



# Report of the third Global Forum of malaria-eliminating countries

JUNE 2019

MEETING REPORT

## SUMMARY

WHO convened representatives of 21 countries with the potential to eliminate malaria by 2020 (the E-2020) at the third Global Forum of Malaria-eliminating Countries, in Wuxi, China, on 18–20 June 2019. Representatives of the national malaria programmes of the ministries of health of 20 of the 21 E-2020 countries attended the 3-day meeting. The other participants were representatives from Argentina, Armenia, Philippines, Uzbekistan and Vanuatu; WHO country, regional and headquarters staff and observers from major donors. A large delegation from China also participated as observers. Countries described their progress towards elimination and the challenges in achieving this goal. Several technical presentations were made by WHO staff, including on a new pilot programme to provide subnational support for malaria elimination, STOP-Malaria; the Global Malaria Programme's policy pathway; and certification procedures. As in 2018, the Malaria Elimination Oversight Committee attended the Global Forum and made recommendations to help countries achieve elimination. Several countries reported significant progress towards elimination: for the first time, Cabo Verde, the Islamic Republic of Iran, Malaysia and Timor-Leste reported 0 indigenous cases since the beginning of 2018, while China and El Salvador maintained their malaria-free status. Eswatini, Saudi Arabia and South Africa reported large reductions in the number of cases in 2018 as compared with 2017. Certification of Algeria and Argentina as malaria-free was celebrated at an evening ceremony.

## BACKGROUND

In 2015, WHO launched the *Global technical strategy for malaria 2016–2030*, one of its pillars being “accelerate efforts towards elimination and attainment of malaria-free status”.<sup>1</sup> The milestones for 2020 include elimination of malaria in at least 10 countries in which malaria was transmitted in 2015 and preventing re-establishment of malaria in any country that has already achieved 0 indigenous cases. In 2016, WHO identified 21 countries with the potential to eliminate malaria by 2020 on the basis of 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.<sup>2</sup> These 21 countries, referred to as the E-2020, consist of six in the African Region (Algeria, Botswana, Cabo Verde, Comoros, Eswatini and South Africa); seven in the Region of the Americas (Belize, Costa Rica, Ecuador, El Salvador, Mexico, Paraguay and Suriname); two in the Eastern Mediterranean Region (Islamic Republic of Iran and Saudi Arabia); three in the South-East Asia Region (Bhutan, Nepal and Timor Leste); and three in the Western Pacific Region (China, Malaysia and Republic of Korea). WHO convened the E-2020 countries at an inaugural Global Forum in Geneva, Switzerland, in March 2017, and a second forum was held in San José, Costa Rica, in June 2018. The third Global Forum was held in Wuxi, China, on 18–20 June 2019 and was attended by representatives from 20 of the 21 E-2020 countries (Representatives of the Ministry of Health of South Africa were unable to attend.) and representatives from Argentina, Armenia, Philippines, Uzbekistan and Vanuatu. WHO staff from country and regional offices and from headquarters were also present. The observers included representatives from China and major donors (see list of participants in the annex).

The Malaria Elimination Oversight Committee (MEOC), established by WHO in April 2018, attended the Global Forum. The MEOC supports countries and regions that are actively pursuing the goal of eliminating malaria by reviewing country progress, challenges and bottlenecks and making recommendations on accelerating work. The MEOC meeting report will be published separately.

## **METHOD OF WORK**

The theme of the third Global Forum was “Focusing on high-risk populations for malaria elimination.” E-2020 country representatives presented progress towards elimination in a poster and a panel session. Each country poster presented the trends in the numbers of indigenous and imported malaria cases over time, the most recent map of the distribution of malaria foci throughout the country, their high-risk population(s), programme challenges and recent successes. Each poster was displayed during one of two 60-min poster sessions, where other country representatives, the MEOC, WHO staff and observers could ask questions about the country’s data, elimination strategy and programme implementation. Country representatives were grouped according to the similarity of their high-risk populations and participated in one of four panel sessions, at which they discussed challenges and strategies in reducing the risk for malaria transmission in high-risk populations.

Participants were briefed on the Global Malaria Programme’s updated policy and the STOP-Malaria pilot programme and heard a technical update on preparing for certification of elimination. On the third day of the meeting, the Jiangsu Institute of Parasitic Diseases organized a field visit and visits to a provincial and a district health facility and a county office of the China Centres for Disease Control and Prevention.

## **OPENING SESSIONS**

The first half of the opening session was chaired by Mr Chang Jile, Director-General of the Bureau of Disease Control and Prevention, National Health Commission, China. Mr Li Bin, Vice-Minister of the National Health Commission, China, welcomed participants and said that holding the 2019 Global Forum in China would help the country to achieve malaria elimination and certification of malaria-free status by 2020. He summarized China’s experiences in the fight against malaria over the past seven decades and reiterated

China's commitment to contribute to the global fight. Mr Wang Si Yuan, Deputy Secretary-General, Jiangsu Provincial Government, also welcomed participants.

Dr Pedro Alonso, Director of the Global Malaria Programme, provided an update on the global malaria situation, indicating that worldwide progress had stalled and action was required to get back on track to achieve the 2030 global targets. The progress achieved by malaria-eliminating countries was nevertheless encouraging, and their example inspired others to achieve 0 cases and create a world in which no one died of malaria. Dr Gauden Galea, WHO Representative to China, said that China's achievement of malaria elimination was not a chance occurrence: elimination was a country-led, country-owned venture that required a clear strategy comprising strong case-based surveillance and response and a strong reference laboratory system.

During the second half of the opening sessions, progress in malaria elimination in the Western Pacific Region was presented by Dr Rabindra Abeyesinghe, Coordinator, Malaria and Other Vector-borne and Parasitic Diseases, WHO Regional Office for the Western Pacific. China's experiences in malaria control and elimination were presented by three representatives. Dr Yan Jun, Director of the Malaria and Parasitic Diseases Division, Bureau of Disease Control and Prevention, China National Health Commission, gave an overview of successes and challenges in China's malaria control and elimination programme. China's 1-3-7 surveillance and response strategy was presented by Dr Cao Jun, Deputy Director of the Jiangsu Institute of Parasitic Diseases, and Dr Zhou Hong Ning, Director of the Yunnan Institute of Parasitic Diseases, described malaria elimination activities in Yunnan border areas.

