





WHO Library Cataloguing-in-Publication Data

World malaria report : 2013.

1. Malaria - prevention and control. 2 Malaria - economics. 3. Malaria - epidemiology. 4. National health programs - utilization. 5. Insecticidetreated bednets. 6. Antimalarials - therapeutic use. 7. Drug resistance. 8. Disease vectors. 9. Malaria vaccines. 10. World health. I. World Health Organization.

ISBN 978 92 4 156469 4

(NLM classification: WC 765)

#### © World Health Organization 2013

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 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.

Map production: WHO Global Malaria Programme and WHO Public Health Information and Geographic Information Systems.

Design and layout: designisgood.info

Cover photo: © Mark Tuschman (www.tuschmanphoto.com/blog)

Inside photo: © Mark Tuschman (www.tuschmanphoto.com/blog)

Please consult the WHO Global Malaria Programme web site for the most up-to-date version of all documents (www.who.int/malaria). Printed in France

# Contents

Foreword	v
Acknowledgements	vi
Abbreviations	viii
Summary and Key Points	ix
Avant-propos	xv
Résumé et points essentiels	xvi
Prefacio	xxi
Resumen y puntos esenciales	xxiii
CHAPTER 1 Introduction	1
CHAPTER 2 Policies, strategies, goals and targets for malaria control and elimination	3
2.1 Policy development	3
2.2 Malaria control policies and strategies	4
2.3 Malaria surveillance	11
2.4 Malaria elimination	12
2.5 Goals and targets for malaria control and elimination	12
2.6 Indicators of progress	12
CHAPTER 3 Financing malaria control	17
3.1 International financing of malaria control	17
3.2 Domestic financing of malaria control	18
3.3 Comparison of resources available and resource requirements	19
3.4 Distribution of available funding by WHO Region	19
3.5 Distribution of available funding by disease burden and national income	20
3.6 Endemic country's willingness to pay for malaria control	20
3.7 Conclusions	21
CHAPTER 4 Vector control for malaria	23
4.1 Need for vector control	23
4.2 ITN/LLIN policy and implementation	23
4.3 IRS policy adoption and implementation	26
4.4 Larval control strategies	28
4.5 Malaria vector insecticide resistance and the Global Plan for Insecticide Resistance Management	28
4.6 Conclusions	30
CHAPTER 5 Preventive therapies for malaria	31
5.1 Need for preventive chemotherapy	31
5.2 Malaria chemoprevention policies and implementation	31
5.3 New therapies for malaria prevention	33
5.4 Conclusions	34
CHAPTER 6 Diagnostic testing and treatment of malaria	37
6.1 Needs for diagnostic testing and treatment	37
6.2 Diagnostic testing for malaria	38
6.3 Treatment of malaria	40
6.4 Antimalarial drug resistance	44
6.5 Conclusions	46
CHAPTER 7 Malaria surveillance	49
7.1 Introduction	49
7.2 Indicators derived from routine information systems	49
7.3 Indicators derived from household surveys	50
7.4 Conclusions	52
CHAPTER 8 Changes in malaria incidence and mortality	55
8.1 Introduction	55
8.2 Progress towards elimination	58
8.3 Trends in estimated malaria cases and deaths	61
8.4 Conclusions	66
Regional profiles	69
Country profiles	91
Annexes	199
Autores -	172

"If political commitment wanes, the great progress that has been achieved could be undone in some places in a single transmission season."

4

## Foreword



#### Dr Margaret Chan Director-General World Health Organization

This year's *World Malaria Report* documents remarkable progress in the global fight against malaria, and includes updated burden estimates for the 2000-2012 period.

The report shows that increased political commitment and the expansion of global malaria investments since 2000 have led to major gains against this preventable disease, saving an estimated 3.3 million lives.

Each year we have a better understanding of global malaria trends and the burden of disease, as measured against the situation in 2000. According to the latest estimates, malaria mortality rates were reduced by about 42% globally and by 49% in the WHO African Region between 2000 and 2012. During the same period, malaria incidence rates declined by 25% around the world, and by 31% in the African Region. These substantial reductions occurred as a result of a major scale-up of vector control interventions, diagnostic testing, and treatment with artemisinin-based combination therapies, or ACTs.

