



Report of the second Global Forum of malaria-eliminating countries

JUNE 2018

MEETING REPORT

SUMMARY

WHO convened 21 countries with the potential to eliminate malaria by 2020 (E-2020) at a second Global Forum of malaria-eliminating countries in San José, Costa Rica, 11–13 June 2018. Representatives of the national malaria programmes of the ministries of health from 20 of the 21 E-2020 countries attended the two-and-a-half-day meeting along with representatives from four Central American countries (Guatemala, Nicaragua, Honduras and Panama) and Argentina. Accompanying the national programme representatives were WHO country, regional and headquarters staff, and the meeting was joined by observers from major donors. Countries shared their progress towards elimination and the challenges they face in achieving this goal. Several technical presentations were made by WHO staff, including conclusions from an evidence review group on border malaria, highlights from the new WHO surveillance, monitoring and evaluation manual, focus microstratification and microplanning, and updates on certification procedures. For the first time, the Malaria Elimination Oversight Committee attended the Global Forum and produced a series of recommendations to help countries achieve elimination. Several countries reported significant progress towards elimination: For the first time, China and El Salvador reported zero indigenous cases since the beginning of 2017, while Algeria maintained its malaria-free status and Iran (the Islamic Republic of), Malaysia, the Republic of Korea, Saudi Arabia, Suriname and Timor-Leste reported important reductions in the number of cases in 2017 compared with 2016. The certification of Paraguay as malaria-free was celebrated at an evening ceremony on the first night, with the certificate presented by the Regional Director of the WHO Regional Office for the Americas and the Pan American Health Organization.

BACKGROUND

In 2015, the World Health Organization (WHO) launched the *Global Technical Strategy for Malaria 2016–2030* with “accelerate efforts towards elimination and

attainment of malaria-free status” as one of its three pillars.¹ In line with this objective, the milestones for 2020 include elimination of malaria in at least 10 countries that had malaria transmission in 2015, while preventing re-establishment of malaria in any country. In 2016, WHO identified 21 countries as having the potential to eliminate malaria by 2020 based on three criteria: the trends in incident case reductions between 2000 and 2014; the declared malaria elimination objectives of the country; and the informed opinions of malaria experts in the region.² These 21 countries, referred to as the E-2020, are found across the globe: seven from the Region of the Americas (Belize, Costa Rica, Ecuador, El Salvador, Mexico, Paraguay, Suriname); six from the African Region (Algeria, Botswana, Cabo Verde, Comoros, South Africa, Swaziland); three from the South-East Asia Region (Bhutan, Nepal, Timor-Leste); three from the Western Pacific Region (China, Malaysia, Republic of Korea); and two from the Eastern Mediterranean Region (Iran [Islamic Republic of] and Saudi Arabia). WHO convened the E-2020 countries at an inaugural Global Forum in Geneva, Switzerland, 16–17 March 2017. The second Global Forum was held in San José, Costa Rica, 11–13 June 2018 and was attended by representatives from 20 of the 21 E-2020 countries and the remaining Central American countries (Panama, Nicaragua, Honduras and Guatemala) plus Argentina, along with WHO staff from the national, regional and headquarters levels. Observers included representatives from the major donors (see list of participants in the annex).

For the first time, the newly convened Malaria Elimination Oversight Committee (MEOC), established by WHO in April 2018, attended the Global Forum to support countries in their attempts to achieve malaria elimination. The MEOC supports countries and regions actively pursuing that goal by reviewing country progress towards elimination, reviewing the challenges and bottlenecks identified, and providing recommendations on how to accelerate elimination. The MEOC meeting report can be found here (<http://www.who.int/malaria/areas/elimination/advisory-committees/en/>).

METHOD OF WORK

The theme of the second Global Forum E-2020 was “Focusing on the Foci”. During the meeting, countries presented their progress towards elimination using a standard template that requested information on the trend in the number of indigenous and imported cases over time, malaria programme staffing levels, their most recent stratification map indicating the distribution of malaria foci throughout the country, the implementation status of surveillance and response activities, and the challenges and bottlenecks facing the country. Each country presentation was followed by a question-and-answer period where other country representatives, the MEOC, WHO staff and observers could ask questions about the country’s elimination strategy or programme implementation. Participants received a briefing on a recent evidence review group (ERG) on border malaria, an important issue that had been raised at the inaugural Global Forum; the new Malaria surveillance, monitoring and evaluation manual; updates on hot topics such as tafenoquine, a new anti-relapse medication being reviewed; and an introduction to microstratification and microplanning approaches utilized in the Americas. The procedures for countries to request and receive certification of malaria-free status were clarified.

