GLOBAL INVESTMENTS IN TUBERCULOSIS RESEARCH AND DEVELOPMENT

PAST, PRESENT, AND FUTURE

A POLICY PAPER PREPARED FOR THE FIRST WHO GLOBAL MINISTERIAL CONFERENCE ON ENDING TUBERCULOSIS IN THE SUSTAINABLE DEVELOPMENT ERA: A MULTISECTORAL RESPONSE

END TB

World Health Organization

Global investments in Tuberculosis research and development: past, present and future. A policy paper prepared for the first WHO global ministerial conference on ending tuberculosis in the sustainable development era: a multisectoral response

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A policy paper prepared for the First Global Ministerial Conference on Ending TB in the Sustainable Development Era

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ABBREVIATIONS

ACTG	AIDS Clinical Trials Group
AIDS	acquired immunodeficiency syndrome
AMR	antimicrobial resistance
BCG	bacille Calmette–Guérin
BRDPI	biomedical research and development price index
BRICS	Brazil, Russian Federation, India, China and South Africa
CAGR	compound annual growth rate
CDC	Centers for Disease Control and Prevention (United States)
CEWG	WHO Consultative Expert Working Group on Research and Development: Financing and Coordination
CHIM	controlled human infection model
CMV	cytomegalovirus
CPI	consumer price index
DALY	disability-adjusted life-year
DNA	deoxyribonucleic acid
DOD	Department of Defense (United States)
DR-TB	drug-resistant TB
DS-TB	drug-susceptible TB
EDCTP	European and Developing Countries Clinical Trials Partnership
EU	European Union
FDA	Food and Drug Administration (United States)
FDC	fixed-dose combination
FIND	Foundation for Innovative New Diagnostics
Gates	Bill & Melinda Gates Foundation
GDP	gross domestic product
GERD	gross domestic expenditure on research and development
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HIV	human immunodeficiency virus
LPA	line probe assays
LTBI	latent TB infection
MDR-TB	multidrug-resistant TB
MTB	Mycobacterium tuberculosis
NCE	new chemical entity
NIH	National Institutes of Health (United States)
NTP	national TB programme
OR/IR	operational and implementation research
PEPFAR	US President's Emergency Plan for AIDS Relief
POI	prevention of infection
R&D	research and development
RCT	randomized controlled trial
SAMRC	South African Medical Research Council
SDG	Sustainable Development Goal
TAG	Treatment Action Group
TB	tuberculosis
TBTC	Tuberculosis Trials Consortium
The Union	International Union Against TB and Lung Disease
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
United Kingdom	United Kingdom of Great Britain and Northern Ireland
US	United States
USAID	United States Agency for International Development
USAMRIID	United States Army Military Research Institute of Infectious Diseases
USPHS	US Public Health Service
WHO	World Health Organization
XDR-TB	extensively drug-resistant TB

FOREWORD

Research is the sine qua non to pursue substantial improvements in health outcomes: every diagnosis, intervention and treatment carried out in tuberculosis (TB) programmes has been conceived and developed through scientific research. Simply put, research translates into health benefits every day, with wider (and usually underestimated) positive benefits trickling down to create further social and economic well-being. In the WHO End TB Strategy, we make the case for TB research being central to improving patient health, and positively transforming health-care services with better interventions and products. In doing this, we need to consider three main issues. The first is that an estimated 10 million people contract TB disease every year, most of them in poor, underserved areas, and all of them need to have their safety and well-being protected. Second, only one third of investment needs for TB research and development are currently met – a situation that hampers the development of new and better tools for detecting, treating and preventing TB. Third, what sets 2017–2018 apart is our ability, through two forthcoming unprecedented high-level meetings, to secure commitment from Member States and the research community at large in addressing critical impediments to TB R&D. Hence, now it is a critical time to articulate what we need from TB R&D.

Together with our various partners, academics and civil society groups, we have developed a policy paper on TB R&D for use in the context of the "WHO's First Global Ministerial Conference on Tuberculosis in the Sustainable Development Era – A Multisectoral Response" in Moscow. This document aims to articulate a coherent vision of the research needs to end TB and elaborates on the funding and structural requirements that are necessary to operationalize this vision. It describes how some of the research funded in the past has delivered benefits to patients and influenced policy- and decision-making, but also how little is being invested in TB R&D in comparison with other diseases, such as HIV and malaria, that also affect poor populations. The paper shows that, despite significant progress, previous investments were not sufficient to warrant success in tackling difficult challenges, such as multidrug-resistant TB (MDR-TB), expedited development of new and improved tools, and effective deployment of such tools. To tackle these challenges, the present policy paper recommends the development of a global strategy for TB Research to foster collaboration, improve efficiency and increase R&D financing. The strategy, will serve as a coherent source of direction so the opportunities commencing from the forthcoming meetings are used optimally.

Further findings from this report are expected to inform the debate at both national and global levels on prioritizing the policy approaches that are urgently needed to advance TB R&D in the era of the SDGs.

Since it is our shared responsibility to foster TB R&D at all levels (national, regional and global) and lay the foundations for the speedy development of new tools and strategies, we need to take tangible steps to increase our TB R&D commitments. Such steps include increasing research funding & capacity, reducing regulatory impediments in health research, and encouraging greater public, private and civil society engagement to facilitate equitable and affordable access to new diagnostics, medicines and vaccines.

All relevant stakeholders – including governments, industry, nongovernmental organizations, academics and civil societies at large – should continue to explore ways to support innovations that address the unique set of scientific, economic and regulatory challenges presented by TB, while promoting access to affordable treatment and prevention.

The two forthcoming high-level meetings offer a unique and exciting opportunity for Members States, partners, stakeholders and the overall TB community at large to move forward and foster innovative R&D policies that can promote the rapid achievement of the WHO End TB Strategy targets as well as the relevant SDGs target of ending the TB epidemic.

Through our united efforts, we must echo the pledge of the SDGs to "Leave No One Behind". This begins with reinvigorated research as the basis for innovation.

Dr Mario Raviglione

Director, Global TB Programme
World Health Organization

EXECUTIVE SUMMARY

Tuberculosis (TB) is the most lethal infectious disease in human history, and it remains the leading cause of death from a single infectious agent globally. Drug-resistant forms of TB are responsible for a quarter of annual deaths due to antimicrobial resistance (AMR) and, if left unchecked, by 2050 it will claim millions of lives and cause the global economy to incur losses worth billions of dollars. The present and future threat that TB poses to human health is mainly a consequence of the enormous neglect the TB research field has experienced over the past several decades. Reversing this neglect and ending the TB epidemic by 2030 – as called for by the United Nations Sustainable Development Goals (SDGs) and WHO End TB Strategy – will require a decisive commitment by all countries and stakeholders to increase their support for TB research and innovation.

A renewed, global commitment to TB research and development

The analyses of the past decade of TB research funding presented in this policy paper make clear that past and present expenditures on TB R&D are wholly inadequate when measured against these ambitions. TB accounts for nearly 2% of disability-adjusted life-years (DALYs) and 2% of deaths globally, but receives only 0.25% of the estimated US$ 265 billion spent on medical research annually. TB research receives less support than other global health threats such as HIV and malaria, both in absolute terms and relative to its share of DALYs and premature mortality. Annual funding for TB R&D has not grown appreciably since 2009 and has even lost ground in the face of inflation. Moreover, funding is highly concentrated: 30 institutions from a handful of countries account for over 90% of TB R&D expenditures in any given year. Declining investments by industry over the past 5 years, coupled with flat expenditures from major public and philanthropic funders, mean that there