## **UPDATES FROM THE MALARIA ELIMINATION OVERSIGHT COMMITTEE**

Dr Frank Richards, MEOC Chair, described the Committee's activities. He reminded participants of its terms of reference and the country assignments of each MEOC member. He presented the recommendations made after the 2018 Global Forum, including holding a special review session with the countries closest to reaching elimination. He noted a 75% reduction in indigenous cases since 2016–2018 in the group of seven countries that attended the meeting in February 2019 and presented the conclusions and recommendations (<https://apps.who.int/iris/bitstream/handle/10665/324793/WHO-CDS-GMP-2019.05-eng.pdf>). Dr Richards noted interest within MEOC and WHO in conducting missions for high-level collaboration and advocacy to raise political support and sustained domestic financing. He emphasized the usefulness of national elimination committees, which have been found to be useful by neglected tropical disease control programmes.

## **KEYNOTE PRESENTATION. MEASURING MALARIA'S MARCH TOWARD ELIMINATION: LESSONS FROM FIRST-, SECOND- AND THIRD-GENERATION SURVEILLANCE IN THE RESPONSE TO HIV**

Dr Keith Sabin, Senior Advisor, Strategic Information and Monitoring Division, UNAIDS, reported lessons learnt from the HIV response surveillance and monitoring systems. He described similarities between HIV and malaria elimination, including the role of surveillance among at-risk populations to ensure their access to preventive measures

before they become infected. He noted the challenges posed by decreasing numbers of infections, as it became difficult to assess whether there were really fewer new diagnoses or whether cases of infection were being missed. It was therefore important to improve estimates of populations at risk (denominator) and the accuracy of estimates, with data on risk behaviour. Countries should determine who was being left out and why such individuals were not found, and strategies should be devised to find and engage with them if they did not regularly seek care when ill. A method used currently was “respondent-driven sampling,” an approach involving “snowball sampling” (asking individuals to refer people they know, who then refer people they know, etc) and a mathematical model with weighting of a sample to compensate for the non-random way in which it was collected. With this sampling approach for HIV surveillance, they had identified, found and engaged with the communities that were hardest to reach. The method was used in the surveillance of many diseases by organizations such as UNAIDS, WHO, PEPFAR and the World Bank and could also be used to estimate the size of the at-risk population, disease prevalence, the coverage of interventions and the number not covered.

HIV and malaria continued to be transmitted mainly by populations that were hard to reach and generally mobile. Additional methods to target those groups included “peer outreach”, in which index cases were used for active case finding among their peers. Participatory mapping of areas of high-, medium- and low-risk population density could be used for surveillance and interventions. Meaningful community engagement involving community members in response activities facilitated multisectoral responses, which were particularly important during pre-elimination and elimination phases, when reliance on the health sector alone was unlikely to be sufficient. Dr Sabin finished his presentation with a word of caution. Despite successes in HIV surveillance, men and adolescent boys remained difficult to engage, and social network methods had been insufficient to do so.

## **TECHNICAL UPDATES FROM WHO**

### **STOP-Malaria: a pilot programme**

Dr Amanda Tiffany (epidemiologist, GMP) described the forthcoming launch of the STOP-Malaria pilot programme. She said that its objective was to strengthen subnational technical and operational capacity to eliminate the last foci of transmission by providing sustained support for malaria elimination activities, including surveillance. She noted that over 250 people had applied for the programme, and, after a rigorous selection process by WHO regional offices, inter-country support teams and WHO country offices, five participants had been selected. All five were mid-career professionals with significant experience in malaria control or surveillance. They are to be sent to one of five countries in September 2019, after 2 weeks of training in malaria elimination in Botswana with the national programme collaborator and the national programme officer from each WHO country office. The training programme will comprise didactic modules and hands-on exercises and be facilitated by staff from the WHO GMP, the WHO regional offices, WHO inter-country support teams and a WHO country office. Field visits will also be organized in collaboration with the Botswana WHO country office. The first group will be deployed for 9 months. If funding permits, GMP plans to extend the missions to 11 months, and participants will be eligible for a second 11-month mission, if agreed by the WHO country office, the national malaria programme and the participant.

## **Policy pathway of the Global Malaria Programme**

Dr Pedro Alonso (Director, GMP) described the Programme's policy pathway. He said that the revised process for policy development would increase transparency. The process comprised three steps: better anticipation, policy development and optimization of policy uptake and dissemination. The process thus began with activities that provided a framework for prioritizing the work of the GMP, including defining unmet and partially met public health needs with regard to malaria. Recommendations for the development of new tools and strategies would be based on work with other departments, including Prequalification. Uptake of new recommendations would be optimized for consideration of their incorporation into both regional and national programme decision-making. The process was dynamic, as discussions were under way, and changes would continue to be made and incorporated as necessary.

## **Preparing for certification of malaria elimination**

Dr Li Xiao Hong (Technical Officer, GMP) described the procedure for preparation for WHO certification of malaria elimination. She introduced a number of tools being developed by WHO. The first was the Malaria Elimination Assessment Tool, which can be used to assess progress towards elimination and readiness for certification. The tool operationalizes the framework for malaria elimination (published in 2017), highlights components of a malaria elimination strategy and specifies requirements for certification, including the documentation required and the elements of a system necessary for preventing re-establishment of transmission. She shared the outcomes of certification exercises with the E-2020 countries, which had shown that continued vigilance and passive case detection are essential after elimination, regardless of the risk of re-establishment of transmission. Surveillance data should be monitored regularly to ensure that all suspected malaria cases are reported and tested. She introduced the national elimination report template and explained its use. She proposed that countries that are planning to request official certification contact the WHO Secretariat well in advance in order to shorten the certification process.

