

## Malaria

### Algeria

#### E-2020 country brief

Status: **Certified malaria-free**

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#### Overview

**Algeria has become the second country in the WHO African Region to be officially recognized as malaria-free, after Mauritius, which was certified in 1973.**

The country's path to malaria elimination goes back to 1880, when French physician Dr Charles Louis Alphonse Laveran discovered the malaria parasite while working in a hospital in the north-eastern city of Constantine. By the 1960s, malaria had become the nation's primary health challenge, with an estimated 80 000 cases reported each year.

Algeria's subsequent success in beating the disease is primarily due to a well-trained health workforce coupled with free healthcare; this allowed for effective prevention measures, early diagnosis and treatment of all malaria cases, and a rapid response to disease outbreaks. Algeria has also always fully funded its budget for malaria elimination through domestic financing.

In 2013, the country reported its last indigenous case of malaria. Thanks to its malaria-free status, Algeria is expected to benefit from a growth in tourism and development in the southern provinces.

#### At a glance

- **0** indigenous malaria cases since 2014
- **1** introduced malaria case in 2018
- **1241** imported malaria cases in 2018
- Dominant malaria species: mixed *Plasmodium falciparum* & *P. vivax*
- Populations at greater risk: inhabitants in the southern region bordering the malaria-endemic countries Mali and Niger, and along the trans-Saharan migration route

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#### Elements of success

The national elimination programme faces a challenging situation due to long, porous borders with malaria-endemic countries to the south. Algeria has managed to achieve malaria elimination and prevent re-establishment by:

- providing free diagnosis and treatment for malaria to everyone, regardless of nationality or legal status;
- implementing a national reference laboratory with fully-skilled staff for quality-assured diagnostics;
- establishing a dynamic epidemiological and entomological surveillance system with immediate notification of cases up to the central level, including prompt investigation, classification and response for all cases and eventual foci;
- implementing multisectoral integrated vector control with targeted indoor residual spraying (IRS) and diversified antilarval control (environmental management, and targeted chemical and biological actions);
- providing advice and free malaria chemoprophylaxis to travellers, through centres for prevention in all administrative divisions;
- staffing the national and subnational levels with well-trained and dedicated teams; and
- funding malaria activities fully through domestic finances, thereby evidencing strong political commitment.

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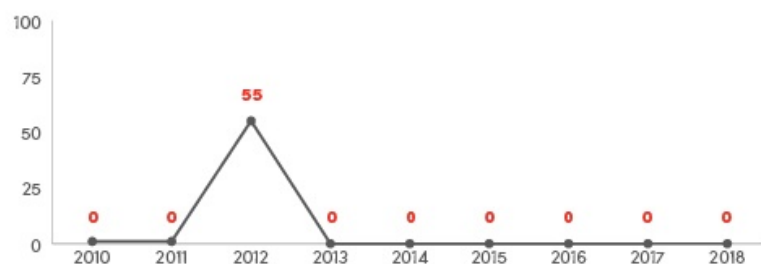
### Plan for prevention of re-establishment

The plan for prevention of re-establishment was developed based on an analysis of receptivity and risk of importation. Key strategies for prevention of malaria re-establishment are:

- to maintain vigilance in general health services and manage imported cases to prevent the consequences of importation:
- to strengthen capacity to react to epidemics of malaria;
- to continue health education, public advocacy and involvement of the community to maintain the country's malaria-free status;
- to continue entomological surveillance, and further strengthen and improve vector control; and
- to provide chemoprophylaxis to travellers and conduct proactive case detection in high-risk populations, to reduce and mitigate risk of importation.
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### Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### Belize

#### E-2020 country brief

Status: **On track**

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#### Overview

**Between 2001 and 2018, Belize reduced its malaria burden by more than 99%; from just over 10 000 indigenous malaria cases in the mid-1990s to only 3 in 2018, this Central American country has achieved remarkable success.**

Belize's recent progress towards reaching the 2020 elimination target is due, in part, to its efforts in stratifying the country by risk of malaria transmission. Authorities have pinpointed 16 high-risk areas, where malaria surveillance has been intensified at the community level. All residents in these areas receive insecticide-treated bed nets and the inside walls of homes are sprayed with insecticides.

