

**OVERVIEW**

- 4% of all tuberculosis (TB) disease cases are multi drug-resistant tuberculosis (MDR-TB) cases
- MDR-TB is a big problem because it is more difficult and costly to cure. “MDR” means resistance to two of the most effective first-line drugs: rifampicin and isoniazid
- MDR-TB must be treated with second-line drugs which are less effective, more expensive, and associated with more serious side effects than first-line treatments
- Extensively drug-resistant tuberculosis (XDR-TB) is nearly impossible to cure.
- Businesses can cost-effectively address MDR/XDR-TB in the same ways they take action on HIV: workplace and community programs, using core competencies, and providing advocacy and leadership around issues related to TB

DRUG-RESISTANT TUBERCULOSIS: THE PROBLEM

Tuberculosis was the cause of 1.7 million deaths in 2009, largely among people in their most productive years. There are 9.4 million new infections every year. Multiple drug-resistant TB (MDR-TB) and extensively drug-resistant TB (XDR-TB) have become more prevalent in the last 15-20 years. Both MDR- and XDR-TB pose formidable challenges in diagnosis and treatment.

MDR-TB

MDR-TB is defined as resistance to two of the most important and effective “first-line” drugs, rifampicin and isoniazid, which are the preferred option for treatment. 3.3% of all TB disease cases are MDR-TB. 50% of MDR-TB cases are estimated to occur in China and India and 27 countries account for 86% of cases. MDR-TB among new TB cases is most heavily concentrated in Eastern European countries like Russia (16%), Azerbaijan (22%), and other former Eastern Bloc countries.

MDR-TB must be treated with so-called “second-line” drugs which are less effective, more expensive, and associated with more serious side effects than first-line treatments. Diagnosis of drug resistance is difficult, especially in low resource countries; diagnosis may take anywhere from 6 to 16 weeks and requires sophisticated lab equipment.

It is important to note that MDR-TB can be cured. However, the cost of drugs for treating the average MDR-TB patient is 50 to 200 times more than normal TB. MDR-TB takes at least three times longer to cure –

18-24 months – and has a higher mortality rate overall than drug-susceptible TB.

XDR-TB

XDR-TB is defined as MDR-TB that also does not respond to multiple second-line drugs. It is estimated that 5% of MDR-TB cases are XDR-TB. XDR-TB must be treated with even more expensive and toxic third-line drugs, and a course of treatment must be specifically tailored to individual TB samples. Most patients with XDR-TB will die before such measures can be carried out, in large part due to the difficulty of diagnosing the resistance in time.

XDR-TB is a very new version of TB: the first known outbreak was in South Africa, in 2005. Because XDR-TB is so new, the exact number of cases is unclear. It is extremely difficult to diagnose, especially in developing countries, due to inadequate laboratory facilities. As of January 2010, 58 countries had reported at least one case of XDR-TB to WHO.

HIV-positive TB patients are thought to be at greater risk of acquiring MDR-TB strains. HIV/TB co-infection is especially devastating when the TB is drug-resistant. HIV-positive patients progress more quickly to severe disease and death due to increased difficulty in proper diagnosis and quick treatment. Because of this, it is especially important to prevent drug-resistant TB in areas with high HIV prevalence.

WHAT CAUSES DRUG RESISTANCE?

There are two types of MDR-TB: primary and acquired. Primary MDR-TB occurs when a person is

infected by someone else who has the resistant strain. Acquired MDR-TB results when regular TB is inadequately treated, which causes bacteria to develop resistance to the drugs used. Treatment failure occurs when drugs are improperly prescribed due to lack of provider knowledge or due to drug shortages. Sometimes the patient may terminate first-line treatment due to debilitating side effects, lack of a support network, inability to take off time from work to get the treatment s/he needs or other reason. Contrary to what many people believe, it is rare for drug resistance to be caused by the willful neglect of patients to manage treatment.

HOW DO MDR-TB AND XDR-TB AFFECT BUSINESS?

TB exacts a huge economic toll on businesses, most acutely in developing economies. Ranging from \$3.32 billion for Zimbabwe to \$1.18 trillion for China, the total economic burden of TB between 2006 and 2015 for the twenty-two high burden countries is estimated to be about \$3.4 trillion.

MDR-TB and XDR-TB represent new challenges to business in the fight against the global TB epidemic. There is little information available on drug-resistant TB in particular, but the Global Fund estimates that TB alone results in a decline in worker productivity of US\$12 billion every year. This loss of productivity is the result of absenteeism during treatment; since the time needed to bring MDR-TB to a non-infectious state, allowing the person to resume work, is significantly longer.

There are direct and indirect costs to business from MDR-TB. In settings where employers provide physical care, direct costs include the care and treatment of the disease, including the more expensive medications and any other treatments necessary. Indirect costs include spending associated with employee absence and turnover, retraining employees who have been out sick for months, etc. These expenses make it cost-effective to prevent MDR-TB in the workplace.

WHAT CAN BUSINESS DO?

