

GLOBAL TUBERCULOSIS REPORT 2014

Warning: This report is out-of-date. In particular, entire time-series of TB disease burden estimates are updated every year. For the latest data and analysis, please see the most recent edition of the global TB report.

Global tuberculosis report

2014



**World Health
Organization**

WHO Library Cataloguing-in-Publication Data

Global tuberculosis report 2014.

1.Tuberculosis – epidemiology. 2.Tuberculosis, Pulmonary – prevention and control. 3.Tuberculosis – economics.
4.Tuberculosis, Multidrug-Resistant. 5.Annual Reports. I.World Health Organization.

ISBN 978 92 4 156480 9

(NLM classification: WF 300)

© World Health Organization 2014

All rights reserved. Publications of the World Health Organization are available on the WHO website (www.who.int) or can be purchased from WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland (tel.: +41 22 791 3264; fax: +41 22 791 4857; e-mail: bookorders@who.int). Requests for permission to reproduce or translate WHO publications – whether for sale or for non-commercial distribution – should be addressed to WHO Press through the WHO website (www.who.int/about/licensing/copyright_form/en/index.html).

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use.

The cover design is based on a chest X-ray from a participant who was found to have MDR-TB during a national TB prevalence survey. The colour scheme and motifs aim to represent all people who are affected by TB. The cover was designed by Irwin Law based on an idea by Tom Hiatt.

Designed by minimum graphics
Printed in France

WHO/HTM/TB/2014.08

Contents

Abbreviations	iv
Acknowledgements	v
Executive summary	xi
Chapter 1 Introduction	1
Chapter 2 The burden of disease caused by TB	7
Chapter 3 Countdown to 2015	32
Chapter 4 TB case notifications and treatment outcomes	39
Chapter 5 Drug-resistant TB	54
Chapter 6 Diagnostics and laboratory strengthening	74
Chapter 7 Addressing the co-epidemics of TB and HIV	83
Chapter 8 Financing	91
Chapter 9 Research and development	106
 Annexes	
1. Access to the WHO global TB database	119
2. Country profiles	123
3. Regional profiles	147

Abbreviations

AFB	acid-fast bacilli	NTP	national tuberculosis [control] programme
AIDS	acquired immunodeficiency syndrome	OECD	Organisation for Economic Co-operation and Development
ART	antiretroviral therapy	PEPFAR	US President's Emergency Plan for AIDS Relief
BCG	Bacille-Calmette-Guérin	PK	pharmacokinetic
BRICS	Brazil, Russian Federation, India, China, South Africa	PMDT	Programmatic Management of Drug-resistant TB
CDR	case detection rate	PPM	public-private mix
CFR	case fatality rate	PTB	pulmonary TB
CFU	colony forming units	rGLC	Regional Green Light Committee
CI	confidence interval	RR-TB	rifampicin-resistant tuberculosis
CPT	co-trimoxazole preventive therapy	SDG	Sustainable Development Goal
DR-TB	drug-resistant tuberculosis	SRL	supranational reference laboratory
DST	drug susceptibility testing	SRL-CE	SRL National Centre of Excellence
EBA	early bactericidal activity	STAG-TB	WHO's Strategy and Technical Advisory Group for TB
EPTB	extrapulmonary TB	STEP-TB	Speeding Treatments to End Pediatric Tuberculosis
EQA	external quality assessment	TAG	Treatment Action Group
FDA	US Food and Drug Administration	TB	tuberculosis
GDI	Global Drug-resistant TB Initiative	TBTC	TB Trials Consortium
GDP	gross domestic product	TBVI	Tuberculosis Vaccine Initiative
GLC	Green Light Committee	TPP	target product profile
GLI	Global Laboratory Initiative	TST	tuberculin skin test
HBC	high-burden country	UHC	universal health coverage
HIV	human immunodeficiency virus	UN	United Nations
ICD-10	International Classification of Diseases (10th revision)	UNAIDS	Joint United Nations Programme on HIV/AIDS
IHME	Institute for Health Metrics and Evaluation	UNITAID	international facility for the purchase of diagnostics and drugs for diagnosis and treatment of HIV/AIDS, malaria and TB
IGRA	interferon-gamma release assay	USAID	United States Agency for International Development
IPT	isoniazid preventive therapy	VR	vital registration
IRR	incidence rate ratio	WHA	World Health Assembly
ITT	intention-to-treat	WHO	World Health Organization
LED	light-emitting diode	XDR-TB	extensively drug-resistant tuberculosis, defined as MDR-TB plus resistance to at least one fluoroquinolone and a second-line injectable
LPA	line-probe assay	ZN	Ziehl-Neelsen
LTBI	latent TB infection		
MDG	Millennium Development Goal		
MDR-TB	multidrug-resistant tuberculosis, defined as resistance to at least isoniazid and rifampicin, the two most powerful anti-TB drugs		
MGIT	Mycobacteria Growth Indicator Tube		
MNCH	maternal, newborn and child health		
NAAT	nucleic acid amplification test		
NDWG	New Diagnostics Working Group		
NGO	nongovernmental organization		
NIAID	US National Institute of Allergy and Infectious Diseases		