Despite malaria's status as a forgotten disease in parts of Belize, a dedicated network of some 300 volunteers and healthcare workers provide prompt diagnosis and effective malaria treatment. Belize has also set up a national reference laboratory for malaria and certified 3 microscopists.

#### At a glance

- **3** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **4** imported malaria cases in 2018
- **0** malaria deaths in 2018
- Dominant malaria species: *Plasmodium vivax* (100%)
- High-risk populations: immigrants from neighboring countries working in banana and citrus farms; border communities

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#### Successes

- interventions targeted according to updated estimation of importation risk and receptivity;
- 16 localities with high risk of transmission prioritized;
- national reference lab for malaria established and 3 microscopists certified;

- increased inclusion of the private sector in diagnosis and reporting.

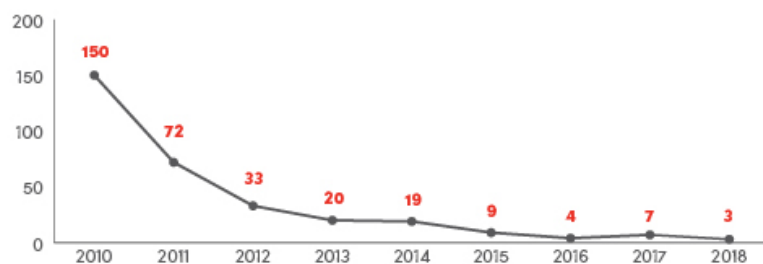
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## Challenges

- malaria a "forgotten" disease in many areas;
- limited resources shared with other vector-borne diseases;
- lack of succession planning and local training opportunities limit the capacity of staff to lead malaria elimination;
- limited microscopy network.

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## Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### Bhutan

#### E-2020 country brief

Status: **On track**

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#### Overview

**Bhutan has reduced its malaria burden from 410 indigenous cases in 2010 to only 6 in 2018, making its goal of realizing zero indigenous cases by 2020 feasible.**

Bhutan's success in curbing malaria is due to enhanced surveillance as well as wider geographical access to malaria diagnostics and antimalarial medicines. In malarious areas, residents receive insecticide-treated bed nets and their homes are given 2 rounds of indoor insecticide spraying. Taken together, these actions have interrupted malaria transmission in 18 out of 20 districts. In 2019, a web-based software programme was put in place to strengthen real-time malaria reporting.

In high-risk areas, community action groups plan and implement malaria prevention and control. Populations at high risk of contracting malaria include indigenous people living in remote areas, the military, border communities and forest-users.

As part of its elimination approach, Bhutan will need to strengthen its cross-border engagement with India, where imported malaria poses a significant challenge. The country will also need to increase domestic funding to fight malaria.

#### At a glance

- **6** indigenous malaria cases in 2018
- **14** introduced malaria cases in 2018
- **34** imported malaria cases in 2018
- **1** malaria death in 2018
- Dominant malaria species: *Plasmodium vivax* (70%)
- High-risk populations: indigenous populations in remote areas; military; forest users; border communities

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#### Successes

- reduction in malaria incidence through enhanced surveillance, increased coverage of diagnostics and antimalarials, distribution of long-lasting insecticidal nets, and focal indoor residual spraying;
- malaria transmission interrupted in 18 out of 20 districts;
- community action groups formed in high-risk communities;
- oversight and direction for all diseases targeted for elimination, including malaria, by a national disease elimination committee.

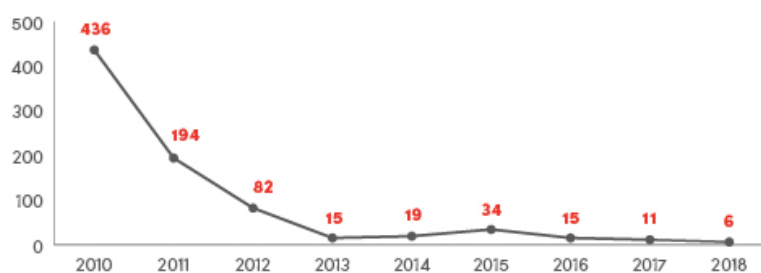
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## Challenges

- reduced donor support for malaria;
- high risk of malaria resurgence given transmission in border regions;
- high population mobility;
- need for cross-border collaboration with India.

