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Brazilian response to tuberculosis: context, challenges and perspectives

Tuberculosis (TB) has affected mankind for more than 8,000 years. Before the mid-19th century TB was not recognized as a contagious disease and was attributable to several causes such as hereditary, miasmas, and other environmental and social determinants. But, in 1882, Robert Koch identified *Mycobacterium tuberculosis*, which allowed to defining TB as an infectious disease. Then blossoming biomedical research started its quest for vaccines and drug therapies. BCG vaccine was applied for the first time in humans in 1921. Years later, in 1944, streptomycin was successfully used in TB treatment and it was the starting point for a number of anti-TB drug therapies. These breakthroughs created new opportunities for TB prevention and treatment. However, in the 19th century, TB mortality in Europe was remarkably higher than that seen in Africa today. Yet a sharp decline in TB mortality was seen by the end of that century, long before the advent of modern preventive and therapeutic alternatives, most likely due to improved life conditions. Today, in developed countries, TB is a condition confined to population groups comprising immigrants from poor countries and other marginalized people (homeless, alcoholics, inmates, among others).

Although TB is a potentially curable and preventable disease, it has remained a public health concern in developing countries, including Brazil. Worldwide, it is estimated two billion people have latent TB infection and around 8.8 million new cases are diagnosed every year. In Brazil, about 80,000 cases and 6,000 deaths are reported every year. Owing to its immunosuppressive effect which makes people more susceptible to develop TB, HIV-AIDS epidemic, among other consequences, has contributed to increasing TB cases in many countries.

In children, BCG knowingly provides clear protection when given neonatally while, in adults, protection against TB clinical forms is highly variable worldwide, a phenomenon not yet understood. As vaccine is not consistently effective and the major source of TB infection is sick people, the best prevention available in health care is still early detection and treatment of cases. Untreated or inadequately treated cases can infect other people and thus perpetuate TB dissemination chain.

TB requires long-term complex treatment with the administration of several drugs for a period of time even after patients have clinically recovered. Treatment default is high and can produce drug-resistant forms of *M. tuberculosis*, which hinders disease control. The World Health Organization recommends implementation of the directly observed short-course treatment (DOTS) strategy for a fully effective treatment. In Brazil, the successful Family Health Program provides favorable opportunities for expanding access to health care and more effective detection and treatment of diseases such as TB.

Starting from 1999, the Brazilian Ministry of Health has set TB as a priority in the health agenda. TB control actions aims at diagnosing at least 90% of expected cases and curing at least 85% of diagnosed cases. The implementation of TB control actions in all municipalities is part of primary health care and local and state administrators are expected to plan and coordinate actions to assure TB control including the implementation of DOTS strategy.

Yet this course of action faces great challenges at all levels of health care and social organization: Brazil's huge territorial area marked by geographical and cultural differences between its regions; inadequately trained providers; lack of research to propose solutions to health care operations; modest involvement of society in TB control; lack of continual regular support to the National Program for Tuberculosis Control; no guarantee of universal, comprehensive and equal access to health care; all in a scenario of huge social inequalities and deprived life conditions of most Brazilian population. TB control is not only an indicator of health care quality but also of social justice.

This supplement approaches TB from several different perspectives within the framework of evaluation of the guidelines adopted in Brazil in the last ten years. In the light of all these subjects there is a clear need for the involvement of different actors – civil society, governments and administrators, universities and research centers. By jointly devising effective strategies and thus maximizing the contribution of each segment, within an expected reduction of social inequalities, TB control goals can be attainable in Brazil.