



## Editorial

# Roadmap for Tuberculosis Elimination in Latin America and the Caribbean<sup>☆</sup>



## Hoja de ruta para la eliminación de la tuberculosis en Latinoamérica y el Caribe

Carlos A. Torres-Duque,<sup>a,\*</sup> Zhenia M. Fuentes Alcalá,<sup>b</sup> Adrián Rendón,<sup>c</sup> Giovanni Battista Migliori<sup>d</sup>

<sup>a</sup> Fundación Neumológica Colombiana, Universidad de La Sabana, Bogotá, Colombia

<sup>b</sup> Hospital José Ignacio Baldó, Caracas, Venezuela

<sup>c</sup> Hospital Universitario de Monterrey, Monterrey, Mexico

<sup>d</sup> World Health Organization Collaborating Centre for Tuberculosis and Lung Diseases, Maugeri Care and Research Institute, Tradate, Italy

### Introduction

The WHO American region (North America, Latin America and the Caribbean) was the first to meet the Millennium Development Goals 2015 target of reducing the mortality and the incidence of tuberculosis (TB) by 50% from 1990 rates. Despite this achievement, the annual rate of decline in the incidence of TB has slowed down in recent years, particularly in Latin America and the Caribbean (LAC), where TB remains a public health problem with a reported incidence of 32.8 cases/100 000 inhabitants and an estimated incidence of 40.5 in 2015. These rates exceed the overall average of 27.1/100 000 for the region, but remain lower than the world average, estimated at 141.9/100 000 inhabitants.<sup>1</sup> The proportion of patients presenting combined TB and HIV infection was 11.8%, and 4508 cases of drug resistance (58.6% of the estimated number) were reported. The nature of the TB problem varies widely in this subregion,<sup>2</sup> and few countries fulfill the criterion of low incidence (<10 cases/100 000 inhabitants). Those which do are Costa Rica, Cuba, Jamaica, Puerto Rico, and some other Caribbean countries and territories.

The World Health Organization recently launched their Global strategy and targets for tuberculosis prevention, care and control after 2015 (End TB Strategy)<sup>3</sup> and Toward tuberculosis elimination: An action framework for low-incidence countries,<sup>4</sup> but the LAC sub-region is finding it a challenge to implement these programs due to the variability of conditions in each country and territory.

The elimination of TB as a public health problem is defined as an annual incidence of less than 1 case per million inhabitants. For operational reasons and to make the best use of resources, measures aimed to eliminating TB should be directed at low-incidence regions instead of being applied indiscriminately in all

countries and territories.<sup>4</sup> The 2016-2019 Plan of Action for the Prevention and Control of Tuberculosis of the Pan American Health Organization<sup>2</sup> is aimed to reduce TB mortality and morbidity but is not focused on the actions for TB elimination in which some low-incidence LAC countries have already begun to address.<sup>5-7</sup>

Guided by the "Toward tuberculosis elimination: An action framework for low-incidence countries"<sup>4</sup> document, the Latin American Thoracic Society (ALAT) with the support of the European Respiratory Society (ERS) developed a "Roadmap for Tuberculosis Elimination in Latin America and the Caribbean". This program was discussed in the VIII Meeting of Low-Incidence Countries convened by the Pan American Health Organization,<sup>7</sup> and forms part of the ALAT/ERS LATSINTB project (Latin America without TB). This editorial summarizes TB elimination action areas; readers are encouraged to consult the full text, available below as supplementary material ([doi:10.1016/j.arbres.2017.07.004](https://doi.org/10.1016/j.arbres.2017.07.004)), for more detailed information. The introduction of locally oriented national and regional strategies, practice guidelines and operation manuals require mechanisms for the implementation, follow-up, monitoring and evaluation of elimination actions.