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## Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### Botswana

#### E-2020 country brief

Status: **Off track**

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#### Overview

Botswana has made impressive progress in reducing indigenous malaria transmission, from a reported 71 000 cases in 2000 to 533 in 2018. Despite significant variation from year to year – with a higher number of malaria cases in 2014, 2016 and 2017 – the country has continued to report an overall decline in both cases and deaths since 2000.

Challenges faced by Botswana's national malaria control programme include the perception, in some communities, that malaria is a low priority disease, which can lead to people not protecting themselves with insecticide-treated nets and other WHO-recommended prevention measures. Added to this, some residents do not accept vector control activities such as insecticide spraying inside homes.

However, the government's commitment to eliminate malaria remains strong. In line with the 2017 mid-term review of its malaria strategy, Botswana's case management policy guidelines follow WHO recommendations. A quality assurance and control system ensures that all malaria diagnoses are examined. Trainings for clinicians are also held regularly and surveillance has been stepped up in malarious districts. In addition, Botswana is implementing integrated vector management and working to minimize insecticide resistance.

#### At a glance

- **585** indigenous malaria cases in 2018
- **1** introduced malaria cases in 2018
- **51** imported malaria cases in 2018
- **9** malaria deaths in 2018
- Dominant malaria species: *Plasmodium falciparum* (100%)
- High-risk populations: mobile migrant populations; communities in the Okavango Delta; Botswanan travellers moving to and from malarious districts

## Successes

- 69% decrease in number of reported malaria cases following outbreaks in 2014, 2016 and 2017;
- all districts using District Health Information Software 2 (DHIS2) for real-time malaria reporting;
- mapping of all malaria cases at household level and stratification at village level;
- adoption of the Community Acting Together to Eliminate Malaria (CATTEM) approach;
- enhanced community monitoring in malarious districts by malaria surveillance agents.

## Challenges

- perception of malaria as a low priority disease among some community members in low transmission areas, leading to failure to adopt protective behaviours;
- suboptimal use of existing data collection tools such as laboratory registers (rapid diagnostic test and microscopy), leading to inadequate data collection on some malaria elimination indicators;
- vector control activities not well accepted by some of the population.

## Malaria impact



Source: [World malaria report 2019](#)



## Malaria

### Cabo Verde

#### E-2020 country brief

Status: **On track**

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#### Overview

Until the late 1950s, Cabo Verde reported between 5000 and 15 000 malaria cases per year. Since then, the island nation has twice achieved malaria elimination, primarily through the use of indoor residual spraying (IRS) of homes with insecticides, although lapses in vector control led to resurgences of the disease.

Cabo Verde was back on track to achieve elimination by 2020 when, in 2017, the country reported 423 indigenous infections in the capital city of Praia, located on the southern coast of Santiago island. In addition, 23 cases of *P. falciparum* malaria were imported from several African countries and 1 case of *P. vivax* was imported from Brazil.

The archipelago's malaria control programme combines rapid diagnostics and quick treatment of all confirmed cases, as well as preventive measures, including vector control with IRS and larval source management. All confirmed malaria cases are treated, with at least 3 days of hospitalization.

After the 2017 epidemic was detected, Cabo Verde targeted its vector control efforts to affected neighbourhoods by interviewing people with confirmed malaria and geolocating the site where they were most likely infected. These targeted actions stopped the epidemic in its tracks and interrupted transmission. Cabo Verde has been malaria-free since February 2018.

#### At a glance

- **2** indigenous malaria cases in 2018
- **1** introduced malaria cases in 2018
- **18** imported malaria cases in 2018
- **0** malaria deaths in 2018
- Dominant malaria species: *Plasmodium falciparum* (100%)
- High-risk populations: migrants travelling to and from the African continent

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## Successes

- 7 previously malaria-endemic islands have remained malaria-free since 1960;
- national participation in the Technical Commission for the Initiative to Eliminate Malaria from the Sahel;
- active participation in coordination meetings between countries as part of the region's Transboundary Elimination Plan.