## **Report on a regional platform for sharing malaria surveillance data in the Greater Mekong Subregion**

Dr Hiromasa Okayasu (Coordinator, Greater Mekong Sub-region) presented the regional data-sharing platform for malaria in the Greater Mekong sub-region, established in 2014, as an example of regional collaboration for malaria elimination. All the countries in the sub-region (Cambodia, China, Lao People's Democratic Republic, Myanmar, Thailand and Viet Nam) report surveillance data monthly through their national surveillance systems to the platform, to be shared with the other countries. The platform permits cross-border collaboration, whereby national and sub-national staff access and analyse data for adjacent areas. It also allows countries to identify common priorities, conduct informed discussions and make recommendations.

The platform permits WHO to monitor progress towards malaria elimination in the Greater Mekong sub-region and provide regular feedback to countries and partners. Upon request, WHO can analyse data (e.g. cases and annual parasite incidence) and share them at national, regional and subnational levels. Although data collection is now routine, access to data was initially difficult. Furthermore, data are not reported from the private sector or from non-public partners, which are not covered by the national surveillance system. WHO continues to support improvement of national surveillance systems and to facilitate data-sharing in the sub-region.

## **Panel sessions: challenges of high-risk populations**

Four panel sessions with representatives from E-2020 countries were held on the theme of the third Global Forum “Focusing on high-risk populations for malaria elimination.” Each panel was moderated by a member of the MEOC, and the panel topics reflected common experiences in countries with high-risk populations: nomadic and migrant populations, migrant workers on agricultural plantations and in mining, border communities and foreign workers in malaria-endemic countries. The panel discussions were interactive, with sharing of information in a dynamic, participatory approach.

At the beginning of each panel, the participants described the high-risk populations in their countries; the challenges to providing preventive services, diagnosis and treatment and ensuring adequate surveillance and timely responses; and the strategies they had used to overcome the difficulties. The effective practices described were: ensuring universal access to malaria diagnosis, treatment and preventive services for all people in a country, irrespective of their nationality or residence; collaboration with non-health sectors (e.g. private companies and the military); and formal or informal engagement of members of the high-risk populations.

The mobility of populations between countries was cited repeatedly as a challenge for malaria elimination, and panellists described the strategies they have used to reach these populations. They include working with employers to ensure access to testing and treatment and to ensure that all suspected cases are reported and investigated rapidly, identifying community workers in high-risk communities to carry out testing and referral to treatment and developing joint plans with neighbouring countries for activities in border areas.

Surveillance was highlighted as a challenge, and work to intensify surveillance and response in areas with at-risk populations, border communities and highly receptive areas was described. Many countries engaged either formally or informally with members of high-risk populations to improve data collection for investigation and response to cases. Some countries have trained members of high-risk populations to deliver malaria services, provide malaria testing and treatment or referral and support active case detection when necessary. In countries in which high-risk population are difficult to reach, engaging individuals in these community was reported to be a cost-effective way to improve case reporting and understanding of population movements.

## **Award ceremony**

An evening award ceremony was opened by Ms Tan Ying, Commissioner of Jiangsu Provincial Health Commission, who welcomed participants. A video on malaria elimination in China was shown. Two speakers, Dr Scott Filler, Senior Disease Coordinator, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and Dr Alonso, acknowledged the achievements of the malaria-eliminating countries. Representatives of three countries that have recently been certified malaria-free, Argentina, Algeria and Uzbekistan, receiving tokens from Dr Alonso. They commented that elimination and certification had been hard-won achievements by their malaria teams and governments, and they expressed their thanks to WHO and all parties that had helped them. Dr Frank Richards, Chair of MEOC, encouraged them to continue their good work.

## Field visit

A field visit was organized by Jiangsu Institute of Parasitic Diseases on the last day of the meeting. Participants and observers were divided into two groups to observe China's 1-3-7 approach in action. The approach involves definition of targets, which guide and monitor case reporting, investigation and response: report malaria cases within 1 day, confirm and investigate each case within 3 days, and determine and implement the appropriate public health response to prevent further transmission within 7 days. Participants observed the system for detection and notification of cases (component 1 of the strategy) at the Chinese Centres for Disease Control and Prevention and case confirmation, classification, investigation and response (components 3 and 7 of the strategy) at the Chinese People's Hospital. At the Jingang Town Anil Community Health Service Station, participants discussed the practical elements of components 1 and 3 with local health workers.

In the afternoon, the group moved to the Jiangsu Institute of Parasitic Diseases (a WHO collaborating centre for research and training on malaria elimination), where they visited the vector biology laboratory, observed the Institute's microscopic and molecular examination systems and visited the science popularization museum. The group then reconvened to discuss a recent imported case of malaria and the local response.

## E-2020 COUNTRY PROGRESS

Progress towards elimination, identified high-risk populations, successes achieved by the national programme and challenges faced is summarized below for each E-2020 country.

### African Region

#### Algeria

Algeria was certified as malaria-free on 22 May 2019 after reporting 0 indigenous cases since 2014 and a positive recommendation from the MECP. In 2018, Algeria had reported 1 introduced and 1241 imported malaria cases. The area of greatest risk of importation in Algeria continues to be the southern province of Tamanrasset, which borders malaria-endemic Mali and Niger and accounted for most of the imported cases. Algeria achieved malaria elimination and has prevented re-establishment by providing free diagnosis and treatment for everyone in the country, regardless of nationality and legal status, ensuring quality-assured diagnosis and establishing strong epidemiological and entomological surveillance systems with mandatory, immediate case notification. Their plan for preventing re-establishment includes maintaining vigilance in the general health service to manage imported cases and mitigate the risks of onward transmission, strengthening the capacity to respond to malaria outbreaks, continued entomological surveillance, providing free chemoprophylaxis to travellers and proactive case detection in high-risk populations.

#### Botswana

Botswana reported 533 indigenous and 51 imported malaria cases in 2018, indicating a decreasing trend in malaria transmission after an outbreak in 2017 of 1900 indigenous cases. The latest map of malaria cases shows that transmission continues along Botswana's south-eastern border with Limpopo Province, South Africa, and along its

northern and north-eastern borders with Namibia and Zimbabwe, respectively. High-risk populations in Botswana include mobile and migrant populations, communities in the Okavango Delta and Botswanan travellers moving to and from malarious districts. While Botswana faces challenges, including a perception of malaria as a low priority and poor acceptance of vector control in some communities, they have documented a 69% decrease in the number of malaria cases reported in recent outbreaks. They have also mapped all recent malaria cases at household level and conducted stratification in villages.

