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## Political and epidemiological context

As part of the global efforts to meet the Millennium Development Goals (MDG), the Stop TB strategy, implemented between 1990 and 2015, made considerable progress in the fight against tuberculosis (TB). During this period, TB prevalence fell by 42%, and TB deaths by 47%.<sup>1</sup> These results were driven by increased investment by countries and international donors in scaling up access to TB diagnosis and treatment.

Nevertheless, following the 25-year MGD era, tuberculosis has become the communicable disease that most kills people worldwide and the leading cause of death among people living with HIV (PLWH), surpassing AIDS as the most lethal communicable disease of modern times. It is estimated that in 2016, 10.4 million people became ill and 1.7 million died because of TB (including 400,000 people co-infected with TB/HIV).<sup>2</sup>

Drug-resistant tuberculosis (DR-TB) is a growing problem. Multi-drug-resistant TB (MDR-TB) is the most prevalent among diseases having antimicrobial resistance (AMR). In 2016, less than 12% of DR-TB cases were cured.<sup>3</sup>

In response to this global emergency, an articulated set of actions is needed which go beyond epidemiological

surveillance. These include rapid and precise diagnosis to detect new cases and bacterial resistance, rapid and effective treatment for drug-sensitive and drug-resistant TB, adequate prevention measures – such as vaccination and treatment of latent TB –, as well as social protection and support measures for TB patients.

In order to make this global response feasible, the World Health Organization (WHO) approved, during the 2014 World Health Assembly, the End TB Strategy, which proposes a radical paradigmatic change in the fight against TB, with the aim of eliminating this disease as a public health problem: cut new TB cases by 90% and reduce TB deaths by 95% between 2015 and 2035, as well as eliminating the economic burden on families affected by the disease.<sup>4</sup>

Synergistically, in 2015 the United Nations launched the Sustainable Development Goals (SDG), the targets of which include reducing TB deaths by 90% by 2030.<sup>4</sup>

Although existing technologies play a key role, essential needs persist, especially those relating to DR-TB diagnosis and treatment and access to prevention measures. Mitigation of social determinants of health and social protection for the most vulnerable are imperative for meeting the global goals.

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## The End TB Strategy

The End TB Strategy brings a bold proposal for change in addressing TB, by proposing the elimination of the epidemic by 2035. It also includes clear and ambitious targets, which will only be achieved with innovation, investment and political determination.

The global targets are built on three pillars:

- Pillar 1: Integrated, patient-centred TB care and prevention;
- Pillar 2: Bold policies and supportive systems for those affected by TB; and
- Pillar 3: Intensified research and innovation.

Each pillar involves fundamental interventions to ensure that all people who have TB have access to diagnosis, treatment and prevention, without facing catastrophic expenditure or the worsening of their social status.

TB is generally the result of the weakening of the immune system caused by diseases such as AIDS or diabetes, immunosuppressive drugs, aging or other co-morbidities and habits, such as alcohol drinking or the use of licit and illicit drugs. Moreover, it principally affects people made vulnerable by social and economic inequalities. As a multiple-cause disease, TB requires a multisectoral response.

## The synergy of global policies

For the first time ever, a synergy of global policies to end TB is taking place. The Universal Health Coverage, the AMR and the SDG agendas are aligned. Universal coverage is a key element for achieving the global goals, by requiring governments to take on responsibility for ensuring universal access to health services.

The SDG agenda promotes equity, justice, human rights and the elimination of poverty. Meeting SDG targets is fundamental for providing better services to highly vulnerable people and thus contributing to addressing TB.

## Investments needed to accelerate TB elimination

In order to eliminate TB as a public health problem, the End TB Strategy emphasizes the need for innovation and research in order to accelerate the incorporation of existing tools and the introduction of

innovative instruments. While the pipeline promises new tools, changes to TB diagnosis and treatment have been slow. Longstanding technologies and drugs are still fundamental.

New DR-TB medication was conditionally approved in 2012 and 2014 – the first for more than 40 years –, but its adoption has been slow: less than 10% of eligible patients are receiving the new drugs. WHO, country authorities and global partners will need to actively support innovation in order for the full potential of these new tools to be explored.

The End TB Strategy also emphasizes an integrated approach to achieving its goals, e.g. detecting and treating active TB, as well as averting new cases; i.e. enhanced diagnosis and treatment need to be complemented by prevention strategies.

Integrated approaches are important for TB elimination. Approximately 85% of TB cases are pulmonary, and patients have general clinical symptoms which result in them seeking services such as primary health care, maternal and infant health care (in the case of children) or general practice clinics. Furthermore, one third of HIV-related deaths result from TB. As such, service integration, especially HIV services, needs to be prioritized.

Short-term investments should therefore concentrate on TB testing, treatment and prevention, whilst also using integrated approaches.

## Diagnosis

Detecting 4.1 million undiagnosed cases globally is a priority for the End TB Strategy. It is crucial to overcome the challenges to diagnosis, including detection of cases of latent infection. In this sense, two major challenges have been identified: i) development of a point-of-care test for detecting TB among highly vulnerable people, making the most of the opportunity to diagnose the disease upon first contact with the health system; and ii) development of a rapid drug susceptibility test, to change culture and inform the treatment algorithm.

The response to resistance is intrinsically linked to the problem of diagnosis. Adopting new diagnostic tests and universalizing susceptibility tests will contribute to detection and adequate treatment of latent, sensitive and resistant TB.

The number of ill people and shortage of health professionals cannot justify susceptibility tests not

being performed; on the contrary, these should replace empirical treatment and inform treatment algorithms for treatment of resistant cases, especially for populations at increased risk.

### Treatment

New shorter, less toxic and more efficacious treatment schemes have been tested, with promising results, combining new drugs with medication known to be effective for resistant TB treatment. It is expected that in the coming years there will be more efficacious, safer and accessible schemes, so as to drastically reduce the number of schemes currently in existence and reach an algorithm with a low number of treatment schemes.

### Prevention

Prevention is a fundamental strategy for eliminating TB. Without preventing latent TB reactivation and without the existence of pre- and post-exposure vaccine, it is unlikely that meeting global goals will be possible.

New preventive, short-duration and accessible treatment should be available in the near future. Its rapid incorporation will be fundamental for eliminating TB. As vaccines are still a far-off promise, addressing latent infection must be prioritized. In Brazil, children, household contacts and PLWHA must be focused. Another area to be explored are adherence strategies, linking diagnosis to prevention and treatment retention.

### References

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### Brazil and global leadership

Brazil has been a global reference in TB control. The articulation of public social protection policies, such as the Brazilian National Health System (*Sistema Único de Saúde* - SUS) and the Family Allowance Programme (*Programa Bolsa Família* - PBF), has proven itself to be successful in controlling TB, leading the country to achieve the MDG targets in advance of the stipulated deadline.

Out of 30 countries on the TB burden list, Brazil has the lowest incidence and mortality rates.<sup>2</sup> The Brazilian health system has sufficient technical and structural conditions to eliminate the disease; universal coverage and access to diagnosis and treatment are offered free of charge by SUS. In other words, with political determination and articulation of intersectoral actions, the conditions are in place for Brazil to take a leadership position. There is, however, no time to be lost.

When aiming to eliminate TB, it is more necessary than ever for us to prioritize investments in Health structure, intersectoral articulation, encouragement of civil society participation, as well as public policies to combat social determinants of the disease.

The matter at issue is either to live endlessly with the disease that most symbolizes social exclusion, or lead the global movement to eliminate TB. Brazil has all the conditions needed to play this leadership role.