OPENING SESSIONS

The meeting was opened by Dr Giselle Amador Muñoz, Minister of Health, Costa Rica, who welcomed the participants from around the world. Dr Pedro Alonso, Director, WHO Global Malaria Programme (GMP), provided an overview of the world malaria situation and the goals for malaria elimination under the *Global Technical Strategy for malaria 2016–2030*. Dr Carissa Etienne, Director, Pan American Health Organization (PAHO),

WHO Regional Office for the Americas, extended a warm welcome to all participants and especially the representatives of national programmes who were visiting the region for the first time. She thanked the Minister of Health of Costa Rica for her hospitality and noted that holding the Global Forum in Costa Rica was important because the country was demonstrating that it is possible to eliminate malaria when correct political decisions are made. Dr Etienne also welcomed representatives of donor institutions and other global partners committed to the elimination of malaria, and said that the work to be completed over the next few days would contribute in an important way to achieving the goals that WHO member states have set in eliminating malaria in as many as 21 countries by 2020, and hopefully the rest of the world thereafter.

During the second half of the opening sessions, a video on malaria elimination in the Americas was presented, after which a panel discussion of malaria elimination in the Americas was facilitated by Dr Luis Gerardo Castellanos, Unit Chief, Neglected, Tropical and Vector-Borne Diseases, PAHO/WHO. The panel participants included Dr Marcos Espinal, Director, Communicable Diseases and Environmental Determinants, PAHO/WHO; Dr Emma Iriarte, Health Lead Specialist, Inter-American Development Bank; and Dr Daniel Salas Peraza, Director, Health Surveillance, Ministry of Health, Costa Rica.

INTRODUCTION TO THE MEOC

Dr Frank Richards, Chair, MEOC, presented the purpose and terms of reference for the MEOC. The MEOC was created by WHO with the endorsement of the Malaria Policy Advisory Committee (MPAC) to assist countries close to elimination achieve the elimination targets that are part of the *Global Technical Strategy for malaria 2016–2030*. Its terms of reference include provision of independent advising, monitoring and reporting on progress in eliminating countries, identifying risks to elimination and confronting difficult issues. The MEOC was attending the Global Forum for the first time and its immediate goal was to introduce the committee as an ally to eliminating countries. Dr Richards distinguished the goals of the MEOC from a sister committee, the Malaria Elimination Certification Panel (MECP), whose terms of reference are related to evaluating whether countries have met the criteria to be certified malaria-free by WHO. Dr Richards noted that the MEOC is an advocate for countries to reach elimination, while the MECP is external to the elimination effort, to preserve impartiality with respect to certification.

REPORT ON THE CONCLUSIONS AND RECOMMENDATIONS OF AN ERG ON BORDER MALARIA

During the first Global Forum of malaria-eliminating countries in 2017, multiple countries identified border malaria as a significant challenge. As a result, WHO convened an ERG to examine the issue, define border malaria more clearly and review evidence for effective interventions. Dr Li Xiao Hong, Elimination Unit, WHO/GMP, shared preliminary conclusions and recommendations from the border malaria ERG. “Cross-border” malaria problems may be comprised of two related but distinct issues: movement of people infected with malaria parasites across international borders, including airports and sea ports, and malaria transmission that crosses international boundaries. “Border malaria” was defined in the ERG as malaria transmission or potential for transmission that takes place across adjacent administrative areas that share an international border (or lie at a specified distance from an international border). Border malaria can be considered a transmission focus that crosses the international border. “Transnational malaria”

was defined as the importation of malaria parasites across international borders, which may include airports and sea ports. Transnational malaria does not involve the border area per se but may contribute to transmission within the country if it leads to local transmission. The overall conclusions of the ERG were that border areas need to be considered by elimination programs early on, because the border region is likely to be one of the last places to eliminate transmission; that information-sharing and coordination at the local level is essential, and is often more efficient than attempts to coordinate information-sharing at the national level; and that malaria-endemic countries sharing international borders should conduct joint mapping and joint risk assessments, leading to a harmonized and holistic approach to malaria elimination in the border area.