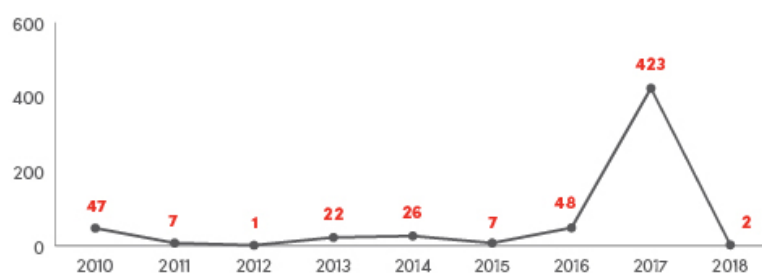
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## Challenges

- imported cases from the African continent;
- continuity of funding for malaria elimination activities;
- lack of a laboratory quality control system;
- difficulty conducting surveillance among migrant populations.

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## Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### China

#### E-2020 country brief

Status: **On track**

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#### Overview

**As the world's most populous country, China's achievement of 2 years of zero indigenous malaria cases is astounding, given its estimated 30 million cases and 300 000 deaths a year due to malaria in the 1940s.**

In particular, the implementation of "1-3-7" surveillance and response strategy, introduced after China launched its malaria elimination programme in 2010, has successfully brought the number of indigenous cases of malaria to zero since August 2016.

The numeral "1" signifies the one-day deadline health facilities are given to report a malaria diagnosis. The "3" signifies a 3-day deadline for the China Centers for Disease Control and Prevention (CDC) county office to confirm and investigate any malaria cases and determine if there is a risk of spread. And by day "7," the CDC office is required to manage the area where the malaria case originated to reduce the risk of further transmission.

Using the 1-3-7 programme, China has achieved success even in Yunnan province, despite its shared borders with the malaria-endemic countries of Lao People's Democratic Republic, Myanmar and Viet Nam.

#### At a glance

- **0** indigenous malaria cases in 2017 and 2018
- **4** introduced malaria cases in 2018
- **2511** imported malaria cases in 2018
- **6** malaria deaths in 2018
- Dominant malaria species: *Plasmodium vivax* (100%)
- High-risk populations: inhabitants living in border areas; migrants and Chinese travellers returning from malaria-endemic countries

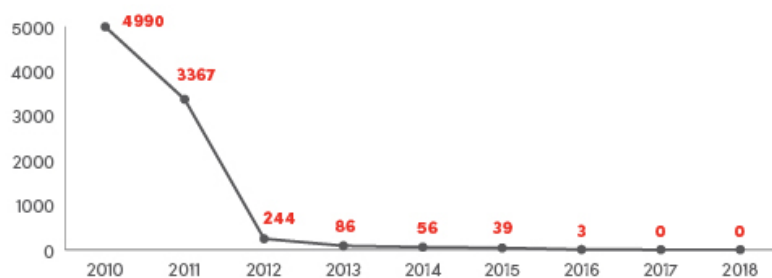
## Successes

- Quality control and quality assurance system for malaria diagnosis, which includes a national reference laboratory as well as provincial reference laboratories, is well established throughout the country.
- Seven provinces have completed provincial verification of malaria elimination and achieved official recognition by the National Health Commission.
- Treatment of severe malaria cases has been improved through the establishment of a national severe malaria treatment committee and continued training of health clinicians.

## Challenges

- border malaria in Yunnan Province;
- large number of imported cases, mostly Chinese nationals returning from Africa and South-East Asia.

## Malaria impact



Source: [World malaria report 2019](#)

## Malaria

### Comoros

#### E-2020 country brief

Status: **Off track**

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#### Overview

Even as the number of indigenous malaria cases in Comoros has risen to nearly 16 000 in 2018, the government stands committed to its goal of reaching zero malaria cases. The entire population is also supporting the fight against malaria.

After a sharp decline in its malaria burden in recent years, this archipelago off the south-east coast of Africa has experienced first-hand the volatility of making headway in battling malaria with a resurgence in cases.

Hurdles to elimination success include residents' low usage of insecticide-treated bed nets as well as general weaknesses in the country's health system. However, the government maintains its strong resolve at the highest levels to reach elimination status. To address re-introduction of transmission, the islands of Mwali and Ndzuwani request visitors arriving from malaria-endemic areas to be tested for malaria.

