



## Battle Against Tuberculosis: Some Gains in Russia

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### Key Messages

- About 1.1 million people, or almost 0.6-0.7% of the population in Russia, developed TB between 1995 and 2004.
- Russian TB control practices were highly centralized, relied heavily on mass X-ray screenings and were not effective in controlling the increasing numbers of TB cases.
- From 2003-2008, the World Bank, in coordination with the World Health Organization (WHO) and other international partners, supported the implementation of the TB/AIDS Control Project in Russia. The Project covered 79 of the 83 regions across Russia, strengthening both the civilian and prison health systems. Project activities supported the implementation of the WHO-recommended "Directly Observed Treatment Strategy" (DOTS) for TB control.
- Since 2004, notifications of new TB cases in Russia have stabilized. TB mortality in the general population has decreased by 25% and among prisoners by 35%.

### The Challenge

Tuberculosis (TB), a disease that infects the lungs, is spread from person to person through the air. It tends to manifest itself in situations of high social stress, poor nutrition, and low levels of immunity. If not treated, TB can be fatal.

Across Russia, the deep socio-economic crisis of the 1990s and early 2000s provided fertile ground for the spread of TB. Indeed, as noted, "People who were already living very precariously saw their real incomes drop by 25% to 30% at a time when government spending was also falling."<sup>2</sup> As a result, social and health conditions deteriorated, and TB spread rapidly. Russia also had one of the highest rates of imprisonment in the world that, coupled with adverse conditions in prisons, increased the risk of TB, HIV and other infectious diseases among prisoners.<sup>3</sup>

This situation contributed to Russia having one of the highest rates of TB in the world. The annual number of new cases and relapses tripled after 1990, reaching 92 per 100,000 population in 2001; Russian prisons reported more than 50,000 TB patients annually during this period. More than 50% of all new TB cases in the country were among the unemployed, pensioners, homeless and alcoholics.<sup>4</sup>

### Expanding the Directly Observed Treatment Strategy (DOTS) for TB Control

Russian TB control practices were highly centralized and relied heavily on mass X-ray screenings. Treatment included lengthy hospitalizations in specialized centers and allowed for variations in drug regimens for patients. This approach, coupled with a deteriorated health system, was not effective in addressing the increasing numbers of TB cases: 1.1 million people, or almost 0.6-0.7% of the population, developed TB between 1995 and 2004.

From 2003-2008, the World Bank supported the implementation of the TB/AIDS Control Project (total cost US\$ 244 million), in partnership with the WHO Stop TB Program. The Project was complemented by support from the Global Fund to Fight AIDS, TB and Malaria, of the US Agency for International Development (USAID), as well as

<sup>1</sup> This Knowledge Brief takes into account the results of the Implementation Completion Report for the Russia TB/AIDS Control Project prepared by Betty Hanan and Asel Sargaldakova in December 2009, WHO assessments, and data from the Russian MOHSD.

<sup>2</sup> John Litwack, World Bank Lead Economist in Russia, as quoted in "A Turning Point in the Fight Against Tuberculosis in Russia" (de Preneuf, F., 2006). World Bank web site: <http://go.worldbank.org/XDVC6X0JM0>

<sup>3</sup> Bobrik, A., K. Danishevski, K. Eroshina, and M. McKee. 2005. "Prison Health in Russia: The Larger Picture." *Journal of Public Health Policy* 26:30-59.

<sup>4</sup> Coker, R., M.McKee, R.Atun, and others. 2006. "Risk Factors for Pulmonary Tuberculosis in Samara, Russia: A Case-Control Study." *British Medical Journal* 332:85-7.

Russia's own federal and regional efforts. The Russian Health Care Foundation managed project implementation on behalf of the Federal Ministry of Health and Social Development (MOHSD) and the Ministry of Justice's Federal Corrections Center in charge of prisons.

The Project was designed in accordance with the Federal Targeted Social Disease Prevention and Control Program (2002-2006). About 80% of Project funds were allocated for TB control with the goal of contributing to a leveling-off or reduction in morbidity, mortality and transmission of TB. The Project covered 79 of the 83 regions across the vast Russian territory - from the Baltic Sea to the Pacific Ocean, strengthening both the civilian and prison health systems.

To achieve its objective, Project investments and activities supported the full-scale implementation of the WHO recommended DOTS strategy for TB control as follows:

**1. Sustained political commitment to TB control.** The MOHSD-led High Level Working Group (HLWG) on TB and Thematic Working Groups, made up of representatives of leading national agencies and specialists, revised the national TB strategy according to international standards and developed new policies and guidelines for TB control. These groups also facilitated consultation among Russian and international experts and the coordination of all TB programs in the country. A Strategic Five Year Plan for TB (2003-2007) was launched by the MOHSD, along with Ministerial Orders 109, 50, and 690 to guide the implementation of activities. Needs assessments and investment plans financed under the Project in each of the participating regions were prepared by teams from specialized institutes: Research Institute of Phthiopulmonology of the Sechenov Medical Academy, Central TB Research Institute of the Russian Academy of Medical Sciences, St. Petersburg Research Institute of Phthiopulmonology, Ural Research Institute of Phthiopulmonology, and Novosibirsk TB Research Institute. The Ministry of Justice's Federal Corrections Center conducted similar work in the prison health system. Technical assistance was provided by WHO.