MICROPLANNING FOR ELIMINATION IN MALARIA FOCI

The PAHO region has been using a microplanning approach for elimination of malaria in foci based on the *detección-tratamiento-investigación-respuesta* (DTIR – detection, treatment, investigation and response) paradigm for elimination. Dr Roberto Montoya, Regional Malaria Advisor, AMRO/PAHO, presented results from the region's experiences with microstratification and microplanning. He noted that malaria elimination at the national level is the result of elimination of malaria in each of the transmission foci and requires elimination of the human reservoir of infection. The microstratification and microplanning approach identifies the bottlenecks and weaknesses of the malaria-elimination programme at the local level, generates hypotheses as to the drivers of transmission in the focus and then develops a microplan to address the programme gaps and reduce transmission. Examples of this approach in Gracias a Dios, Honduras, were presented.

SURVEILLANCE AS AN INTERVENTION FOR MALARIA

In 2018, WHO issued *Malaria surveillance monitoring & evaluation: a reference manual* and Dr Kim Lindblade, Team Lead, Elimination Unit, WHO/GMP, presented the key elements from both the surveillance manual and the 2017 WHO Framework for malaria elimination. As countries move from higher to lower levels of malaria transmission, the surveillance system changes from use of aggregate data collected only by passive surveillance systems and reported monthly, to case-based data collected by both passive and active surveillance systems and reported immediately. Surveillance as an intervention seeks to limit onward transmission from a malaria case and requires immediate attention to treat all cases promptly, identify additional cases in the vicinity and ensure appropriate vector control is in place. Investigations in transmission foci or of outbreaks are conducted to determine the drivers of malaria transmission in the focus, whether the drivers include programmatic weaknesses or environmental factors, in order to design an appropriate response plan.

HOT TOPICS AND UPCOMING INTERVENTIONS FOR ELIMINATION

Dr Alonso updated participants on four new or upcoming malaria tools. Tafenoquine is a single-dose anti-relapse medication that has been submitted for registration with the United States Food and Drug Administration (US FDA) and the Australian Therapeutic

Goods Association. (Note: Since the Global Forum, the US FDA has approved tafenoquine for the radical cure of *Plasmodium vivax*). Testing to determine a patient's status of glucose-6-phosphate dehydrogenase (G6PD) deficiency will be required before administration of tafenoquine because the drug has a long half-life. In response, new quantitative G6PD point of care tests are in advanced phases of development to support the safe use of primaquine and tafenoquine. WHO may recommend pilot implementation studies of tafenoquine with point-of-care G6PD tests to inform policy recommendations.

In areas where the main malaria vectors have confirmed pyrethroid resistance of at least an intermediate level due to mono oxygenase-based metabolic mechanisms, WHO recently recommended countries consider deploying long-lasting insecticidal nets (LLINs) that contain piperonyl butoxide, a chemical that knocks out mono oxygenase mechanisms so they can't detoxify the insecticide. The recommendation can be found at <http://www.who.int/malaria/publications/atoz/use-of-pbo-treated-llins/en/>.

Ivermectin is a drug that has been used extensively for the control of parasites of onchocerciasis and lymphatic filariasis. Ivermectin also has effects on biting insects, such as lice, and is considered an endectocide, i.e., a drug to kill biting insects that can be ingested by humans. Ivermectin is being investigated as a potential complementary tool for elimination to address residual transmission due to vectors with a tendency for outdoor biting and resting, biting at early evening and at dawn, and vectors that feed on livestock. A number of trials measuring public health impact are underway.

In elimination programmes, WHO recommends the use of microscopy or rapid diagnostic tests (RDTs) for diagnosis. The limits of detection of these methods are considered to be 50 parasites(p)/ μ l and 100–200 p/ μ l, respectively. Many cross-sectional studies have shown that a proportion of malaria infections have densities below the detection of microscopy or RDTs. In response, a new *P. falciparum* RDT was released in 2017 claiming to have a limit of detection of 2 p/ μ l. The new highly sensitive RDT made by Alere Inc. (Waltham, Massachusetts) is not prequalified by WHO. The importance of low-density malaria infections, undetectable by conventional microscopy and RDTs, in elimination settings is not known. WHO convened a technical consultation 4–6 June 2018 to recommend the research requirements to support policy recommendations for highly sensitive malaria diagnostic tests; these recommendations will be reviewed by the MPAC in October 2018.