### **Cabo Verde**

After a significant epidemic of malaria in Praia during 2017, with 423 indigenous, 23 imported and 11 recrudescant cases of *Plasmodium falciparum* malaria, Cabo Verde reported 2 indigenous and 18 imported malaria cases in 2018. Given its proximity to the mainland, migrants travelling to and from malaria-endemic countries on the African continent have been identified as a high-risk population, and the risk of importation of cases from the continent is an identified challenge. Cabo Verde participates actively in intra-country coordination meetings as part of the Region's Transboundary Elimination Plan, and seven previously malaria-endemic islands of Cabo Verde have remained malaria-free since 1960, except for the island of Boa Vista with 4 indigenous cases in 2015.

### **Comoros**

In 2018, 19 682 indigenous malaria cases were reported in Comoros, representing a 300% increase over the 4852 cases reported in 2017. The large increase in malaria transmission over the past 2 years, underutilization of insecticide-treated nets and the general weakness of the health system pose significant challenges. Nevertheless, high-level authorities are committed to eliminating malaria, and general community support for malaria elimination is increasing. Accordingly, the islands of Mwali and Ndzuwani, which have remained malaria-free, have requested that visitors from malaria-endemic area undergo testing for malaria upon arrival.

### **Eswatini**

Eswatini reported 59 indigenous and 348 imported cases in 2018, representing a decrease from 683 indigenous and 403 imported cases reported in 2017. Most of the active foci are concentrated in the Lubombo Region in the eastern part of the country. The Malaria Elimination Advisory Group meets twice a year to provide guidance and endorse the decisions of the national programme. Risks for importation of malaria parasites are due to a large influx of agricultural workers into Eswatini and movement of residents to neighbouring, malaria-endemic countries to visit friends and relatives. Furthermore, health care workers in areas where malaria is no longer a significant public health concern are less likely to suspect malaria infections. The national programme requires more domestic funding for insecticides to ensure an adequate supply.

### **South Africa**

South Africa reported 9562 indigenous, 8748 imported and 297 unclassified cases in 2018, which represents a decrease after the resurgence of malaria in 2017, when 21 883 indigenous cases, 8028 imported cases and 534 cases of unknown classification were reported. Active foci of transmission are found in the provinces of KwaZulu-Natal, Limpopo and Mpumalanga in the eastern part of the country, bordering Mozambique, Swaziland and Zimbabwe. After a > 50% decrease in the number of indigenous cases since 2017, the national programme was able to mobilize funding for malaria from the national treasury, and coverage of indoor residual spraying is being extended. Migrant workers from malaria-endemic countries and South African residents who travel to malaria-endemic countries to work and visit friends and family remain at high risk, and the number of imported cases reported in South Africa has increased in recent years.

## Region of the Americas

### Belize

Belize continues to report < 10 indigenous cases of malaria: in 2018, the country reported three indigenous and four imported malaria cases, and, in 2017, seven indigenous and two imported cases were reported. As of 2018, there were two active foci, in the western and southern regions of the country. After updating their estimates of risks of importation and receptivity to revise stratification, the national programme targeted interventions to 16 localities with high risks of transmission. Surveillance was improved after involvement of the private sector in diagnosis and reporting. Additionally, a national reference laboratory for malaria has been established, and three microscopists have been certified, although the microscopy network remains limited. The national programme faces financial challenges, as the limited resources are shared with programmes for other vector-borne diseases. Because of the low burden of disease, malaria remains a “forgotten” disease in many areas. Additionally, the capacity of staff to lead malaria elimination activities is limited by lack of succession planning for staff and of local training opportunities.

### Costa Rica

Costa Rica experienced an increase in the number of reported cases in 2018, with 70 indigenous and 38 imported cases, whereas there were 12 indigenous and 13 imported cases in 2017. Most cases were reported in October, November and December 2018. An estimated 6.6% of the at-risk population lives in active or residual non-active foci. The active foci are located in Huetar Norte and Central Norte bordering Nicaragua and Pacifico Central in the western part of the country. The national programme is pilot-testing use of rapid diagnostic tests in hard-to-reach areas and also supporting active surveillance. In outbreak areas, cases are detected proactively. Migrant workers from neighbouring countries and illegal gold miners are high-risk populations. Because of their remote location, irregular migration patterns and lack of social security, people in the mining area in the northern part of the country are difficult to reach with prompt diagnosis and treatment, and interventions in the border areas should be improved.

### Ecuador

Ecuador reported 1653 indigenous and 153 imported cases in 2018, an increase over 1230 indigenous and 75 imported cases in 2017. Approximately 80% of malaria foci are accessible only by water, and these areas are also at risk of violence due to drug trafficking and illegal mining. At the border areas, extensive movement between Colombia, Ecuador and Peru results in frequent parasite importation. Nevertheless, community support for and participation in the fight against malaria has increased. After identification of the provision of artemisinin-based combination therapy as a priority in 2017, the national programme procured these drugs and provided them to health facilities in areas with active malaria transmission. Rapid diagnostic tests were also procured and distributed and laboratorians trained in microscopy.

### El Salvador

El Salvador reported its second consecutive year of 0 indigenous malaria cases in 2018, with only two imported malaria cases. The national programme recognizes the challenge of maintaining the vigilance of health workers in recognizing suspected malaria cases and sustaining continued use of vector control by the population. In 2018, the first binational meeting was held between El Salvador and Guatemala on imported malaria cases; however, communication with neighbouring countries to ensure timely reporting on malaria transmission remains a challenge. Between September 2018 and March 2019, the first cohort of entomologists was trained in medical entomology in Belize and awarded diplomas. Currently, over 5000 people participate in malaria-related field activities, including vector control technicians and voluntary collaborators, who are retrained regularly.

