International Journal of Infectious Diseases 56 (2017) 21–24

Contents lists available at ScienceDirect

International Journal of Infectious Diseases

journal homepage: www.elsevier.com/locate/ijid

Funding for tuberculosis research—an urgent crisis of political will, human rights, and global solidarity

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ARTICLE INFO

Article history:
Received 15 November 2016
Accepted 20 November 2016

Corresponding Editor: Eskild Petersen, Aarhus, Denmark

Keywords:
Tuberculosis research
Advocacy
Human rights
Funding

Tuberculosis (TB) killed more people in 2015 than any other single infectious agent, but funding for research to develop better prevention, diagnosis, and treatment methods for TB declined to its lowest level in 7 years. TB research and development (R&D) is woefully underfunded, a situation best viewed as a crisis of political will and a failure on the part of governments to see unmet innovation needs in the TB response as a human rights issue requiring immediate action. Over 60% of available money for TB R&D comes from public sources, and 67% of public money comes from a single country: the USA. The election of Donald Trump to the US presidency in November 2016 has introduced great uncertainty into the support that science generally, and TB research in particular, will receive in the coming years. Advocacy on the part of all actors—from civil society to TB-affected communities to scientists themselves—is urgently needed to increase US government support for TB research moving forward.

1. Introduction

In 2015, tuberculosis (TB) killed 1.8 million people and caused 10.4 million to fall ill, yet funding for TB research and development (R&D) fell by US$53.4 million from 2014.[1] This decline, reported by the Treatment Action Group (TAG) in its 11th annual report on TB research funding trends, caused global spending on TB R&D to fall to $620.6 million, its lowest level since 2008.[2] TB is preventable and curable with available technologies, but the ascendancy of TB to the world's leading cause of death from a single infectious agent makes it clear that eliminating TB will depend on accelerating research and innovation to develop better prevention, diagnosis, and treatment methods.

The juxtaposition of rising estimates of TB mortality and morbidity and diminishing investments in TB research indicates that governments have yet to mobilize behind the World Health Organization (WHO) End TB Strategy, which has set targets of reducing TB deaths by 95% and TB incidence by 90% by 2035.[3] The End TB Strategy warns that new tools to fight TB must be introduced no later than 2025 in order to meet these targets, yet research by TAG shows that funding for TB R&D is flagging. TAG has conducted a global survey of TB R&D funding each year since 2005, the methodology for which is described in detail in its 2016 report (*2016 report on tuberculosis research funding trends, 2005–2015: no time to lose*).[2] Total funding for TB R&D has never exceeded $700 million per year since 2005 and has stagnated since 2009, declining in three of the last five years—by $36.5 million in 2012, $12.3 million in 2014, and $53.4 million in 2015 (see Figure 1).[2] These numbers point to an acute absence of political will setting back the TB response; in the words of one TB activist, Lynette Mabote, "there can be no end to TB without an end to political indifference in [its] R&D agenda".[4]

2. Funding for TB research and human rights

The divergence between the size of the TB epidemic and funding for the R&D required to overcome TB also points to the failure of governments to see unmet innovation needs in the TB response as a human rights crisis requiring immediate action. Under international human rights law, governments are obligated to uphold the human right of everyone to enjoy the benefits of scientific progress and its applications (hereafter the 'right to science'). This right first appeared in Article 27 of the Universal Declaration of Human Rights and is set forth in detail in Article 15 of the International Covenant on Economic, Social and Cultural Rights (ICESCR).[5,6] Although the right to science remains less well defined than other related human rights (e.g., the right to health), a growing normative consensus on its meaning points toward the obligation of governments to fulfill the right by directing public funding in a 'purposive development' of science and technology,

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http://dx.doi.org/10.1016/j.ijid.2016.11.412