#### At a glance

- **15 613** indigenous malaria cases in 2018
- **4069** indigenous malaria cases in 2018
- Dominant malaria species: *Plasmodium falciparum* (100%)
- High-risk populations: residents of Ngazidja (Grand Comoros)

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#### Successes

- strong commitment of the country's high-level authorities to malaria elimination;
- increasing support from the entire population for malaria elimination;
- request from the islands of Mwali and Ndzuwani for their visitors from malaria-endemic areas to undergo malaria testing upon arrival.

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#### Challenges

- significant increases in transmission over the past 2 years;

- general health system weaknesses;
- low utilization of insecticide-treated bednets.

### Malaria impact



Source: [World malaria report 2019](#)

## Malaria

### Costa Rica

#### E-2020 country brief

Status: **Somewhat off track**

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#### Overview

After having no cases of indigenous malaria in 2015, Costa Rica reported 70 cases in 2018, up from 12 in 2017. This upsurge in cases has been related to illegal gold mining in the north of the country, which draws migrant workers from neighbouring malaria-endemic countries.

Since it is difficult to access the gold mining area, detecting and treating malaria here is a challenge. To fight the disease, Costa Rica is piloting the use of rapid diagnostic tests in hard-to-reach areas. Through active surveillance approaches, the Ministry of Health found more than 70% of the cases in 2018 in these areas, preventing significant spread of the infection.

With 95% of the population having access to an excellent primary health care system through the Costa Rican Social Security Fund (*Caja Costarricense del Seguro Social*), the country has an excellent base from which to pursue malaria elimination. Costa Rica's network of more than 100 laboratories and the integration of malaria activities in the health care system allow for the swift detection and containment of cases and outbreaks.

#### At a glance

- **70** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **38** imported malaria cases in 2018
- Dominant malaria species: *Plasmodium vivax* (100%)
- High-risk populations: 6.6% of the at-risk population residing in active and residual non-active foci; migrant workers from neighbouring countries; persons associated with illegal gold mining

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#### Successes

- 95% of the population with access to health services through the national social security fund;
- proactive case detection in outbreak areas;
- use of rapid diagnostic tests piloted in hard-to-reach areas to support active surveillance.

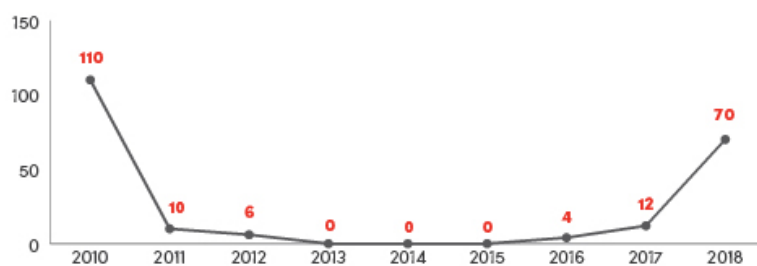
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## Challenges

- ensuring prompt diagnosis and treatment in the northern mining area due to the population's irregular migration situation, lack of social security and difficult access;
- preventing the re-establishment of malaria transmission in Matina, historically considered the most important focus of the country;
- improving interventions and communications on the borders.

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## Malaria impact



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Source: [World malaria report 2019](#)



## Malaria

### Ecuador

#### E-2020 country brief

Status: **Off track**

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#### Overview

Ecuador is facing a resurgence of malaria, with 1653 indigenous cases in 2018, an increase of nearly 400 cases over the previous year. This comes after a steep decline in cases – to about 240 – in 2014.

From community and staff worker to the highest levels of government, Ecuador is determined to win its battle against malaria. The country's strategy includes training for local staff and volunteers to help them diagnose, treat and follow up on malaria cases, especially in areas that are difficult to access.

Populations at high risk for malaria include mobile migrants, miners and indigenous people. Greater mobility of people at Ecuador's borders with Colombia and Peru, as well as illegal activities, add to its challenges. However, in collaboration with the Pan American Health Organization, WHO's Regional Office for the Americas, Ecuador is gaining crucial technical know-how. A priority goal is for patients diagnosed with malaria to be treated on the day of diagnosis.

