



Multidrug-Resistant TB as A Major Concern for Tuberculosis Control Programs

*Salman KHAZAEI¹, Hamid SALEHINIYA², Shahin SOLTANI³, *Abdollah MOHAMMADIAN-HAFSHEJANI⁴*

1. Dept. of Epidemiology & Biostatistics, School of Public Health, Hamadan University of Medical Sciences, Hamadan, Iran
2. Minimally Invasive Surgery Research Center, Iran University of Medical Sciences, Tehran, Iran
3. Dept. of Health Management and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran
4. Dept. of Epidemiology & Biostatistics, School of Public Health, Isfahan University of Medical Sciences, Isfahan, Iran

*Corresponding Author: Email: amohamadii1361@gmail.com

(Received 18 Sep 2015; accepted 12 Oct 2015)

Dear Editor in Chief

Multidrug-resistant TB (MDR-TB) is a major challenge to TB control program (1). MDR-TB patient is resistant to treatment with at least two of the common. Strong first-line treatment anti-TB drugs contain isoniazid and rifampicin (2). Some factors caused drug resistance of tuberculosis for example: Insufficient treatment, early discontinuation of treatment, genetic factors and HIV infection. Furthermore, long time of treatment (At least 6 months) and side effects of anti TB drugs, are the main causes of patients noncompliance (3).

Although rates of MDR-TB are rather low in developed countries (North America and Western Europe countries), but in some parts of the Russian Federation, the former Soviet Union and some parts of Asia the rate is increasing (4). According to Table 1, globally 5% of total TB cases have had MDR-TB in 2013 (included 3.5% of new cases and 20.5% of previously treated TB cases) (5). There were an estimated 300,000 new cases of MDR TB occurred in 2013 worldwide, and only about 45% of them were diagnosed and notified (5).

Table 1: Percentage of new and previously treated TB cases with MDR-TB by six WHO regions in 2014

Region	% of new TB cases with MDR-TB (CI)	% of retreatment TB cases with MDR-TB (CI)
African Region	2.4 (0.2-5)	13 (.02-27)
Region of the Americas	2.2 (1.3-3)	13 (4.9-22)
Eastern Mediterranean Region	3.6 (2.3-5)	22 (12-32)
European Region	14 (9.7-19)	44 (36-52)
South-East Asia Region	2.2 (1.8-2.7)	16 (12-20)
Western Pacific Region	4.4 (2.6-6.3)	22 (18-26)
Global	3.5 (2.2-4.7)	21 (14-28)

In 2012 and 2013, globally rates of treatment success (cure for positive pulmonary TB and treatment completion for other types) were about 48%, whereas for 28% of patients did not follow up (5). The process of diagnosis and treatment of MDR-TB cases are complicated and entail high cost. For diagnose of MDR-TB cases, there needs to train staff and sufficient facilities for culture of *Mycobacteria* and drug-susceptibility test (6). As the Fig. 1 shows, about US\$ 8 billion is required for a complete response to the tuberculosis epidemic in low and middle-income countries annually, of which about 20% should be allocated for detection and treatment of MDR-TB (4).

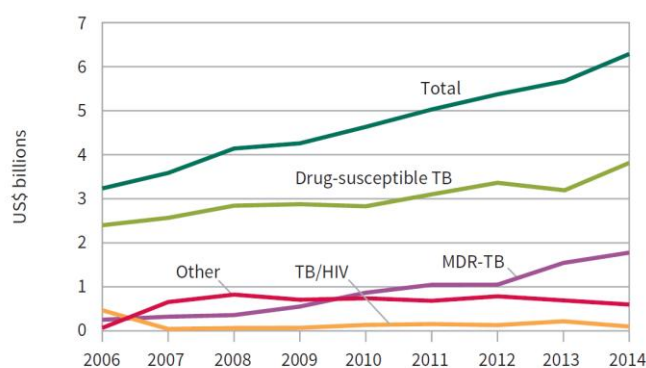


Fig. 1: Funding for TB prevention, diagnosis and treatment by intervention area, 2006-2014

As for TB control program, all care for tuberculosis, whether in the public or private sector should be according to international standards (6). Control of MDR-TB in society can be achieved using providing sufficient second line drugs, timely diagnosis and treatment of TB patients, treatment follow up, monitoring completion of treatment and

special attention to TB infection in HIV/AIDS patients.

Acknowledgment

The authors declare that there is no conflict of interests.

References

1. World Health Organization (2006). The Tuberculosis Coalition for Technical Assistance. International Standards of Care. Available from: http://www.who.int/tb/publications/2006/is_tc_report_shortversion.pdf
2. Mukherjee JS, Rich ML, Socci AR, Joseph JK, Virú FA, Shin SS, et al. (2004). Programmes and principles in treatment of multidrug-resistant tuberculosis. *The Lancet*, 363 (9407):474-81.
3. Toungousova O, Mariandyshev A, Bjune G, Caugant D, Sandven P (2005). Resistance of multidrug-resistant strains of *Mycobacterium tuberculosis* from the Archangel oblast, Russia, to second-line anti-tuberculosis drugs. *Europ J Clin Microbiol Infect Dis*, 24(3):202-6.
4. World Health Organization. Multidrug-resistant tuberculosis (MDR-TB) (2013). Available from: <http://www.who.int/tb/publications/MDRFactSheet2012.pdf>
5. World Health Organization (2014). "Global Tuberculosis Report 2014", WHO, Geneva, Available from: www.who.int/tb/publications/global_report/
6. Jaramillo E (2008). Guidelines for the programmatic management of drug-resistant tuberculosis. World Health Organization.pp.:8-13