### Priority Action Areas for the Elimination of Tuberculosis in Latin America and the Caribbean

Countries with a low incidence of TB are characterized by a low rate of transmission among the general population, occasional outbreaks, higher concentrations in vulnerable populations and the elderly, and a significant impact from migrations.<sup>4</sup> Actions for the elimination of TB give priority to reaching vulnerable populations, detecting and treating latent TB, implementing migration policies, correcting social determinants, and fostering political commitment to universal access to high-quality services.<sup>4,5</sup>

Low-incidence countries in LAC are enhancing their strategic plans and activities aimed to elimination. In recent years, several meetings have been held to set objectives and goals<sup>5-7</sup> that can be implemented under the 8 priority action areas defined by the Elimination Framework<sup>4</sup>, the which the "Roadmap for TB Elimination

<sup>☆</sup> Please cite this article as: Torres-Duque CA, Fuentes Alcalá ZM, Rendón A, Migliori GB. Roadmap for tuberculosis elimination in Latin America and the Caribbean. Arch Bronconeumol. 2018;54:7-9.

\* Corresponding author.

E-mail address: [ctorres@neumologica.org](mailto:ctorres@neumologica.org) (C.A. Torres-Duque).

in Latin American and the Caribbean” recommend to adapt for the LAC, as follows:

### 1. Ensure Political Commitment, Funding and Access to High Quality Services

- (a) Increased political commitment to provide adequate resources.
- (b) Governmental coordination of national strategic plans.
- (c) Health systems and social protection with more capacity and improved quality.
- (d) Community participation.

Elimination actions are costly because they require early diagnosis and identification of resistance patterns in populations that are hard to reach and difficult to monitor. Political commitment must increase, funding strategies must be developed,<sup>4–6</sup> and health and social protection systems must be improved.<sup>8</sup> The participation of the community is vital in TB, as social determinants can represent both the origin of the problem and the barrier to its solution.<sup>5,9</sup>

### 2. Focus on Vulnerable, Hard-to-Reach Populations

- (a) Identification and characterization of vulnerable populations.
- (b) Intersectoral intervention in socioeconomic determinants.
- (c) Fostering coordination across health programs.

If TB is to be eliminated, vulnerable populations with a greater risk of acquiring or developing TB<sup>4</sup> must be identified and targeted, e.g., HIV carriers, illicit drug users, prisoners, patients with immune systems compromised by disease or medications, homeless people, migrants, indigenous individuals, people of African descent, and healthcare personnel. The heterogeneous situation in LAC means that each country must identify these factors individually.<sup>5–7</sup> At-risk populations tend to concentrate in large cities, a setting that can hinder the elimination of TB, but LAC has shown significant progress in meeting this challenge.<sup>10</sup> It is important that both general socioeconomic determinants of TB, such as underinvestment in health and poor accessibility to services,<sup>11</sup> and determinants that apply particularly to vulnerable populations are addressed. Coordination across the various health programs is essential for managing HIV coinfection<sup>12</sup> and other comorbidities, and for the early detection and monitoring of TB.

### 3. Address Immigration and Cross-Border Issues

- (a) Development of TB immigration policies that protect the human rights of immigrants.
- (b) Screening for active and latent TB in immigrants.
- (c) Access for immigrants to diagnosis and treatment in host countries.

The dynamics of migration in LAC have changed in recent decades, with an increase in South–South migration.<sup>13</sup> Neighboring countries may have very different TB profiles, seriously affecting low-incidence countries.

### 4. Undertake Screening and Guarantee Treatment for Active and Latent Tuberculosis in Contacts and At-Risk Populations

- (a) Improved contact tracing.
- (b) Expanded capacity for diagnosis, treatment, and follow-up of active and latent TB.
- (c) Early identification and management of outbreaks.

Case-finding and treatment of latent TB is essential. Emphasis must be placed on children younger than 5 years of age, contacts of TB patients, and immunocompromised individuals.

### 5. Optimize Prevention and Management of Resistant Tuberculosis

- (a) Access to susceptibility testing to first-line drugs for all TB patients and to second-line drugs for patients who have already been treated or who show initial drug resistance.
- (b) Additional support for laboratories with emphasis on molecular testing, such as GeneXpert.
- (c) National guidelines for drug-resistant TB and provision of drugs.
- (d) Epidemiological resistance surveillance.
- (e) Creation of expert-approved programs to guide the management of drug-resistant TB.

