Opinion article

Can Brazil achieve the new World Health Organization global targets for tuberculosis control?

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Ending the global epidemic of tuberculosis (TB) by 2035 is the new and ambitious World Health Organization (WHO) strategy adopted in 2015.[1] The goals of the 'End TB Strategy', are: (i) 95% reduction in number of TB deaths; and (ii) 90% reduction in TB incidence rate between 2015 and 2035.[2]

Brazil achieved the targets of the Millennium Development Goals (MDG) for TB control before the 2015 deadline. The goal of reducing the TB mortality rate by half in comparison to 1990 rates was reached in 2011, and the number of deaths reported was close to 4,600, corresponding to 2.4 deaths per 100,000 inhabitants. The new WHO goals are more ambitious. They seek to end TB as a pandemic, i.e. to reduce incidence to less than 10 cases per 100,000 inhabitants, and to reduce the mortality rate by 95% by 2035. These goals are unlikely to be achieved without significant and profound changes in healthcare and social protection, as well as changes in the regional economic and political context. These are intersectorial actions that can contribute to the reduction of TB incidence and mortality.

Among the reasons for Brazil achieving the goals before 2015 is the implementation of the Family Health Strategy (FHS) with effect from the 1990s. This healthcare model within the Brazilian National Health System (SUS) recommends the reordering of services, establishing primary healthcare as the health system entry point. Providing care to individuals with TB in primary care has contributed to addressing the disease, through access to diagnosis, treatment and other tuberculosis-related care, all performed for free, i.e., without cost to the individual with TB.[3,4]

The FHS teams are responsible for directly observed therapy (DOT), an important strategy for reducing treatment abandonment rates, death and the development of multidrug-resistant tuberculosis (MDR-TB). A study carried out based on data from the Tuberculosis Notifiable Diseases Information System (SINAN-TB) showed a 25% reduction in these unfavorable outcomes thanks to DOT. However, only 51.5% of TB cases reported on SINAN were on DOT in 2011.[5]

Another important factor for the improvement in the control of the disease was the introduction in 2009 of treatment with a fixed-dose combination (FDC) of rifampicin, isoniazid, pyrazinamide and ethambutol (RHZE): RHZE-FDC. A study conducted in Brazil, comparing the standard dose with the fixed-dose combination, showed that the latter reduced the rate of treatment abandonment by 14% among new tuberculosis cases who began treatment between October 2009 and September 2010 in five cities surveyed.[6]

In addition, the Rapid Diagnostic Test (Xpert MTB/RIF) was implemented in 2014 in SUS in Brazil. A randomized clinical trial[7] conducted in two Brazilian state capital cities in 2012 assessed the implementation

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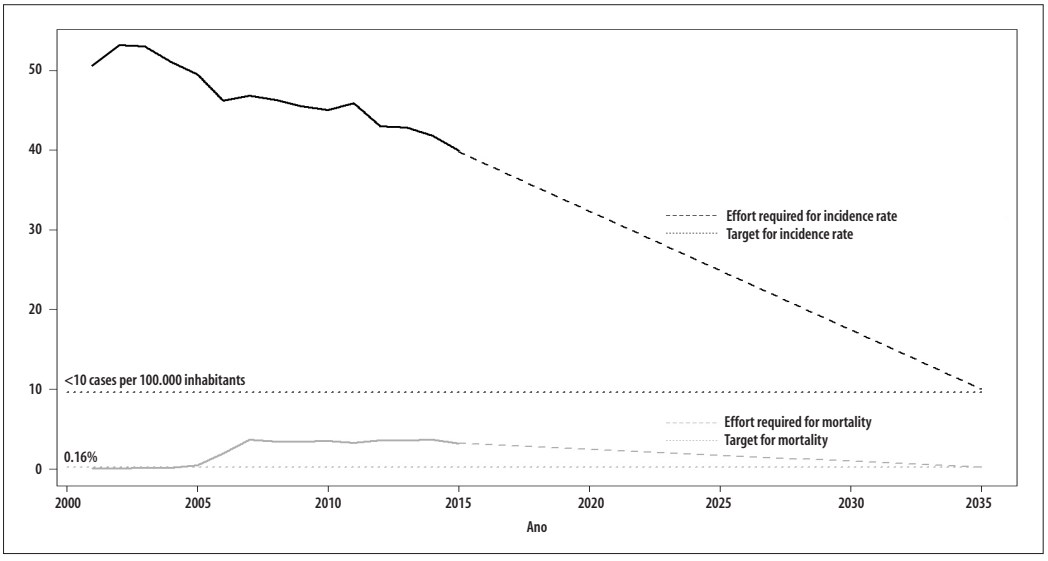
of Xpert MTB/RIF and found a 59% increase in the laboratory confirmed rate of pulmonary TB; however, the overall notification rate did not increase, and there was no change in the notification rate for those without a laboratory test result. The study also pointed to a reduction in the time taken to start treatment from 11.4 days [interquartile range (IQR) 8.5;14.5] to 8.1 days (IQR 5.4; 9.3) (= 0.04). Despite the improvement in the notification rate - only among laboratory confirmed cases - and the three-day reduction in beginning diagnosis, this new technology did not increase the pulmonary TB notification rate nor did it reduce the TB incidence rate. The latter is one of the main indicators for the achievement of the WHO goal.