Acknowledgements

DEDICATION

This global tuberculosis (TB) report is dedicated to Glenn Thomas and Amal Bassili.

Glenn Thomas died in the Malaysian Airlines tragedy on 17 July 2014, on his way to the 2014 International AIDS conference in Melbourne, Australia. Glenn worked with the Global TB Programme in WHO headquarters as TB Communications Adviser for nearly a decade before joining the WHO Department of Communications in 2012. He was a passionate TB communicator, advocate and liaison with the media community. He contributed significantly to raising global awareness of and attention to the TB/HIV co-epidemic and the emergence and spread of M/XDR-TB, to spreading the news on WHO policies, findings and new tools, and to the launch of ten global TB reports.

Amal Bassili died in August 2014. She was the focal point for Tropical Disease Research in the Eastern Mediterranean Regional Office (EMRO) from 2000–2013 and the surveillance officer within EMRO's TB unit from 2007–2013. She made an outstanding contribution to TB surveillance and operational research in the Eastern Mediterranean Region and globally, including improving country staff capacity in data management, promotion of and strong support to inventory/capture-recapture studies to improve estimates of TB disease burden, technical assistance for the design, implementation and analysis of national TB prevalence surveys, and essential support for the reporting of data featured in global TB reports.

Glenn and Amal are greatly missed by all their colleagues in the Global TB Programme and the Eastern Mediterranean Regional Office, and by all those who had the opportunity to know and work with them.

This global TB report was produced by a core team of 18 people: Annabel Baddeley, Anna Dean, Hannah Monica Dias, Dennis Falzon, Katherine Floyd, Inés Garcia Baena, Christopher Gilpin, Philippe Glaziou, Tom Hiatt, Irwin Law, Christian Lienhardt, Nathalie Likhite, Linh Nguyen, Andrew Siroka, Charalambos Sismanidis, Hazim Timimi, Wayne van Gemert and Matteo Zignol. The team was led by Katherine Floyd. Overall guidance was provided by the Director of the Global TB Programme, Mario Raviglione.

The data collection forms (long and short versions) were developed by Philippe Glaziou and Hazim Timimi, with input from staff throughout the WHO Global TB Programme. Hazim Timimi led and organized all aspects of data management. The review and follow-up of data was done by a team of reviewers that included Annabel Baddeley, Vineet Bhatia, Annemieke Brands, Andrea Braza, Anna Dean, Hannah Monica Dias, Dennis Falzon, Inés Garcia Baena, Giuliano Gargioni, Thomas Joseph, Avinash Kanchar, Soleil Labelle, Irwin Law, Nathalie Likhite, Fuad Mirzayev, Linh Nguyen, Andrea Pantoja, Andrew Siroka, Hazim Timimi, Lana Tomaskovic, Wayne van Gemert, Fraser Wares and Matteo Zignol at WHO headquarters; Tom Hiatt from the Western Pacific Regional Office; and Suman Jain, Nino Mdivani, Alka Singh, Eliud Wandwalo and Mohammed Yassin from the Global Fund. Data for the European Region were collected and validated jointly by the WHO Regional Office for Europe and the European Centre for Disease Prevention and Control (ECDC); we thank in particular Encarna Gimenez, Vahur Hollo and Csaba Ködmön from ECDC for providing validated data files and Andrei Dadu from the WHO Regional Office for Europe for his substantial contribution to follow-up and validation of data for all European countries. Josephine Dy and Taavi Erkkola from UNAIDS managed the process of data collection from national AIDS programmes and provided access to their TB/HIV dataset. Review and validation of TB/HIV data was undertaken in collaboration with Theresa Babovic and Michel Beusenberg from the WHO HIV department and Josephine Dy and Taavi Erkkola from UNAIDS, along with UNAIDS regional and country strategic information advisers.