Business can address MDR- and XDR-TB in the same way as drug-susceptible TB. Through workplace and community programs, creative application of core competencies and advocacy and leadership on the

issue, the private sector can ensure it is playing a part in combating drug-resistant TB.

ENTRY POINTS FOR BUSINESS TO ADDRESS MULTIDRUG RESISTANT TB

Workplace

- Educate employees on TB symptom identification and the risks of developing drug-resistant TB.
- Address the stigma of TB in the workplace by providing TB testing and counseling on-site.
- Raise awareness about treatment options, and promote an enabling environment to facilitate treatment completion (e.g. provide transportation to health clinic)
- Ensure the workplace is properly equipped with air ventilation and that overcrowding is minimized to reduce the spread of TB bacteria.

Community

- Increase programmatic impact by extending workplace programs into the community.

Core Competence

- Use company expertise to fight TB, whether it is products, skill sets or marketing acumen.

Advocacy & Leadership

- Leverage business networks and platforms to raise awareness about MDR/XDR-TB.

For further guidance on how to apply these business actions in your company, please refer to GBHealth's Issue Brief, "Business & TB: Why it Matters."

BENEFITS TO BUSINESS

A Healthy Workforce

Preventing and treating regular TB is a cost-effective way to prevent drug resistance and has a high return on investment. The cure for regular TB is cheap, especially compared to treating advanced TB disease or MDR/XDR-TB. The estimated benefits-to-cost ratio of implementing sustained DOTS, the treatment program for regular TB, relative to having no DOTS coverage is 11-to-1 in sub-Saharan Africa. Researchers have shown that, although more expensive, treatment of patients with MDR-TB using the DOTS-Plus strategy, the treatment program for MDR-TB, can be feasible and cost-effective in low- and middle-income countries.

Reputation-Building

Taking on MDR-TB as an expression of corporate social responsibility also provides the opportunity to build goodwill among employees and customers and to secure a strong reputation as a leader in the public health arena. Very little is currently being done around MDR- and XDR-TB, so action taken now will allow companies to lead the way in this new health frontier.

BEST PRACTICE EXAMPLES

Chevron

Chevron's efforts in Angola and Nigeria include TB education and awareness training for workers, families and communities; reliable diagnosis and treatment specific to TB type (latent, MDR-, and XDR-TB); and provision of directly observed therapy (DOT). X-ray and sputum culture are primary screening tools; the company is also conducting an internal validation study of Quantiferon Gold, a blood-based TB diagnostic.

In Angola, company clinics have consulted and tested 1,884 patients, 539 of whom were diagnosed sputum positive. In Nigeria, Chevron has supported the construction of three local community TB clinics, in collaboration with a local NGO, to provide treatment for TB, HIV/AIDS, and malaria free of charge.

Eli Lilly

The Lilly MDR-TB Partnership is a multi-pronged approach to reduce the incidence of MDR-TB worldwide, with an emphasis on China, India, Russia and South Africa. The program facilitates technology transfer to increase the MDR-TB drug supply, provides training to improve disease case management and surveillance, and offers support for community, patient advocacy, and workplace awareness and prevention programs.

Tibotec

In collaboration with the TB Alliance, pharmaceutical company Tibotec is developing a drug to treat both MDR-TB and drug-susceptible TB. Both parties contribute their expertise and resources in the discovery of new ATP synthase inhibitors which will influence the development of these new drugs. Currently, they are working on TMC207, which could be the first TB compound in 40 years to have a new mechanism of action, introducing a novel approach to the fight against TB.

REFERENCES AND RESOURCES

Advocacy & Leadership Intervention: Eli Lilly, GBC, 2009
Core Competence Intervention: Tibotec, GBC, 2008
Drug and multidrug resistant tuberculosis (MDR TB), WHO, 2010
Economic Benefit of Tuberculosis Control, World Bank, 2007
Feasibility and Cost-Effectiveness of Treating Multidrug-Resistant Tuberculosis, Tupasi, et al., 2006
Global Investments in TB Control: Economic Benefits, Health Affairs, 2009
Global Tuberculosis Control: A Short Update to the 2009 Report, WHO, 2009
Multidrug and extensively drug-resistant TB (M/XDR-TB), Tuberculosis, WHO, 2010
Protecting Your Workforce and Surrounding Communities from Tuberculosis, World Economic Forum, 2008
Studies Confirm XDR-TB Can Be Cured, Partners in Health, 2008
Tuberculosis disease Report, The Global Fund, 2006

ABOUT GBCHEALTH

GBCHealth is a global coalition of over 200 private sector companies and top NGOs leading the business fight for improved global health. GBCHealth supports members by developing comprehensive workplace policies; supporting community programs; leveraging core competencies; facilitating leadership and advocacy by business leaders; and brokering partnerships. GBCHealth also manages the private sector delegation to the Global Fund to Fight AIDS, Tuberculosis and Malaria, serving as an entry-point for corporate collaboration and engagement with the Fund and its recipients worldwide.

GBCHealth has offices in New York, Johannesburg, Beijing, Nairobi and Moscow. For more information on GBCHealth, please visit www.gbchealth.org.