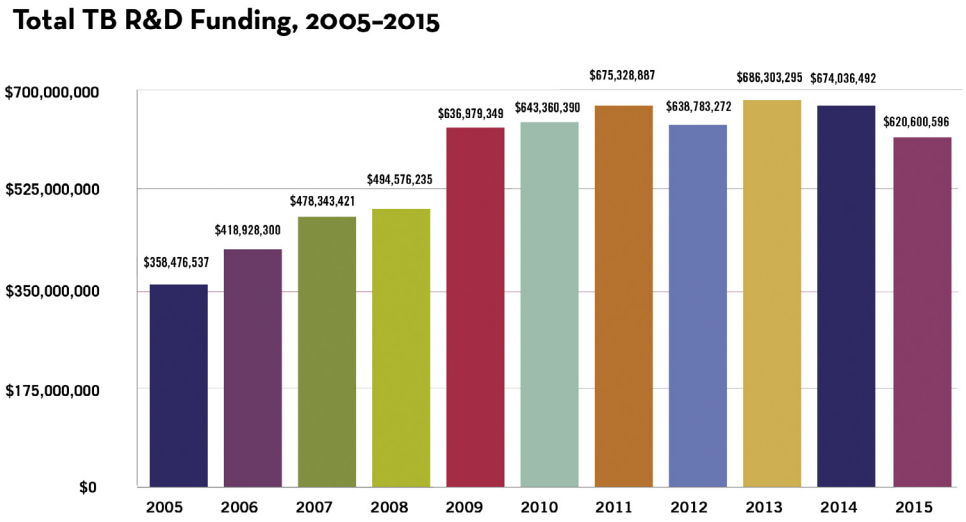

Figure 1. Total TB R&D Funding, 2005–2015.

particularly to benefit marginalized or vulnerable groups.[7] In addition to spurring the development of science and technology through public investment, governments must ensure that all people can enjoy the benefits of scientific progress, without discrimination, including tangible applications of innovation (e.g., new tools to fight disease).[8] These activities have been summarized as a dual obligation to both develop and diffuse science.[9,10]

As the slow scale-up of treatment for drug-resistant TB (DR-TB) has illustrated, the diffusion component of the right to science has been imperfectly honored. An estimated 80% of people with DR-TB receive no treatment, and new TB drugs bedaquiline and delamanid have reached only a fraction of the people who are eligible to receive them under WHO guidance.[1,11] The struggle to secure treatment for all people with DR-TB shows how scientific advancement and access to its benefits is a prerequisite for the realization of other rights, such as the right to health (e.g., ICESCR Article 12) and the right to life (e.g., Article 6 of the International Covenant on Civil and Political Rights).

The challenges to diffusion, however, begin with development and cannot be separated from the grave underfunding of TB research.[9] In addition to the low level of funding, TB research sits in the precarious position of relying on a handful of donors for the majority of its support. From 2011 to 2015, two institutions—the US National Institutes of Health (NIH) and the Bill & Melinda Gates Foundation (BMGF)—contributed 57% of all money spent on TB research globally.[2] With the notable exception of the BMGF, government financing underwrites the bulk of TB R&D. Pharmaceutical industry investments in TB R&D declined by 40% over the last 5 years, dropping from $145 million in 2011 to $87 million in 2015 (see Figure 2).[2] In 2015, public institutions contributed 63% of money for TB research, and 67% of public funding came from the government of the USA. Total US government investment of $265 million in TB R&D in 2015 was seven times greater than the $37 million spent by the UK, the second-largest contributor. A similar degree of concentration applies within different categories of TB research.[2] Awards from the NIH comprised 68% of TB basic science funding in 2015, and the NIH and the BMGF together accounted for

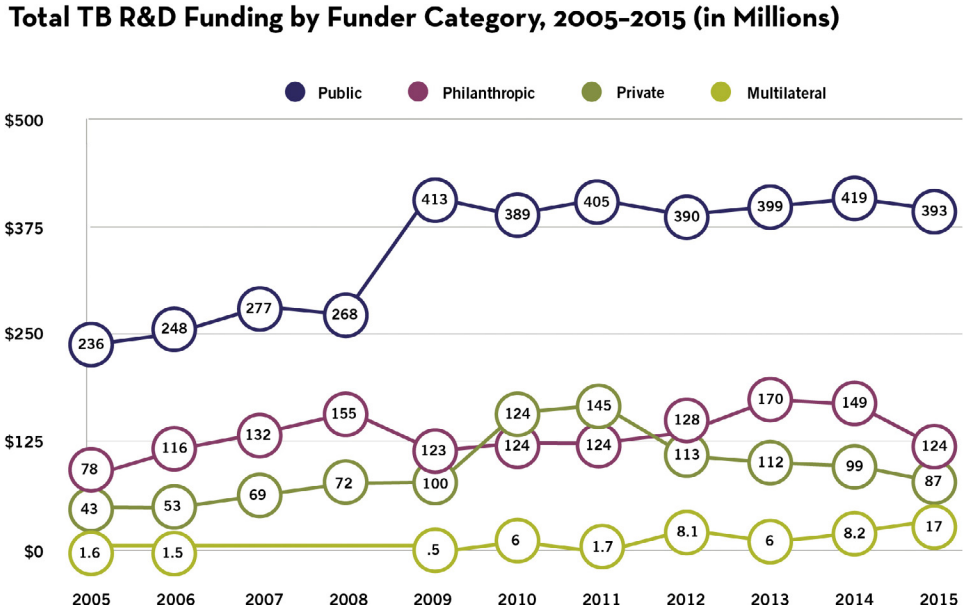

Figure 2. Total TB R&D Funding by Funder Category, 2005–2015 (in Millions).