## **Mexico**

Mexico reported 803 indigenous malaria cases in 2018, an increase over the 736 reported in 2017, while the number of imported cases decreased from 29 in 2017 to 24 in 2018. Active foci are concentrated mainly in the southeast, along Mexico's border with Guatemala. Residents of the State of Chiapas, especially along the border with Guatemala, have been identified as at high risk because of their limited access to health facilities. Migrants traveling through Mexico are also a source of parasite importation. Maintaining disease surveillance among high-risk groups poses a challenge for the national programme; however, passive surveillance has been strengthened with the use of community health promoters. A national stratification exercise was conducted recently, reflecting reorientation of the national programme from an emphasis on vector to control to include surveillance, and activities have been targeted accordingly. The programme is also working to prevent re-establishment of transmission in areas of the country that are currently malaria-free.

## **Paraguay**

Paraguay was certified malaria-free in 2017 at the Global Forum, after reporting 0 indigenous cases of malaria since 2012 and a positive recommendation from the WHO MECP. Imported cases continue to be identified, with five reported in 2018 and in 2017. The national programme now focuses on preventing re-establishment of infection. The plan is based on an analysis of receptivity and risk of importation. The key strategies include active case detection and enhanced surveillance at health facilities to identify additional cases, collaboration with other sectors and ministries to monitor changes in receptivity or risk of importation and strategies for high-risk populations. Training of general health service staff ensures maintenance of vigilance and the quality of services, and active engagement with community volunteers ensures early detection and treatment of cases.

## **Suriname**

Suriname reported 30 indigenous and 198 imported malaria cases in 2018 and 40 indigenous and 511 imported cases in 2017. The active foci are located mainly in the eastern part of the country that borders French Guiana. Cross-border movement of mobile migrant populations from French Guiana into Suriname for illegal mining can result in importation of malaria parasites. A malaria programme specifically for high-risk populations was therefore created by the Ministry of Health, and malaria screening posts are established in border areas.

# **Eastern Mediterranean Region**

## **Iran (Islamic Republic of)**

Iran has made significant progress in reducing the number of indigenous malaria cases. Zero indigenous and 573 imported malaria cases were reported in 2018 and 57 indigenous and 871 imported cases in 2017. Local transmission of *P. vivax* has occurred primarily in the south-eastern part of the country bordering the Pakistani province of Balochistan with movement of people to and from Balochistan. As the number of cases decreases, maintaining political commitment and vigilance among health care workers for identifying suspected malaria cases has become more difficult. Nevertheless, the malaria programme is fully funded by the Government, and a national Malaria Elimination Advisory Committee has been established.

## **Saudi Arabia**

Saudi Arabia reported 61 indigenous and 2517 imported malaria cases in 2018 and 177 indigenous and 2974 imported cases in 2017. Malaria is transmitted mainly in the

Asean and Jizan regions bordering Yemen, and vector control operations should be strengthened in foci along the border. Both undocumented migrants from Yemen and communities living along the border have been identified as high-risk populations. Cross-border population movement, especially with Yemen, poses a risk for parasite importation. Mobile units have been deployed for diagnosis and treatment of cases in undocumented migrants from neighbouring countries. Despite the annual influx of pilgrims and complex situations with neighbouring countries, Saudi Arabia has not reported a significant increase in indigenous malaria cases. The malaria programme is fully funded by the Government, and an independent malaria elimination advisory committee meets twice a year.

## **South-East Asian Region**

### **Bhutan**

Bhutan reported 6 indigenous and 34 imported malaria cases in 2018 and 11 indigenous and 38 imported cases in 2017. Enhanced surveillance, coverage of diagnostics and antimalarial drugs, distribution of long-lasting insecticide-treated nets and focal indoor residual spraying have contributed to reducing malaria transmission, and transmission has now been interrupted in 18 of the 20 districts of the country. Active foci are located on the southern border with India, where population mobility is high, and resurgence of malaria is a risk; cross-border collaboration with India should be established. Border communities, indigenous populations in remote areas, the military and forest users have been identified as high-risk populations. Decreased donor support for malaria control after the fall in incidence could compromise the gains made in the country.

### **Nepal**

Nepal reported 559 indigenous and 599 imported cases in 2018 and 628 indigenous and 665 imported cases in 2017. The districts with active foci are located mainly along the border with India, and mobile populations and people living in the border areas are two of the three high-risk populations. Seasonal importation of malaria parasites by migrants and reports of new cases in mountainous areas that are difficult to access pose challenges for early detection and rapid response. The National Malaria Strategic Plan is being revised to reflect the goal of malaria elimination. Risk stratification has been revised, and the surveillance and treatment protocol has been updated. Yet, human resources for malaria activities at provincial and local levels remain inadequate, and implementation of an integrated vector management programme has been difficult. Nevertheless, the surveillance system has been strengthened to include web-based reporting, and the 1-3-7 approach is being used.

### **Timor-Leste**

Timor-Leste reported 0 indigenous malaria cases for the first time in 2018, whereas, in 2017, 16 indigenous and 13 imported cases were reported. The one focus considered to be active in 2018 was Oecusse, which is separated from Timor-Leste by Indonesia. Cross-border movement of migrants and Timorese fisherman to and from Indonesia increases the risk of reintroduction of malaria. The national programme has targeted vector control on the basis of evidence from entomological surveillance and monitoring of insecticide resistance. No stock-outs of antimalarial medicines, rapid diagnostic test kits or laboratory consumables were reported at any level. Reporting from private sector health facilities should, however, be strengthened, and more funding is required for malaria-related activities. Currently, 80% of the officers attached to the national malaria programme are funded by the Global Fund.

## Western Pacific Region

### China

For the second year in a row, China reported 0 indigenous cases of malaria in 2018; there were 2511 imported cases in 2018 and 2672 in 2017. Large numbers of imported malaria cases are diagnosed in Chinese nationals returning from malaria-endemic areas in Africa and South-East Asia. Seven provinces have completed verification of malaria elimination and have been recognized officially by the National Health Commission. The long, porous border between Myanmar and Yunnan Province is a challenge for malaria control.