Drug resistance, particularly multi-drug resistance, is a growing problem in LAC, and one that threatens TB elimination.<sup>14</sup> Use of the 2016 update guidelines of the World Health Organization is recommended. These guidelines advocate the use of shorter regimens for the management of multi-drug resistant TB.<sup>15</sup>

### 6. Ensure Monitoring, Evaluation, and Case-Based Data Management

- (a) Improved notification using individual registry platforms.
- (b) Implement data quality monitoring systems.
- (c) Definition of indicators to facilitate monitoring, evaluation and appropriate decision-making for improvement.

### 7. Promote Investment in Research and Innovation

- (a) Support and backing for the creation of TB research groups and networks.
- (b) Definition of research priorities with emphasis on operations research.
- (c) Mobilization of resources for research and innovation.
- (d) Rapid translation of research results into TB action programs and public policy.

### 8. Support Global Plans for Prevention, Care and Control of Tuberculosis

- (a) Globally interconnected actions coordinated across countries, sectors, health programs and disciplines.
- (b) TB as a national health priority with public backing and visibility.
- (c) Participation in global surveillance, monitoring and evaluation.

## Advances in Low-Incidence Countries in Latin America and the Caribbean

Although some wide gaps remain, low-incidence countries in LAC have made significant progress in actions aimed to vulnerable populations, screening of active and latent TB, diagnosis and treatment of resistant TB, surveillance and data systems, and monitoring and evaluation programs.<sup>5–7</sup> Areas in which less progress has been made, and where urgent action is required, include care of immigrants, investment in research, and increased political commitment to funding.

## Indicators for Monitoring and Evaluation

In the VIII Meeting of Low-Incidence TB Countries in the Americas,<sup>7</sup> the main indicators outlined in the Pan American Health

**Table 1**  
Main Impact and Follow-Up Indicators.

	2025 Target (%)
<i>Impact indicators</i>	
Reduction of TB mortality compared to 2015	75
Reduction of TB incidence compared to 2015	50
Proportion of families affected by catastrophic costs	0
<i>Implementation indicators</i>	
TB treatment coverage	≥90
TB treatment success rate	≥90
TB-affected households that experience catastrophic costs due to TB	0
Newly notified TB patients diagnosed using WHO-recommended rapid tests	≥90
Latent TB infection treatment coverage	≥90
Contact investigation coverage	≥90
Drug susceptibility coverage for TB patients	100
Treatment coverage, new TB drugs	≥90
Documentation of HIV status among TB patients	≥90
Case fatality ratio	≤5
Compliance with annual budget for TB elimination plan development	100
Compliance with monitoring and evaluation actions	100

Organization Action Plan<sup>2</sup> and 2014–2019 Strategic Plan<sup>16</sup> were adopted (Table 1). Additional indicators were percentage of compliance with the annual budget for elimination actions and the plan for monitoring and evaluating activities. Milestones, targets and indicators for each of the 8 priority action areas must be adapted to each country and territory.

#### Annex A. Authors of the full “Roadmap for Tuberculosis Elimination in Latin America” document

Carlos A. Torres-Duque, Zhenia M. Fuentes Alcalá, Adrián Rendón, Domingo Palmero, Carlos E. Awad García, Miguel Ángel Salazar, Margareth Dalcolmo, Lia D’Ambrosio, Raquel Duarte and Giovanni Battista Migliori.

#### Appendix B. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.arbr.2017.11.012](https://doi.org/10.1016/j.arbr.2017.11.012).

