

Frequently Asked Questions on the Lilly MDR-TB Partnership

Q1. What is the Lilly MDR-TB Partnership?

A. The Lilly MDR-TB Partnership is a comprehensive public-private initiative led by Lilly to address the expanding crisis of multidrug-resistant tuberculosis (MDR-TB). It aims to transfer Lilly technology for the production of two key MDR-TB drugs (cycloserine and capreomycin) to our four partner companies in high-burden MDR-TB countries, thereby increasing their drug supply. At the same time, the Partnership relies on the capabilities of other partner organizations to ensure that sound MDR-TB programs and policies are in place. These include strengthening prevention and control measures, ensuring that patients receive high-quality drugs and are supported in their communities, promoting a more active role of the business community through advocacy and programs in the workplace, and highlighting the important role of private-sector healthcare providers.

Q2. Who are the partners in this initiative?

A. Following is a list of the partners with brief descriptions of their roles:

Lilly: Supply—at concessionary prices—capreomycin (Capastat®) and cycloserine (Seromycin®) to Green Light Committee-approved projects worldwide; and the transfer of technology to manufacturers in countries with the highest MDR-TB burdens: Aspen (South Africa), Hisun (China), Shasun (India), and SIA (Russia).

- **Aspen:** Production of capreomycin and cycloserine.
- **CDC:** Development of an MDR-TB surveillance system in selected regions in Russia.
- **ICN:** ICN: Development of TB/MDR-TB guidelines, training programs, and curricula for nurses; establishment of a virtual TB learning center.
- **IFRC:** Establishment of community-outreach programs to provide support to MDR-TB patients.
- **IHF:** Development of a hospital managers' training manual in TB and MDR-TB prevention, treatment, and control.
- **Hisun:** Production of capreomycin.
- **PIH:** Establishment of Tomsk/Russia Center of Excellence for training health care professionals to treat MDR-TB.
- **Purdue University:** Training in Good Manufacturing Practices and Good Business Practices for the selected manufacturers.
- **Shasun:** Production of cycloserine.
- **SIA:** Production of cycloserine and capreomycin.
- **TB Alert & TB Survival Project:** Patient advocacy.
- **WEF:** Creation of programs for businesses to promote awareness and better control of TB and MDR-TB in the workplace.

- **WHO & Stop TB Partnership:** Support to countries to set up policies and programs for prevention and control of MDR-TB.
- **WMA:** Development of a physicians long-distance Internet course on clinical management of TB and MDR-TB.

Q3. What is the goal of the Lilly MDR-TB Partnership?

A. The overall goal of the Partnership is to prevent and treat TB and MDR-TB in developing countries. Specifically, the project aims to train private and public sector health care personnel in programs that follow the DOTS-Plus strategy (Directly Observed Treatment short course, for MDR-TB patients), to increase the supply of high-quality drugs, to reduce the stigma associated with TB, and to cure as many people as possible. The Partnership supports the United Nations' Millennium Development Goals and the Stop TB Partnership's "Global Plan to Stop TB"—the goal of which is to save 14 million people from TB and MDR-TB by 2015. The Partnership is also working with the World Health Organization to help it reach its goal of treating 20,000 patients annually by 2010.

Q4. What is Lilly's financial contribution to this initiative?

A. Lilly's total contribution to the MDR-TB partnership is valued at \$70 million.

Q5. How is Lilly's MDR-TB Partnership different from other global public health programs?

A. This initiative is a model for public-private partnerships that involves the cooperative efforts of the pharmaceutical industry, governments, NGOs, international organizations, professional health care associations, academic institutions, and the business community. It is a multi-dimensional, comprehensive program that deals with all aspects of the MDR-TB problem, from drug supply to treatment and surveillance to community support. Most other programs address only one or two aspects of a global health problem. In addition to being a unique public-private partnership, the Lilly Partnership also includes one of the few transfer-of-technology programs in the pharmaceutical industry that teaches partners how to produce the active pharmaceutical ingredient (API) as well as the final product.

Q6. What is MDR-TB?

A. Multidrug-resistant tuberculosis (MDR-TB) is a type of tuberculosis that can often result from incorrect or interrupted treatment of regular tuberculosis. Once a strain of MDR-TB develops, it spreads from person to person just like regular TB.