### Malaysia

Malaysia reported 0 indigenous human malaria cases and 478 imported cases in 2018 and 85 indigenous and 415 imported cases in 2017; however, there were 4124 *P. knowlesi* malaria cases in 2018 and 3614 in 2017. Malaysia is intensifying implementation of the national strategic plan for malaria elimination, with a mortality oversight review and national technical meetings in 2018. An inter-ministerial committee for the control of zoonotic diseases has been established, surveillance has been improved by enforcing online registration of cases and outbreaks, and focus investigation and classification have been introduced. High-risk populations were identified as labourers (including foreign workers in agriculture, farming and forestry) and aboriginal groups in East Malaysia. Ensuring prompt malaria diagnosis in regions where health services are limited remains a challenge, as is accessing temporary foreign workers, who are difficult to trace because of the transient nature of their employment.

### Republic of Korea

The Republic of Korea reported 501 indigenous and 75 imported cases in 2018 and 436 indigenous and 79 imported cases in 2017. The malaria programme is funded entirely by the Government. In 2018, a new 5-year action plan was issued, with 2023 as the target year for certification of malaria-free status. Immediate notification of all positive cases is required. Veterans, active military personnel in the Demilitarized Zone and populations along the Demilitarized Zone (particularly in northern Gangwon and Gyeonggi provinces and northern Incheon city) have been identified as high-risk populations, for whom surveillance should be strengthened. Implementation of vector control in the Demilitarized Zone and sharing of information among programmes and across borders, where the risk is highest, have been identified as essential.

## RECOMMENDATIONS BY THE MEOC

The MEOC presented its preliminary conclusions and recommendations during the meeting and finalized its report in a closed session. The complete report and recommendations will be published separately.

### Endnotes

1. Global Technical Strategy for Malaria 2016–2030. Geneva: World Health Organization; 2015 (<http://www.who.int/malaria/publications/atoz/9789241564991/en/>).
2. Eliminating malaria. Geneva: World Health Organization; 2016 (<http://www.who.int/malaria/publications/atoz/eliminating-malaria/en/>).

## LIST OF PARTICIPANTS

### National participants – E-2020 countries

Samia Hammadi  
Deputy Director of prevalent diseases  
and health alert/ Coordinator of malaria  
elimination programme's  
Ministry of Health, Population and Hospital  
Reform  
ALGERIA

Kim Bautista  
Chief Operations Officer  
Vector Control Unit, Ministry of Health  
BELIZE

Rinzin Namgay  
Chief Entomologist  
Vector-borne Disease Control Programme  
BHUTAN

Mpho Motlaleng  
Focal person for national malaria  
surveillance  
National Malaria Control Programme  
BOTSWANA

Antonio Moreira  
National Malaria Control Programme  
Manager  
CABO VERDE

Jun Yan  
Division Chief of Bureau of Disease Control  
and Prevention  
National Health Commission  
P.R. CHINA

Affane Bacar  
National Malaria Control Programme  
Manager  
Ministry of Health  
COMOROS

Rodrigo Marin Rodriguez  
Coordinator  
Vector Disease Control Programme  
Ministry of Health  
COSTA RICA

Jean Carlos Cagua Ordoñez  
National Malaria Manager  
ECUADOR

Jaime Enrique Aleman Escobar  
Coordinator, National Malaria Control  
Programme  
Ministry of Health  
EL SALVADOR

Zulisile Zulu  
Senior Programme Officer  
National Malaria Programme  
ESWATINI

Ahmad Raeisi  
Associate professor of epidemiology and  
National Malaria Programme Manager  
Ministry of Health  
ISLAMIC REPUBLIC OF IRAN

Mohd Hafizi Bin Abdul Hamid  
Principal Assistant Director (Malaria)  
Vector Borne Disease Sector  
Disease Control Division  
Ministry of Health  
MALAYSIA

Maria Nohemi Colin Soto  
Medical Officer  
National Centre of Epidemiological  
Surveillance and Diseases Control  
Ministry of Health  
MEXICO

Ghanashyam Pokharel  
Senior Public Health Administrator  
Epidemiology and Disease Control Division  
Ministry of Health and Population  
NEPAL

Maria Teresa Baran Wasilchuk  
Director General of the National  
Department for malaria elimination –  
SENEPA  
PARAGUAY

Byoung-Hak Jeon  
Epidemic Intelligence Service Officer  
Korea Centers for Disease Control and  
Prevention  
REPUBLIC OF KOREA

Sang-Eun Lee  
Staff scientist  
Korea Centers for Disease Control and  
Prevention  
REPUBLIC OF KOREA

Mohammed H. Alzahrani  
Malaria Focal Person, Director, Malaria  
Control Programme  
Ministry of Health  
SAUDI ARABIA

Helene Hiwat  
National Malaria Programme Manager  
SURINAME

Maria do Rosario de Fatima Mota  
Malaria Unit Officer  
Ministry of Health  
TIMOR LESTE

### **National Participants – Observer Countries**

Laura Brandt  
Epidemiology and Health Analysis  
Ministry of Health  
ARGENTINA

Lusine Paronyan  
Head of Vector-borne and Parasitic  
Diseases  
Epidemiology Department, National Center  
for Disease Control and Prevention  
Ministry of Health  
ARMENIA

John Bobbie Meyers Roca  
Regional Entomologist  
Department for Health, Center for Health  
Development  
PHILIPPINES

Inna Tyo  
Head of parasitic diseases department  
Ministry of Health  
UZBEKISTAN

Len Tarivonda  
Director, Public Health – Ministry of Health  
VANUATU

### **World Health Organization – Country Offices**

Houria Khelifi  
National Professional Officer  
ALGERIA

Joseph Job  
Specialist, Malaria and Vector-borne  
Diseases  
BELIZE

Kentse Moakofhi  
National Professional Officer  
BOTSWANA

Carolina Gomes  
National Professional Officer and malaria  
focal person  
CABO VERDE