CERTIFICATION OF MALARIA ELIMINATION

Dr Li discussed the criteria for WHO certification of elimination that can be found in the Framework for malaria elimination, and the key steps along the path to WHO certification of countries as malaria-free. She noted that after countries meet the minimum criteria of three years with zero indigenous cases, the official request is sent to the WHO Director-General, after which the country prepares a national elimination report. The MECP reviews the report and sends an evaluation mission to the country to verify the findings in the report, after which the Committee makes a recommendation on whether to certify. The MECP recommendation is subsequently endorsed by the MPAC, which forwards the final recommendation to the WHO Director-General. Dr Li reported on the development of a guide for countries on the certification process that is expected to be released in 2019, and presented a minimum required timeline for the submission of the national elimination report to the awarding of the certificate of elimination by the Director-General (14 weeks).

AWARD CEREMONY

The evening award ceremony featured remarks by Dr Alonso and Ms Annelise Hirschmann, Regional Manager for Latin America and the Caribbean, the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM); a video on elimination of malaria in Paraguay; and a videotaped, congratulatory message from Dr Tedros Adhanom Ghebreyesus, Director-General, WHO. Dr Etienne presented Dr Carlos Ignacio Morínigo Aguilera, Minister of Health, Paraguay, with the framed certificate of elimination signed by the WHO Director-General. Dr Etienne saluted the hundreds of health workers who helped eliminate malaria in Paraguay through their dedication to controlling and then eliminating transmission. Dr Etienne mentioned four specific factors that contributed to elimination in Paraguay:

- Growth in the country's economy at an average of 5% per year over the past decade, higher than its neighbours.
- Social reforms, including universal access to free health care and basic education.
- The quality and coverage of health services.
- Public investment in health, with 10.8% of public expenditures invested in health.

Dr Etienne encouraged Paraguay to maintain its success by preventing the re-establishment of malaria. Dr Morínigo thanked WHO for the certification and emphasized that Paraguay achieved elimination and would prevent re-establishment because it had focused its efforts on the long-term sustainability of its health strategies. The ceremony concluded with congratulations to Paraguay from Dr Alejandra Acuña, the Vice-Minister of Health of Costa Rica.

E-2020 COUNTRY PROGRESS

Member countries at the Global Forum reaffirmed their commitment to meeting their national elimination goals and accepted the invitation from WHO to present their progress annually at subsequent Global Forums. Individual country progress towards elimination, along with surveillance and vector control strategies, is summarized below.

African Region

Algeria

Algeria reported zero indigenous malaria cases in 2017 for the fourth consecutive year, along with 448 imported and seven introduced cases. Since the last Global Forum, Algeria has requested WHO certification of malaria-free status. The area of greatest risk for Algeria is in the southern province of Tamanrasset, which borders malaria-endemic Niger and Mali and accounted for 81% of the imported cases. Algeria recently updated its standard operating procedures for surveillance with technical assistance from WHO, requiring case notification within 24 hours, and response activities, including reactive case detection within 100 metres of the identified case, within 48 hours. The country conducts proactive case detection in areas with migrants and in border areas that are receptive to malaria transmission. A national malaria-elimination committee was established in 2017 consisting of eight members from the Ministry of Health, universities and research institutions. The committee meets quarterly. The national programme is planning to submit its national malaria-elimination report, the next milestone on the way to WHO certification, in September 2018.

Botswana

In 2016, Botswana reported 716 indigenous cases and 64 imported malaria cases; after adjusting for completeness of reports and use of the private sector for malaria treatment, WHO estimates the country had 1911 indigenous cases of malaria. These figures indicate an increasing trend in malaria transmission in Botswana compared with the 2015 reported and adjusted total indigenous cases of 326 and 877 cases, respectively. The latest stratification map shows a large number of cases along Botswana's south-eastern border with Limpopo Province, South Africa, and along its northern and north-eastern borders with Namibia and Zimbabwe, respectively. The national malaria programme in Botswana is staffed by six professionals and was fully funded by the government until 2015, when a US\$ 5.2 million GFATM grant was received to support the elimination strategy until September 2018. The independent National Malaria Elimination Advisory Committee was formed in 2015 but has not yet become functional. The national programme faces challenges related to the quality of case investigations due to low adherence to surveillance guidelines, poor uptake of vector control interventions by communities and inadequate human resource capacity at all levels. Priority actions for 2018 include advocating for adequate resources for elimination, strengthening community-driven malaria-elimination initiatives, increasing coverage of vector control in all transmission foci and continuing to implement cross-border activities with neighbouring countries.