Q7. Why is it important to treat and contain MDR-TB properly?

A. Failure to treat and contain MDR-TB properly can result (and already has resulted) in the creation of new, more resistant strains of the disease, such as XDR-TB. These new strains are resistant to some of the few the drugs that currently treat MDR-TB, as well as to other antibiotics, so there may be no cure for them. The two Lilly drugs at the center of this endeavor are essential for the treatment of those who suffer from MDR-TB. If we fail to use these drugs properly, or fail to increase their availability, many more people will be vulnerable to the spread of this disease.

Q8. What is XDR-TB?

A. Just as MDR-TB is caused by improper or incomplete treatment of regular TB, XDR-TB (extensively drug-resistant TB) is caused by improper or incomplete treatment of MDR-TB. XDR-TB is resistant to even more drugs than is MDR-TB, and treatment options are severely limited. MDR-TB is resistant to "first line" drugs that treat regular TB, responding to only a handful of "second line" drugs. XDR-TB is resistant to most of these second line drugs.

Cycloserine and capreomycin, the two MDR-TB antibiotics made by Lilly, continue to be effective in most cases, and therefore their roles in fighting XDR-TB are nothing less than crucial. (The World Health Organization defines XDR-TB as tuberculosis that is resistant to any fluoroquinolone, and at least one of three injectable second line drugs (capreomycin, kanamycin, and amikacin), in addition to isoniazid and rifampicin, the two most powerful first line drugs, to which MDR-TB is resistant.)

Recently, the Centers for Disease Control and the World Health Organization announced the worldwide emergence of XDR-TB. In Eastern Europe, 14 percent of MDR-TB patients have been

diagnosed with XDR-TB. XDR-TB gained international attention with the October 2006 outbreak in South Africa where 106 confirmed cases in five provinces were identified.

Q9. Which Lilly products are available through the MDR-TB Partnership?

A. Capreomycin (Capastat®) and cycloserine (Seromycin®) are the two Lilly drugs that have been proven to treat MDR-TB effectively and are being made available through the Partnership. They are used in combination with other second-line drugs (drugs used to treat MDR-TB).

Capreomycin is used for the treatment of pulmonary infections caused by capreomycin-susceptible strains of *M. tuberculosis* when the primary agents (isoniazid, rifampicin, para-aminosalicylic acid, ethambutol, and streptomycin) have proven ineffective or cannot be used because of toxicity or the presence of resistant *tubercle bacilli*.

Cycloserine is used for the treatment of active pulmonary and extra-pulmonary tuberculosis (including renal disease) when the causative organisms are susceptible to this drug and when treatments with the primary medications (isoniazid, rifampicin, ethambutol, and streptomycin) have proven inadequate.

Q10. Which countries will be the primary beneficiaries of this public-private effort?

A. The principle beneficiaries of this effort will be the patients in those nations with Green Light Committee-approved MDR-TB programs—the World Health Organization's DOTS-Plus programs that outline clinical guidelines, monitoring and evaluation policies, and require daily patient observation by trained health care staff. Currently, about 22,000 patients are enrolled in DOTS-Plus projects in 40 GLC-approved countries, including: Costa Rica, Bolivia, the Dominican Republic, Ecuador, Egypt, Estonia, El Salvador, Georgia, Haiti, Honduras, India, Jordan, Latvia, Lebanon, Kenya, Kyrgyzstan, Malawi, Mexico, Moldova, Mongolia, Nepal, Nicaragua, Paraguay, Peru, the Philippines, Romania, Russia, Serbia, Syria, Tunisia, and Uzbekistan.

Q11. What is the significance of Lilly's technology transfer for producing capreomycin and cycloserine?

A. By transferring our drug-manufacturing technology, Lilly increases the supply of these products in the countries that need them most. Lilly also teaches the companies how to improve their manufacturing skills, essential for producing other needed drugs. The Lilly MDR-TB Partnership follows the philosophy that, if you give a person a fish you feed him for a day; if you teach a person to fish you feed him for a lifetime.

Q12. How many units of Capastat and Seromycin has Lilly supplied so far?

A. Between 2000 and 2006, Lilly supplied 1 million vials of capreomycin, and 5 million capsules of cycloserine to the World Health Organization.