Fabio Scano  
Coordinator  
P.R. CHINA

Gauden Galea  
WHO Country Representative  
P.R. CHINA

Ahamada Nassuri  
National Professional Officer  
COMOROS

Gabriela Rey  
International PAHO consultant, malaria  
COSTA RICA

Camila Damasceno  
Specialist, Vector-borne diseases  
EL SALVADOR

Kevin Makadzange  
Malaria focal point  
ESWATINI

Omid Zamani  
National Professional Officer  
IRAN

Christoph Hamelmann  
WHO Country Representative  
IRAN

Subhash Lakhe  
National Professional Officer  
NEPAL

Gawrie Loku Galappaththy  
International Professional Staff  
PHILIPPINES

Oscar Martin Mesones Lapouble  
Specialist Malaria and vector-borne  
diseases  
SURINAME

Manel Yapabandara  
Technical Adviser (Malaria)  
NMCP, Ministry of Health  
TIMOR-LESTE

Tessa Knox  
Technical Officer, Malaria and other  
vector-borne diseases

VANUATU  
WHO Regional Staff, Inter-Country Support  
Staff and Malaria Elimination Advisers

Elkhan Gasimov  
Regional Malaria Advisor, EURO  
Copenhagen, DENMARK

Elena Chulkova  
Programme Assistant, EURO  
Copenhagen, DENMARK

Risinth Premaratne  
Malaria Elimination Focal point, SEARO  
New Delhi, INDIA

Rabindra Abeyasinghe  
Regional Malaria Advisor, WPRO  
Manila, PHILIPPINES

James Kelly  
Malaria Elimination Focal point, WPRO  
Manila, PHILIPPINES

Blanca Escribano  
Advisor, Malaria Elimination, PAHO  
Washington, USA

Ebenezer Sheshi Baba  
Malaria Elimination Focal Point, AFRO  
Brazzaville, CONGO

Spes Ntabangana  
Malaria Inter-Country Support Team,  
Central Africa – AFRO  
Libreville, GABON

Elizabeth Juma  
Malaria Inter-Country Support Team,  
Eastern and Southern Africa – AFRO  
Harare, ZIMBABWE

Abderahmane Kharchi Tfeil  
Malaria Inter-Country Support Team, West  
Africa – AFRO  
Ouagadougou, BURKINA FASO

Hiromasa Okayasu  
Coordinator, Greater Mekong Subregion  
CAMBODIA

## **Malaria Elimination Oversight Committee (MEOC)**

Dr Evelyn Ansah  
University of Health and Allied Sciences  
Accra, GHANA

Dr Rose Leke  
University of Yaounde  
Yaounde, CAMEROON

Dr Tang Linhua  
Center for Disease Control and Prevention  
Beijing, P.R. CHINA

Dr Kamini Mendis  
Independent Consultant  
Colombo, SRI LANKA

Dr Frank Richards  
Carter Center  
Atlanta, USA

Dr Mirta Roses  
Senior Independent Advisor  
Buenos Aires, ARGENTINA

Dr Leonardo Santo Simao  
Manhiça Foundation  
MOZAMBIQUE

Dr Yongyuth Yuthavong  
Former Deputy Prime Minister Thailand  
Bangkok, THAILAND

## **National and local observers, P.R. China**

Bin Li  
Vice Minister  
National Health Commission

Siyuan Wang  
Vice Secretary General  
Jiangsu Province

Jile Chang  
Director General  
Bureau of Disease Prevention and Control  
National Health Commission

Ying Tan  
Director General  
Jiangsu Commission of Health

Qinghua He  
Deputy Director General  
Bureau of Disease Prevention and Control,  
National Health Commission  
Yong Feng  
Deputy Director General  
Department of International Cooperation  
National Health Commission

Minghao Zhou  
Deputy Director General  
Jiangsu Commission of Health

Xia Jin  
Department of Health, General  
Administration of Customs

Jian Wu  
Guangzhou Customs district

Changjun Wang  
PLA Center for Disease Control and  
Prevention

Liang Wen  
PLA Center for Disease Control and  
Prevention

Yu Li  
Jiangsu Commission of Health

Jianfeng Shi  
Jiangsu Commission of Health

Jun Ge  
Jiangsu Commission of Health

Pingping Wei  
Jiangsu Commission of Health

Bin Han  
General office, National Health  
Commission

Binqi Lv  
Division of Parasitic and Endemic Diseases,  
Bureau of Disease Prevention and Control,  
National Health Commission

Xiaonong Zhou  
Director  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Ning Xiao  
Deputy Director  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Qi Gao  
Jiangsu Institute of parasitic diseases

Shuisen Zhou  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Li Cai  
Shanghai Municipal Center for Disease  
Control & Prevention

Jianjun Wang  
Anhui Provincial Center for Disease Control  
and Prevention

Shanying Zhang  
Fujian Provincial Center for Disease Control  
and Prevention

Xin Liu  
Shandong Institute of parasitic disease

Shanqing Wang  
Hainan Center for Disease Control &  
Prevention

Henglin Yang  
Yunnan Institute of Parasitic Diseases

Linong Yao  
Zhejiang Provincial Center for Disease  
Control and Prevention

Bo Pan  
Guangdong Provincial Center for Disease  
Control and Prevention

Huaxun Zhang  
Hubei Provincial Center for Disease Control  
and Prevention

Zhigui Xia  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Sheng Zhou  
National Institute for Communicable  
Disease Control and Prevention  
Chinese Center for Disease Control and  
Prevention

Hongwei Zhang  
Henan Provincial Center for Disease  
Control and Prevention

Shaosen Zhang  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Jun Feng  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Li Zhang  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Duoquan Wang  
National Institute of parasitic diseases  
Chinese Center for Disease Control and  
Prevention

Zhongjie Li  
National Institute for Communicable  
Disease Control and Prevention  
Chinese Center for Disease Control and  
Prevention

Yale Yu  
Corps Center for Disease Control and  
Prevention

Huasheng Pang  
Xizang Institute of parasitic diseases Center  
for Disease Control and Prevention

Zhuomayangjin  
Linzhi city, Xizang Institute of parasitic  
diseases Center for Disease Control and  
Prevention