Philippe Glaziou and Charalambos Sismanidis prepared estimates of TB disease burden and associated figures and tables (Chapter 2), with support from Tom Hiatt and Irwin Law. Particular thanks are due to Carel Pretorius (Futures Institute), who worked closely with Philippe Glaziou on analyses and related estimates of TB

mortality among HIV-positive people. Irwin Law prepared the tables on the “countdown to 2015” (Chapter 3). Tom Hiatt and Hazim Timimi prepared all figures and tables on TB notification and treatment outcome data (Chapter 4). Anna Dean, Dennis Falzon, Linh Nguyen and Matteo Zignol analysed data and prepared the figures and tables related to drug-resistant TB (Chapter 5), with input from Charalambos Sismanidis. Tom Hiatt and Wayne van Gemert prepared figures and tables on laboratory strengthening and the roll-out of new diagnostics (Chapter 6). Annabel Baddeley and Tom Hiatt analysed TB/HIV programmatic data and prepared the associated figures and tables (Chapter 7). Inés Garcia and Andrew Siroka analysed financial data, and prepared the associated figures and tables (Chapter 8). Christian Lienhardt and Christopher Gilpin prepared the figures on the pipelines for new TB drugs, diagnostics and vaccines (Chapter 9), with input from Karin Weyer and the respective Working Groups of the Stop TB Partnership. Tom Hiatt coordinated the finalization of all figures and tables and was the focal point for communications with the graphic designer.

The writing of the main part of the report was led by Katherine Floyd. Chapter 2, on the burden of TB disease, was written by Katherine Floyd, Philippe Glaziou and Charalambos Sismanidis, with contributions from Irwin Law and Ikushi Onozaki. Chapter 3, on the “countdown to 2015”, was written by Katherine Floyd and Irwin Law. Chapter 4, on notifications and treatment outcomes, was written by Katherine Floyd, with contributions from Hannah Monica Dias, Haileyesus Getahun, Thomas Joseph, Nathalie Likhite and Mukund Uplekar. Chapter 5, on drug-resistant TB, was prepared by Anna Dean, Dennis Falzon, Linh Nguyen, Karin Weyer and Matteo Zignol, with input from Vineet Bhatia, Katherine Floyd, Philippe Glaziou, Fraser Wares and Charalambos Sismanidis. Chapter 6, on diagnostics and laboratory strengthening, was prepared by Wayne van Gemert, with input from Christopher Gilpin, Fuad Mirzayev and Karin Weyer. Chapter 7 was prepared by Annabel Baddeley with

gestions on advanced drafts of chapter text, including Lisa Nelson from the HIV department in WHO, and Reuben Granich and Taavi Erkkola from UNAIDS.

The global report is accompanied by a special supplement on “Drug-resistant TB: surveillance and response”, to mark the 20th anniversary of the establishment of the Global Project on anti-TB drug resistance surveillance in 1994. The supplement was prepared by a team of eight people: Anna Dean, Hannah Monica Dias, Dennis Falzon, Katherine Floyd, Mario Raviglione, Diana Weil, Karin Weyer and Matteo Zignol. The development of the surveillance component of the supplement was led by Matteo Zignol and the development of the response component was led by Dennis Falzon, with broad guidance from Katherine Floyd and Karin Weyer.

Annex 1, which explains how to use the online global TB database, was written by Hazim Timimi. The country profiles that appear in Annex 2 and the regional profiles that appear in Annex 3 were also prepared by Hazim Timimi. The CD-rom that is provided alongside the report and which includes detailed tables with a wealth of global, regional and country-specific data from the global TB database was prepared by Tom Hiatt and Hazim Timimi. The online technical appendix that explains the methods used to estimate the burden of disease caused by TB (incidence, prevalence, mortality) was prepared by Philippe Glaziou, with input from Anna Dean, Carel Pretorius, Charalambos Sismanidis and Matteo Zignol. We thank Colin Mathers of the WHO Mortality and Burden of Disease team for his careful review.

We thank Pamela Baillie in the Global TB Programme’s monitoring and evaluation team for impeccable administrative support, Doris Ma Fat from the WHO Mortality and Burden of Disease team for providing TB mortality data extracted from the WHO Mortality Database, and Juliana Daher, Peter Ghys and Mary Mahy (UNAIDS) for providing epidemiological data that were used to estimate HIV-associated TB mortality.

The entire report was edited by Sarah Colburn.

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_27706