#### At a glance

- **1653** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **153** imported malaria cases in 2018
- **0** malaria deaths in 2018
- Dominant malaria species: *Plasmodium vivax* (72%) concentrated in the Amazon; *P. falciparum* (28%) concentrated along the coast
- High-risk populations: mobile migrant populations; illegal miners; indigenous populations

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#### Successes

- increased community support and participation in the fight against malaria;

- rapid diagnostic tests procured and laboratory technicians trained in microscopy;
- artemisinin-based combination therapies procured and provided to health facilities in areas with active malaria transmission.

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## Challenges

- many areas with malaria foci are difficult to access;
- high human mobility at the border areas between Colombia, Ecuador and Peru;
- situations of violence: drug trafficking and increased activities in illegal mining.

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## Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### El Salvador

#### E-2020 country brief

Status: **On track**

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#### Overview

**With zero reported indigenous malaria cases since 2017, El Salvador is on the path to achieving official malaria-free certification by WHO. This small country has made great strides by ensuring that all malaria cases are treated and reported.**

El Salvador's malaria elimination programme is supported by 3 pillars: strong political engagement backed by sustained domestic financing; a multisectoral national strategic plan that is data-driven; and ongoing education about malaria for everyone – from clinicians to community members.

As early as 1990, El Salvador introduced an electronic malaria information system to allow for the targeting of malaria interventions to specific geographies and populations. The country is also working to ensure all of its cases are 100% verified and confirmed through quality diagnostic testing.

As a neighbour of malaria-endemic Guatemala and Honduras, El Salvador is strengthening malaria surveillance along international borders; this includes developing a strategy for detecting suspected malaria cases among immigrants who may already be working in the country.

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#### At a glance

- **0** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **2** imported malaria cases in 2018
- **0** malaria deaths since 1998
- Dominant malaria species: *Plasmodium vivax* (100%)
- High-risk populations: Migrant workers from neighbouring countries; Salvadorans travelling to malaria-endemic countries for work or to visit family and friends

## Successes

- zero indigenous malaria cases reached in 2017 and maintained since that time;
- first cohort of 85 people trained and awarded diplomas in medical entomology between September 2018 and March 2019;
- first binational meeting between El Salvador and Guatemala on imported malaria cases conducted in December 2018;
- more than 5000 people working in the field on malaria, including vector control technicians from the Malaria and Environmental Health Programme, as well as voluntary collaborators (trained and maintained).

## Challenges

- maintaining vigilance for suspected malaria cases;
- improving communication with neighbouring countries to receive timely, relevant reports on their malaria situation;
- sustaining interest among the population to continue to use vector control;
- increasing involvement of both first level of care and hospital network.

## Malaria impact



Source: [World malaria report 2019](#)

## Malaria

### Eswatini (Kingdom of)

#### E-2020 country brief

Status: **Off track**

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#### Overview

**Eswatini's efforts to eliminate malaria are producing results. In 2018 there were a reported 268 indigenous cases of the disease compared to 724 cases in 2017.**

Progress is due, in part, to the country's 100% adherence to national diagnostic and treatment guidelines as well as an improvement in vector control activities. Backed by high-level government support, its 2015-2020 national strategic plan for elimination seeks to reach zero indigenous malaria cases by 2020.

Challenges include articulating an effective preventive strategy among migrant agricultural workers in Eswatini as well as among its own residents travelling to neighbouring malaria-endemic countries. In 2018, there were 348 imported cases of the disease.

To get to zero, Eswatini will need to increase its domestic funding of insecticides to ensure an adequate supply and bolster healthcare services for suspected malaria patients. As more than one third of Eswatini's population lives in areas where malaria transmission occurs, mainly during the rainy season, the country will need to intensify its rapid response approach to cases and continue intensified surveillance and targeted vector control.

#### At a glance

- **268** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **348** imported malaria cases in 2018
- **2** malaria deaths in 2018
- Dominant malaria species: *Plasmodium falciparum* (100%)
- High-risk populations: migrants attracted by need for labour in agricultural areas of Eswatini; residents of Eswatini travelling to neighbouring, malaria-endemic countries to visit friends and relatives

## Successes

- more than 80% reduction in indigenous malaria cases;
- 100% adherence to national diagnostic and treatment guidelines;
- biannual meetings of the Eswatini Malaria Elimination Advisory Group.