Another critical point to observe lies in the convergence of the TB epidemic with epidemics of other communicable and non-communicable diseases,[8] such as human immunodeficiency virus (HIV) infection and diabetes *mellitus*. These comorbidities increase the risk of developing TB and worsen the progression of TB and its outcomes. Given that clinical management of TB occurs at the primary level of health care and that the convergence of epidemics imposes a degree of greater complexity on the diagnosis, treatment and monitoring of these individuals, a clinical approach is needed on other levels of healthcare, along with better management of care.

In addition, the social vulnerability of individuals with TB must be considered. A recent study linking the SINAN-TB database and the Single Registry (*Cadastro Único - CadÚnico*) database, suggests that those under treatment for TB and who are also enrolled in the Brazilian Program of conditional cash transfer, known as the Family Income Transfer Program (*Programa Bolsa Família* - PBF), obtained better results, reaching a proportion of cure 5.2% higher than the corresponding proportion among those not benefited by PBF.[9] In spite of the efforts to reduce the extent of TB-related inequalities among vulnerable groups and the general population, the impact of conditional cash transfers requires further confirmation in prospective studies.

In the light of the new WHO classification of the TB epidemic, Brazil no longer has a generalized epidemic, but rather a concentrated epidemic among some vulnerable populations: people living on the streets, individuals deprived of liberty, indigenous people, people living with HIV, among other groups, thus imposing a great challenge for healthcare services, since the clinical management of these groups requires interdisciplinary and intersectorial actions. In order to continue towards meeting the targets established by WHO and agreed to by the Ministry of Health, the need exists to maintain the trend of reducing TB incidence and improving indicators of its cure (Figure 1). In the absence of an



Source: Tuberculosis Notifiable Diseases Information System - SINAN-TB.

Figure 1 – Tuberculosis incidence rate (in black) and mortality (in Grey), Brazil (2001-2015) and targets to be achieved by 2035

effective vaccine to control the disease, TB-sensitive measures (TB-sensitive strategies) such as maintaining and intensifying political and economic efforts to reduce inequalities, by means of actions such as PBF and FHS, have shown themselves to be fundamental in addressing and controlling TB among vulnerable populations. It is also important that strategies be implemented aimed at reducing treatment abandonment, this being the main indicator of the failure of the strategy in Brazil. Income transfer programs, whether financial or otherwise, for individuals with TB (TB-specific strategies), as well as health sector actions to ensure that individuals who use or abuse alcohol and other drugs complete TB treatment, will be fundamental for achieving the goals.

Future research should focus on social determinants of TB, incorporating innovative methodologies for studying vulnerable populations and their clinical management in order to gain a better understanding of the impact of control measures on tuberculosis incidence and mortality. Both the targeting of efforts to reduce inequalities and also initiatives to improve existing strategies and make them more effective can bring Brazil closer to meeting the recommended goals, without the need to incorporate the latest and most expensive technologies.[10] As such, it is expected that Brazil will once more be able to celebrate the achievement of the WHO goals for the elimination of TB by 2035.

Authors' contributions

Maciel ELN and Reis-Santos B contributed to the conception and design of the article. Sales CMM, Maciel ELN, Reis-Santos B and Bertoldi AI contributed to drafting and critical revision of the manuscript. All the authors approved the final version and are responsible for all aspects of the study, ensuring its accuracy and integrity.

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