Cabo Verde

Cabo Verde experienced a significant epidemic of malaria in the city of Praia during 2017, with 423 indigenous, 23 imported and 11 recrudescence cases of *P. falciparum*, compared with 47 indigenous and 28 imported cases in 2016. The epidemic ended in January 2018 after the national programme retrained its indoor residual spray (IRS) agents and resprayed the areas most affected by the epidemic. Cabo Verde has five professionals in the national malaria control programme and provides US\$ 4.6 million of domestic financing for malaria elimination, in addition to a US\$ 466 000 GFATM grant. The national programme reports a lack of qualified staff, equipment and material. The frequent importation of malaria cases from mainland Africa poses a significant challenge to the programme. In addition, there is difficulty implementing vector control in many areas, particularly in the Praia, due to refusals of homeowners to allow IRS and a general lack of acceptance to use LLINs. The programme is working to strengthen epidemiologic and entomologic surveillance systems and to increase community sensitization about the need for IRS. [Note: The representative from Cabo Verde was unable to attend the meeting but shared the country's presentation in advance.]

Comoros

Comoros reported a significant increase in malaria cases (4852) and malaria deaths (3) in 2017, compared with 2016 (1658 cases and zero deaths). However, no cases were reported from Mwali or Ndzuwani, the smaller of the three islands that make up Comoros. Although the increasing number of cases on the big island of Ngazidja is of significant concern, the total number of reported cases remains significantly lower than the caseload in 2013 (54 130), immediately before there was a mass drug administration campaign on Ngazidja. The management unit of the national malaria programme consists of seven professionals, in addition to three professionals dedicated to malaria in the monitoring and evaluation unit and 17 others in the laboratory department. Domestic financing accounts for 10% of the required budget for malaria elimination in Comoros, the GFATM provides 42%, and 8% comes from other sources, leaving a financing gap of 40%. The national programme has identified limited financial resources as an important impediment to maintaining universal coverage of interventions, responding adequately to introduced cases on the two smaller islands and reinforcing community-based surveillance. Priority actions include achieving and maintaining universal coverage of case management and LLINs, organizing routine IRS and MDA campaigns, and strengthening surveillance.

Eswatini

Eswatini (formerly Swaziland) reported an increase in malaria in 2017 similar to those of other southern African countries. After reporting 67 indigenous and 230 imported cases and three malaria-related deaths in 2016, the country reported 683 indigenous and 403 imported cases and 21 malaria-related deaths in 2017. The US\$ 2 million budget in 2018 was funded almost equally by domestic sources and the GFATM. The national programme counts on five¹⁵ professionals at the national level. The Malaria Elimination Advisory Group meets twice per year to provide guidance and endorse decisions of the national programme. In 2017, the identification of indigenous cases in parts of Eswatini not considered to be receptive to transmission suggests the need to update the stratification map. The national programme believes that changes in weather patterns require adjustment to the timing and location of its interventions. The large population movement into Eswatini to support the agricultural industry is a challenge because of associated importation of malaria parasites. At the same time, residents of many communities where malaria is no longer a significant public health concern often do not seek prompt diagnosis and treatment when they experience clinical signs and symptoms suggestive of malaria. The national programme identifies the need to increase domestic funding for insecticides to ensure an adequate supply and to implement a well-designed IRS campaign to achieve high coverage in transmission foci. The programme is working towards systematically identifying transmission foci, developing appropriate response plans and clearing the foci of infections.

South Africa

South Africa reported a serious resurgence of malaria in 2017. The national programme reported 21 883 indigenous cases, 8028 imported cases and 534 cases of unknown classification, in addition to 331 malaria deaths. In 2016, the country reported 1114 indigenous, 4501 imported and 227 unclassified cases and 54 deaths. The national malaria programme is funded by domestic resources with additional support from regional grants as part of the E8 initiative. There are four professionals at the national level in the malaria control programme. The South Africa Malaria Elimination Committee was formed in 2014 and has two meetings per year. The committee includes experts on case management, vector control, surveillance, monitoring and evaluation, and health promotion, drawing heavily on experts from the private sector, national public health institutes, WHO and academic institutions. The national programme has been successful in mobilizing extra funding from the national treasury and increased IRS coverage to 98% in the 2017–2018 season. Outbreaks reported in 2017 from malaria-endemic areas without recent transmission were not included in the IRS program. The number of structures in these areas to be sprayed will be increased. The country faces continuous importation of malaria parasites through population movements from neighbouring malaria-endemic countries. There have been challenges in acquiring dichlorodiphenyltrichloroethane (DDT) for the IRS programme; South Africa is looking at the potential for pool procurement through a supplier to the Southern African Development Community.

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