**2. Access to quality sputum microscopy for case detection among persons with TB symptoms (for example, prolonged cough).** The most common diagnostic test to detect TB is microscopic examination of sputum smeared on a glass slide. It detects the most infectious cases and is highly specific in high-prevalence settings. This test, supported by X-rays when necessary and confirmed by bacteriological culture, is considered the diagnostic gold standard as it can identify over 80% of TB cases and allows for drug susceptibility testing.

Project investments modernized the public health laboratory network, particularly at the municipal level and in the prison

health system, where it was the weakest. The reference laboratories at the federal research institutes were also strengthened. More than 42,000 units of modern laboratory equipment and 200 X-ray/fluorography machines were procured for six reference laboratories at federal TB research institutes, 49 bacteriological laboratories and 2,371 clinical diagnostic laboratories in primary care facilities. Routine drug resistance surveillance is now in place; in 2009, over 90% of culture-positive cases were tested for resistance to first line anti-TB drugs. The supply of biosafety cabinets increased the capacity of laboratories for infection control. More than 24,000 medical personnel working in civilian and prison health facilities were trained on the role of primary care physicians, organization of TB control at the municipal level, and TB detection using microscopy and culture methods.

**3. Standardized short-course chemotherapy for all cases of TB, including direct observation of treatment.** By 2007, all 83 regions in the Russian Federation, up from 14 in 2003, adopted the WHO recommended DOTS strategy for TB control. Training of specialists in accordance with new MOHSD TB treatment protocols was provided.

In routine TB cases, standard first-line treatment regimens are prescribed. The majority of infectious TB patients are hospitalized during the intensive phase of treatment to prevent person-to-person contagion; during out-patient treatment, drug dispensing and follow-up of patients are performed at primary care facilities. Management of TB/HIV co-infection is carried out jointly by TB and HIV/AIDS services. Six to nine months of therapy is required, using a combination of several drugs, to cure TB. The Project supplied 142 civilian and prison health facilities in 80 regions with anti-TB first-line drugs (Isoniazid, Rifampicin, Pirazinamid, Ethambutol) worth US\$ 19.3 million, which ensured uninterrupted treatment using strengthened centralized drug procurement systems.

Some regional governments, such as in Vladimir, have implemented social support programs for TB patients to prevent treatment interruptions and defaults during ambulatory treatment, particularly targeting the unemployed, homeless, alcoholics, and former prisoners. Support provided includes food supplements, free transportation or reimbursement of transport costs, and psychological and legal counseling. Incentives for service providers are also included to support timely detection and treatment.

Compliance with the standard treatment regimen among newly detected TB cases has increased from 44% in 2004 to about 75% in 2008 - close to the 85% target set for the end of the project. Assessment of treatment success is done using cohort data.

**4. Confronting multiple-drug resistant TB.** While Project laboratory improvements contributed to better diagnosing drug-resistant TB cases, parallel funding from national programs, the Global Fund and USAID supported treatment with second-line TB drugs following WHO guidelines.

**5. Improved recording and reporting system, enabling assessment of patient outcomes.** New forms of TB recording and reporting were introduced in all civilian and prison health facilities for cohort method analysis of TB detection and treatment outcomes. Specialists from federal TB research institutes monitored TB control activities in every region covered by the project. Training workshops were conducted to improve monitoring and evaluation capacity.

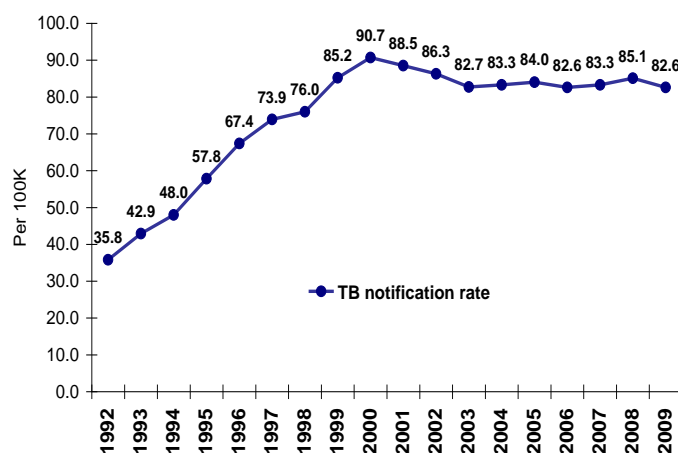
**6. Addressing HIV/TB co-infection.** With Project support, a comprehensive set of 52 standards and protocols for HIV/AIDS prevention, diagnosis, care and treatment were developed by the MOHSD and adopted for nationwide use. In addition, the laboratory network in 82 regional AIDS centers, 16 regional STI centers, 35 regional prison laboratories, and federal research institutes, was strengthened with new equipment and supplies for the detection, diagnosis and case management of HIV and other sexually transmitted diseases using PCR (polymerase chain reaction), CD4, Viral Load and CD8 tests. This investment contributed greatly towards confronting the spread of the HIV/AIDS epidemic; timely access to quality PCR testing, which helps detect and diagnose infectious diseases such as HIV, and the measurement of the number of CD4 and CD8 cells in the blood and viral load concentrations, that assess the status of the immune system in persons diagnosed with HIV, are critical procedures that support the scaling-up of treatment with anti-retroviral drugs, help reduce the infectivity level of patients, slow the rate of new infections, and help increase the life expectancy and quality of life of people infected with HIV. The safety of blood services was also improved, reducing the risk of HIV transmission via blood transfusions.

