB is to treat first time TB effectively only by doctors with full knowledge and experience of TB and by engaging the patient and family in his/her care. Raising public awareness is crucial. Medical curriculum must stress the treatment of TB; TB laboratories should be augmented; industry should add altruism to commerce and, above all, the government should own responsibility for the frugal national health budget that is grossly insufficient for a rapidly expanding population. Finally, these precious second line drugs should not be made available as over the counter sales or left in the hands of inexperienced physicians. The health of the nation is at stake.

REFERENCES