#### References

- World Health Organization. Global tuberculosis report 2016. WHO/HTM/TB/2016.13. Geneva: World Health Organization; 2016. Available from: [http://www.who.int/tb/publications/global\\_report/en/](http://www.who.int/tb/publications/global_report/en/) [accessed 16.10.16].
- Organización Panamericana de la Salud. Plan de acción para la prevención y el control de la tuberculosis en las Américas, 2016–2019. 54.o Consejo Directivo y 67.a Sesión del Comité Regional de la OMS para Las Américas; October 2015. Available from: [www.paho.org/tuberculosis](http://www.paho.org/tuberculosis) [accessed 30.11.15].
- World Health Organization. The End TB Strategy. Global strategy and targets for tuberculosis prevention, care and control after 2015. Available from: [http://www.who.int/tb/post2015\\_strategy/en/](http://www.who.int/tb/post2015_strategy/en/) [accessed 10.09.15].
- Lonnroth K, Migliori GB, Abubakar I, D’Ambrosio L, de Vries G, Diel R, et al. Towards tuberculosis elimination: an action framework for low-incidence countries. *Eur Respir J*. 2015;45:928–52.
- Organización Panamericana de la Salud. VII Reunión Regional de países de baja incidencia de tuberculosis de las Américas. Bogotá, abril de 2015. Available from: [www.paho.org](http://www.paho.org) [accessed 10.04.16].
- Herrera T. VI Reunión de países de baja prevalencia de tuberculosis en las Américas. *Rev Chil Enferm Respir*. 2013;29:108–12.
- Rendon A, Fuentes Z, Torres-Duque CA, Granado MD, Victoria J, Duarte R, et al. Roadmap for tuberculosis elimination in Latin American and Caribbean countries: a strategic alliance. *Eur Respir J*. 2016;48:1282–7.
- Siroka A, Lönnroth K, Ponce N. The impact of social protection on tuberculosis rates: a global analysis. *Lancet Infect Dis*. 2016;16:473–9.
- World Health Organization. Community involvement in tuberculosis care and prevention: towards partnerships for health: guiding principles and recommendations based on a WHO review; 2008. Geneva. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK143698/> [accessed 30.06.16].
- Pan American Health Organization. Framework for tuberculosis control in large cities of Latin America and the Caribbean; 2016. Washington. Available from: <file:///C:/Users/Administrador/Downloads/2016-cha-tb-framework-big-cities.pdf> [accessed 28.02.17].
- Munayco CV, Mújica OJ, León FX, Granado MD, Espinal MA. Social determinants and inequalities in tuberculosis incidence in Latin America and the Caribbean. *Rev Panam Salud Pub*. 2015;38:177–85.
- Organización Mundial de la Salud. Política de la OMS sobre actividades de colaboración TB/VIH. Guías para programas nacionales y otros interesados directos; 2012. Ginebra. Available from: [http://www.who.int/tb/publications/2012/tb\\_hiv\\_policy\\_9789241503006/en](http://www.who.int/tb/publications/2012/tb_hiv_policy_9789241503006/en) [accessed 10.04.16].
- Cordoba R. Rutas y dinámicas migratorias entre los países de América Latina y el Caribe (ALC), y entre ALC y la Unión Europea. Bruselas: Organización Internacional para las Migraciones (OIM); 2012. Available from: [http://publications.iom.int/system/files/pdf/rutas\\_migratorias\\_final.pdf](http://publications.iom.int/system/files/pdf/rutas_migratorias_final.pdf) [accessed 30.01.17].
- Organización Panamericana de la Salud. Tuberculosis multidrogorresistente (TB-MDR) en las Américas; 2016. Evaluación de cohortes a 2012. Available from: [http://www.paho.org/hq/index.php?option=com\\_topics&view=article&id=59&Itemid=40776&lang=en](http://www.paho.org/hq/index.php?option=com_topics&view=article&id=59&Itemid=40776&lang=en) [accessed 12.08.16].
- World Health Organization. WHO treatment guidelines for drug-resistant tuberculosis. 2016 update. Geneva: World Health Organization; 2016. Available from: <http://www.who.int/tb/areas-of-work/drug-resistant-tb/MDRTBguidelines2016.pdf> [accessed 10.03.16].
- Organización Panamericana de la Salud. Plan estratégico de la OPS 2014–2019. Washington: OPS; 2014. Available from: [www.paho.org/tuberculosis](http://www.paho.org/tuberculosis) [accessed 12.02.16].