## Challenges

- Population mobility;
- declining vigilance of the healthcare services for suspected malaria patients;
- need for increased domestic funding of insecticides to ensure adequate supply.

## Malaria impact



Source: [World malaria report 2019](#)

## Malaria

### Iran (Islamic Republic of)

#### E-2020 country brief

Status: **On track**

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#### Overview

Thanks to the Islamic Republic of Iran's malaria programme, the reported number of indigenous malaria cases dropped to zero in 2018 compared to more than 1800 in 2010.

Underpinning this success is strong political will, socio-economic development in endemic areas, and the resolve to leave no one behind; everyone has access to free primary healthcare, which includes the control and treatment of communicable diseases like malaria.

Significant cross-border movement, including migrant workers coming from high-burden malaria neighbouring countries Afghanistan and Pakistan, contributes to imported cases in the Islamic Republic of Iran. In response, the country has set up malaria diagnosis posts at border areas to offer services to people who show symptoms of the disease.

Volunteers are critical to controlling malaria; they have been trained in using rapid diagnostic tests and can follow patients to ensure they take all prescribed malaria treatments. With strong community and national commitment, the Islamic Republic of Iran is poised to seek WHO certification of malaria-free status by 2021.

#### At a glance

- **0** indigenous malaria cases in 2018
- **20** introduced malaria cases in 2018
- **601** imported malaria cases in 2018
- **2** malaria deaths in 2018
- Dominant malaria species: *Plasmodium vivax* (95%)
- High-risk populations: people from Baluchistan (Pakistan) moving in and out of Pakistan areas with Pakistan

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#### Successes

- significant progress in reducing number of indigenous malaria cases;
- fully funded by national government;

- establishment of independent national malaria elimination advisory committee;
- stratification by type of focus.

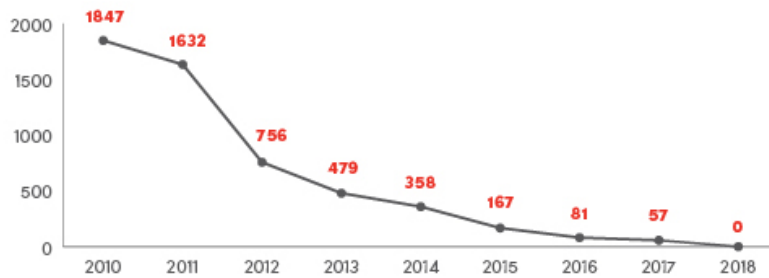
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## Challenges

- cross-border population movements, especially with neighbouring Pakistani Baluchistan;
- maintaining political commitment;
- increasing vigilance for suspected malaria cases among medical practitioners.

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## Malaria impact



Source: [World malaria report 2019](#)



## Malaria

### Malaysia

#### E-2020 country brief

Status: **On track**

#### Overview

**In reaching zero indigenous human malaria cases in 2018, Malaysia accomplished its goal 2 years ahead of schedule. This is especially impressive given that more than 5000 cases were reported in 2010.**

Ensuring prompt malaria diagnosis, treatment and surveillance in remote, hard-to-reach regions played a key role in Malaysia's elimination success. However, the risk of imported malaria remains a key concern. Temporary foreign workers in Malaysia, many of whom are undocumented, may expose the local population to the disease.

Malaysians who work outside the country in sectors such as agriculture and logging are also at high risk of contracting malaria abroad and carrying the infection with them when they return home. To stop the cyclical nature of malaria infection, Malaysian officials are engaging with employers to distribute mosquito bed nets, increase indoor insecticide spraying in homes and share information on malaria prevention and treatment.

Although Malaysia has successfully eliminated indigenous transmission of all human malaria species *P. falciparum*, *P. vivax*, *P. ovale* and *P. malariae*, the *P. knowlesi* parasite, normally found in monkeys, continues to infect a large number of people. While there is no evidence of sustained human-to human transmission of *P. knowlesi* – and, thus, it is not considered a human malaria parasite – the health outcomes for people infected with this parasite can be serious.