This progress is no cause for complacency. The absolute numbers of malaria cases and deaths are not going down as fast as they could. The disease still took an estimated 627 000 lives in 2012, mostly those of children under five years of age in Africa. This means 1300 young lives lost to malaria every day – a strong reminder that victory over this ancient foe is still a long way off. The fact that so many people are dying from mosquito bites is one of the greatest tragedies of the 21<sup>st</sup> century.

If political commitment wanes, the great progress that has been achieved could be undone in some places in a single transmission season. In the last few years, we have started seeing the first signs of a potential slow-down. In 2011 and 2012, the delivery of long-lasting insecticidal nets to endemic countries slowed down and indoor residual spraying programmes levelled off. During this period, malaria mortality rates continued to go down but at a slower pace. In 2013, bednet deliveries picked up again, and the pipeline for next year is even stronger. Nonetheless, even greater efforts will be needed to protect everyone at risk.

As the international community gradually moves towards a post-2015 development agenda, we must not lose sight of what the world's most vulnerable populations expect from us. The concept of *universal health coverage* represents both a social value and an approach to health care that generates better health for entire populations, reduces social inequalities, and protects people from poverty induced by health-care costs. It is a key concept that is already at the centre of the

global health debate, and also the debate about the next set of development goals. Progress against malaria provides good evidence of the tangible benefits of population-wide access to life-saving interventions.

The world also needs to stay focused on addressing the global funding gap for malaria prevention and control. The currently available funding is far less than required to reach universal access to malaria interventions. To achieve our goal, we need an accelerated effort in scaling up vector control tools. We also need to ensure that the most vulnerable groups – children under five, infants and pregnant women – get access to WHO-recommended intermittent preventive therapies, where appropriate. While progress in expanding diagnostic testing and quality-assured treatment has been immense in recent years, we are far from achieving universal access.

In addition, parasite resistance to artemisinin – the core compound in the world's most effective antimalarial medicines – and mosquito resistance to insecticides remain major concerns. If not addressed with appropriate urgency, they could threaten the remarkable progress made since 2000. Though WHO has issued global strategies to tackle these challenges, progress in their adoption by countries has been slow, primarily due to inadequate financing. In April 2013, on World Malaria Day, WHO launched an *Emergency response to artemisinin resistance in the Greater Mekong subregion* to guide countries in the scale-up and implementation of efforts to eliminate resistant parasites. The funding gap for this effort is also substantial.

Strengthening health infrastructures, vital registration and surveillance systems is equally critical to further progress. Based on reported data, 59 countries are meeting the MDG target of reversing the incidence of malaria, and 52 countries are on track to reduce their malaria case incidence rates by 75%, in line with World Health Assembly and Roll Back Malaria targets for 2015. However, these 52 countries account for only 4%, or eight million, of the total estimated malaria cases around the world. In 41 endemic countries, including most high-burden countries, we cannot make a reliable assessment of malaria trends. A concerted effort to improve surveillance systems is needed to remove this gap in our understanding of the malaria situation.

WHO is grateful for the commitment of ministries of health in endemic countries and their many development partners. We are confident that, if we remain determined and act with urgency, we can beat this ancient enemy once and for all.

mlehan

# Acknowledgements

We are very grateful to the numerous people who contributed to the production of the *World malaria report 2013*. The following people collected and reviewed data from malaria endemic countries:

Ahmad Walid Sedigi, Ahmad Mureed Muradi and Sami Nahzat(Afghanistan); Hammadi Djamila (Algeria); Nilton Saraiva and Yava L. Ricardo (Angola); Mario Zaidenberg (Argentina); Viktor Gasimov (Azerbaijan); Mannan A. Bangali and Mohammad Jahirul Karim (Bangladesh); Kim Bautista (Belize); Mariam Okê-Sopoh (Benin); Pema Samup, Rinzin Namgay and Sonam Gyeltshen (Bhutan); Marcos Ysrael Fernandez Encinas (Bolivia [Plurinational State of]); Simon Chihanga (Botswana); Mariana Pereira de Araújo and Poliana de Brito Ribeiro (Brazil); Patrice A. Combary (Burkina Faso); Mbanye Hypax (Burundi); Júlio Monteiro Roigues (Cabo Verde); Abdur Rashid, Siv Sovannaroth and Samphornarann Top (Cambodia); Kouambeng Celestin (Cameroon); M'bary Siolo Mada Bebelou (Central African Republic); Mahamat liss Djaskano (Chad); Shaosen Zhang and Yang Man Ni (China); Pablo Enrique, Chaparro Narváez and Nohora Gonzalez (Colombia); Astafieva Marina (Comoros); Youndouka Jean Mermoz (Congo); José Luis F. Garcés (Costa Rica); Tanoh Méa Antoine, Vléhi Nzi Annick Eloi, Ehui Anicet and Parfait Katche (Côte d'Ivoire); Kim Yun Chol and Shusil Pant (Democratic People's Republic of Korea); Joris Losimba Likwela (Democratic Republic of the Congo); Abdoulkader Mohamed Garad and Farah Mohamoud Ahmed (Djibouti); Jose Manuel Puello Montero (Dominican Republic); Enrique Castro Saavedra (Ecuador); Oscar Sorto Rubio (El Salvador); Matilde A. Riloha Rivas (Equatorial Guinea); Selam Mihreteab (Eritrea); Hiwot Solomon Taffese (Ethiopia); Vanessa Ardillon (French Guiana, France); Abdou Razack Safiou (Gabon); Adam Jagne Sonko and Momodou Kalleh (Gambia); Merab Iosava (Georgia); Constance Bart Plange, Keziah Malm, Wahjib Mohammed, Kofi Oosae and Felicia Owusu-Antwi (Ghana); Adolfo Miranda (Guatemala); Nouman Diakite (Guinea); Paulo Djata (Guinea-Bissau); Reyaud Rahman (Guyana); Darlie Antoine (Haiti); Engels Ilich Banegas Medina (Honduras); G.S. Sonal (India); Anand Joshi, Asik Surya

and Walter Kazadi-Mulombo (Papua New Guinea); Elizabeth Ferreira, Martha Torales and Cynthia Viveros (Paraguay); Maximo Manuel Espinoza Silva (Peru); Mario Baquilod (Philippines); Lasse Vestergaard and Jeunessa Sto Nino (Philippines); Lee Dong-Woo (Republic of Korea); Rukundo Alphonse and Corine Karema (Rwanda); Herodes do Sacramento Rompão (Sao Tome and Principe); Mohammed Hassan Al-Zahrani (Saudi Arabia); Mady Ba, Alioune Badara Gueye, Médoune Ndiop and Bacary Sambou (Senegal); Thomas K. Ansumana (Sierra Leone); Albi Bobogare, Hugo Borugo, Erick Hale and Baakai Kamoriki (Solomon Islands); Fahim Yusuf and Jamal Amran (Somalia); Devan and Moonasar (South Africa); Harriet Pasquale (South Sudan); Risintha Premaratne and S. L. Deniyage (Sri Lanka); Abd Alla Ahmed Ibrahim Mohd (Sudan); B. Jubithana (Suriname); Sicelo Kunene (Swaziland); Anna Mahendeka (United Republic of Tanzania, Mainland); Abdul-wahid H. Al-mafazy (United Republic of Tanzania, Zanzibar); Sayfuddin Karimov (Tajikistan); Prayuth Sudathip (Thailand); Manel Yapabandara, Maria Mota and Maria do Rosario de Fatima Mota (Timor-Leste); Tchassama Tchadjobo (Togo); Maria Cristina Profili, Mehmet Kontas and Seher Topluoglu (Turkey); Peter Okui (Uganda); Inna Tyo, Svetlana Tsay and Natalya Lebedeva (Uzbekistan); Wesley Donald (Vanuatu); Jean-Olivier Guintran and Seyha Ros (Vanuatu); Nuncio Nelson Pizzo (Venezuela [Bolivarian Republic of]); Dai Tran Cong and Nguyen Quy Anh (Viet Nam); Adel Nasser Aljasari and Moamer Badi (Yemen); Sabine Henry and Betty Zumbo (Mayotte); Pagès Frédéric (France [Réunion]); Freddie Masaninga, Ingwe Masaninga and Mercy Mwanza (Zambia); Wonder Sithole (Zimbabwe).

The following WHO staff in regional and subregional offices assisted in the design of data collection forms; the collection and validation of data; and the review of epidemiological estimates, country profiles, regional profiles and chapters:

Boniface Ekoue Kinvi, Etienne Magloire Minkoulou, Georges Alfred Ki-Zerbo and Issa Sanou (WHO Regional Office for Africa [AFRO]); Spes Ntabangana (AFRO/Inter-country Support Team [IST] Central Africa); Khoti Gausi (AFRO/IST East and Southern

### 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 27990