Yi Nei  
Hainan Health Commission

Guangze Wang  
Hainan Center for Disease Control &  
Prevention

Jing Zhuang  
Xinjiang Health Commission

Jiangshan Zhao  
Xinjiang Center for Disease Control and  
Prevention

Xuewu Zhou  
Tianjin Health of Commission

Xiaochun Dong  
Tianjin Center for Disease Control and  
Prevention

JinjinHou  
Health Commission of Henan Province

Deling Lu  
Henan Center for Disease Control and  
Prevention

Jun Deng  
Division of Disease Prevention and Control,  
Health Commission of Hebei Province

Wei Tao  
Hebei Center for Disease Control and  
Prevention

Ping Tie  
Shanxi Center for Disease Control and  
Prevention

Ziyao Lan  
GuizhongCenter for Disease Control and  
Prevention

Lu Huang  
Health Commission of Guizhou Province

Peng Zhao  
Health Commission of Shandong Province

Xiangli Kong  
Shandong Institute of Parasitic Diseases

Li Wang  
Fujian Provincial Health Commission

ZhuYun Chen  
Fujian Provincial Center for Disease Control  
and Prevention

Qian Li  
Fujian Provincial Center for Disease Control  
and Prevention

Wensheng Zhang  
Qinghai Provincial Health Commission

Huixia Cai Qinghai Institute for Endemic Disease Prevention and Control	Xiaodong Zhang Health Commission of Jilin Province
Yunpeng Li Chongqing Health Commission	Shuya Wang Jilin Provincial Center for Disease Control and Prevention
Fei Luo Chongqing Center for Disease Control and Prevention	Zonghua Yang Health Commission of Liaoning Province
Baodi Zhang Health Commission of Shaanxi Province	Jie Zhang Liaoning Provincial Center for Disease Control and Prevention
Lie Cao Shaanxi Provincial Center for Disease Control and Prevention	Lulu Gao Health Commission of Zhejiang Province
Yu Nie Health Commission of Sichuan Province	Wei Ruan Zhejiang Provincial Center for Disease Control and Prevention
Li Li Sichuan Center for Disease Control and Prevention	Wei Guo Health Commission of Inner Mongolia Autonomous Region
Yan Zhou Sichuan Center for Disease Control and Prevention	Jian Song Inner Mongolia Autonomous Region Center for Disease Control and Prevention
Jiang Wu Health Commission of Hubei Province	Na Wang Health Commission of Heilongjiang Province
Hong Zhu Hubei Provincial Center for Disease Control and Prevention	Zhifeng Xing Heilongjiang Provincial Center for Disease Control and Prevention
Jingdiao Chen Guangdong Provincial Center for Disease Control and Prevention	Jinwen Ji Beijing Municipal Health Commission
Yan Zeng Health Commission of Guangxi	Wenting Wu Beijing Center for Disease Prevention and Control
Xiangyang Feng Guangxi Center for Disease Prevention and Control	Fei Yang Health Commission of Ningxia Hui Autonomous Region
Gang Liu Health Commission of Gansu Province	Rongting Qi Ningxia Center for Disease Prevention and Control
Chengming Yang Gansu Provincial Center for Disease Control and Prevention	Hongning Zhou Yunnan Institute of Parasitic Diseases
Ying Ye Health Commission of Jiangxi Province	Zurui Lin Yunnan Institute of Parasitic Diseases
Yanfeng Gong Jiangxi Province Center for Disease Control and Prevention	Jianwei Xu Yunnan Institute of Parasitic Diseases

Xueyong Tao  
Health Commission of Hunan Province

Shifeng Zhuang  
Hunan Provincial Center for Disease  
Control and Prevention

Jie Liu  
Shanghai Municipal Health Commission

Min Zhu  
Shanghai Municipal Center for Disease  
Control and Prevention

Yi Tang  
Health Commission of Anhui Province

Tao Zhang  
Anhui Provincial Center for Disease Control  
and Prevention

Haitao Yang  
Director  
Jiangsu Institute of Parasitic Diseases

Jun Cao  
Deputy Director  
Jiangsu Institute of Parasitic Diseases

## **International observers**

Jeffery Smith  
Chief Operating Officer  
Asia-Pacific Leaders Malaria Alliance  
(APLMA)  
SINGAPORE

Moritoshilwagami  
Senior Researcher, Department of Tropical  
Medicine and Malaria  
Japanese National Center for Global Health  
and Medicine (NCGM)  
JAPAN

Scott Filler  
Malaria Team Leader  
Technical Advice and Partnerships  
Department  
The Global Fund  
Geneva, SWITZERLAND

Wendy Wei  
Senior Program Officer, Malaria  
Bill and Melinda Gates Foundation  
Beijing, P.R. CHINA

Richard Kamwi  
Board Member and Ambassador of the  
Elimination 8 Initiative (E8)  
Roll Back Malaria Partnership to End  
Malaria  
Geneva, SWITZERLAND

Joshua Levens  
Manager, RBM Advocacy and Mobilization  
Partner Committee (ARMPC)  
Roll Back Malaria Partnership to End  
Malaria  
Geneva, SWITZERLAND

## **WHO Global Malaria Programme / Meeting Secretariat**

Pedro Alonso  
Global Malaria Programme Director

Laurent Bergeron  
Project Officer, Programme Support and  
Management, Global Malaria Programme

Kim Lindblade  
Team Leader, Malaria Elimination Unit,  
Global Malaria Programme

Xiao Hong Li  
Technical Officer, Malaria Elimination Unit,  
Global Malaria Programme

Yao Ruan  
Meeting Secretariat

Keith Sabin  
Senior Adviser and Keynote speaker  
UNAIDS Secretariat-WHO

Saira Stewart  
Technical Officer, Programme Support and  
Management, Global Malaria Programme

Selome Tadesse Worku  
Team Assistant, Malaria Elimination Unit,  
Global Malaria Programme

Amanda Tiffany  
Epidemiologist, Malaria Elimination Unit,  
Global Malaria Programme

All documentation related to this meeting can be found at: <http://www.who.int/malaria/areas/elimination/advisory-committees/en/>

To sign up for news and updates from the WHO Global Malaria Programme, please visit: [http://www.who.int/malaria/news/sign\\_up\\_form/en/](http://www.who.int/malaria/news/sign_up_form/en/)