### Results

- Timely detection and diagnosis are yielding higher numbers of notified TB cases among previously unscreened or misdiagnosed patients, including those in the late phase of TB who are harder to cure. Between 2003 and 2008, case detection among persons with TB symptoms using sputum smear microscopy increased by more than 24%, reaching a 73% level in 2008.<sup>5</sup>

- Since 2003, TB notifications have stabilized (Figure 1). The notification of new TB cases was 82.6 per 100,000 population in 2009, down from 90.7 at the beginning of the decade. In 2009, the registered TB prevalence rate was 185.1 per 100,000, significantly down from 218.2 per 100,000 in 2004.

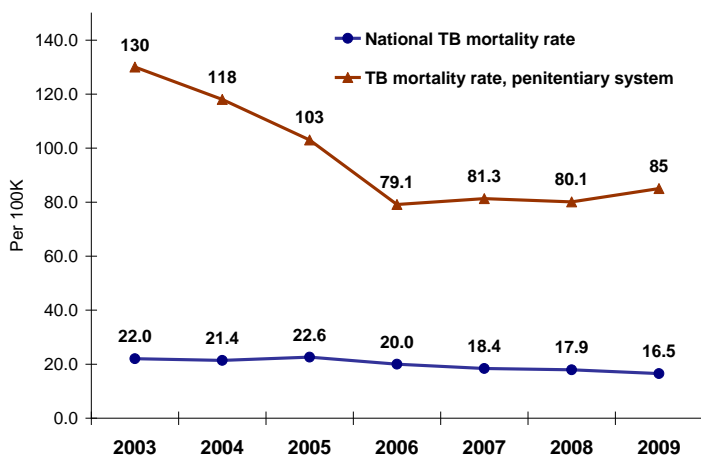
**Figure 1: New TB Cases in the Russian Federation (all health facilities), 1992-2009**



Source: Data from MOHSD's routine TB recording and reporting system.

- By 2008, 75% of new TB patients were receiving the standardized treatment regimen, up from 44% in 2004. The treatment success rate among TB cases registered for treatment was about 60%, still below the 85% recommended by WHO, due in large measure to the increase in the number of multiple-drug resistant TB cases. However, improved diagnosis and care hold the promise for better treatment success rates.
- TB mortality in the general population decreased by 25% between 2003 and 2009 (Figure 2). In prisons, TB deaths dropped by 35% over this period.
- Diagnosis of HIV infected people improved significantly and the percentage of HIV patients receiving treatment with anti retroviral drugs more than doubled between 2005 and 2008, reaching 60% of those in need of treatment as determined by CD4 count (a measure of the state of the immune system) and viral load tests (a measure of the severity of the viral infection). Expanded access to treatment contributed to the decrease in HIV-positive infants born to HIV-infected mothers, from 13.2% in 2003 to 10.6% in 2008.

**Figure 2: TB Mortality Rate in the Russian Federation**



### Lessons Learned

- The establishment of high level and thematic working groups for policy setting and coordination and the participation of key stakeholders in the implementation of project activities were crucial to securing ownership of new approaches and sustaining activities and gains.
  - A clear division of responsibilities among international agencies helped harmonize cooperation and maximize their impact in supporting the implementation of the national program.
  - Modernization of the public health laboratory network and improved knowledge and skills of health personnel were essential to facilitate adoption of new guidelines for TB and HIV control, and scale up treatment.
- The spread of drug-resistant TB (about 15% of new cases in 2009) and HIV/AIDS are a serious challenge to effective TB control in Russia. The provision of social support services (for example, free transportation between the home of the patient and the health center, food supplementation, etc.) and compliance by patients to the treatment regime is needed to prevent treatment interruptions and defaults during ambulatory treatment, particularly among the unemployed, homeless, alcoholics, and former prisoners. TB/HIV co-infection is also a growing problem among vulnerable population groups (for example, injecting drug users), demanding improved prevention and treatment efforts.
  - The strengthening of case registration and reporting systems, and improved technical capacity at different levels of the health system to monitor and evaluate TB detection and treatment outcomes using cohort data, are key institutional building blocks for improving program management and policy formulation.

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