#### At a glance

- **0** indigenous malaria cases in 2018
- **21** introduced malaria cases in 2018
- **485** imported malaria cases in 2018
- **12** malaria death in 2018
- Dominant malaria species: *Plasmodium vivax* and *P. knowlesi*
- High-risk populations: labourers (including foreign workers) in agriculture, farming and forestry sectors; aboriginal groups of East Malaysia

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## Successes

- stepping up implementation of national strategic plan for elimination of malaria;
- foci with active malaria transmission are confined to a few states.

In 2018, the national malaria control programme supported a malaria oversight mortality review and national technical meetings, established an interministerial committee for control of zoonotic disease, improved surveillance by enforcing online case and outbreak registration, and implemented foci investigation and classification.

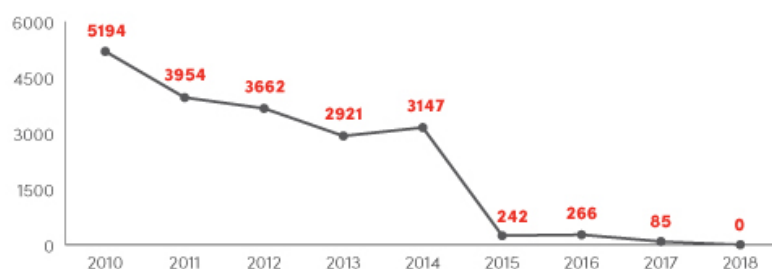
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## Challenges

- *P. knowlesi* cases account for the majority of indigenous cases;
- ensuring prompt malaria diagnosis in regions where health services are limited;
- access to temporary foreign workers who are difficult to track due to the transient nature of their employment.

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## Malaria impact



Source: [World malaria report 2019](#)

## Malaria

### Mexico

#### E-2020 country brief

Status: **Off track**

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#### Overview

**Mexico continues to hold steady in its efforts to reduce its malaria burden. In 2018, the country reported 803 indigenous malaria cases, a drop from more than 1200 in 2010. By attaining malaria elimination at the state level, Mexico shows promise for country-wide success.**

For example, its use of targeted interventions in the State of Oaxaca, such as destroying local breeding sites for *Anopheles* mosquitoes, drove down the number of cases from 17 520 in 1998 to zero in 2014. In the State of San Luis Potosí, authorities rapidly responded to imported and introduced cases of malaria in 2017, preventing new indigenous cases of the disease.

Still, malaria continues to pose a significant risk in Mexico, particularly to residents in the State of Chiapas along the border with Guatemala. Other high-risk populations include indigenous populations, migrants travelling through Mexico, and people engaged in illegal activities. To scale up success and eliminate malaria by 2020, authorities must reorient the malaria programme towards improved surveillance and response.

#### At a glance

- **803** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **23** imported malaria cases in 2018
- **1** malaria death in 2018
- Dominant malaria species: *Plasmodium vivax* (100%)
- High-risk populations: residents of Chiapas, especially along the border with Guatemala; nomadic populations and drug traffickers in Chihuahua; migrants travelling through Mexico

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#### Successes

- focused efforts in Oaxaca reduced cases from 17 520 in 1998 to 0 in 2014;
- passive surveillance strengthened through use of community health promoters;
- sustained community participation in the elimination of anopheline breeding sites in Oaxaca;
- stratification of risk areas with targeted activities;
- strict supervision of treatment by programme staff.

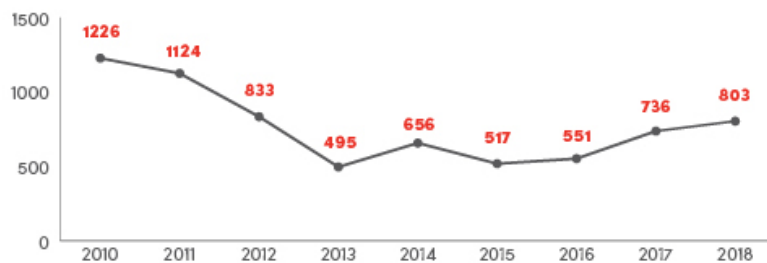
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## Challenges

- changing the orientation of the national malaria control programme from an emphasis on vector control to include surveillance as an intervention;
- maintaining surveillance in high-risk groups, including migrants;
- preventing re-establishment of transmission in areas of the country already malaria-free;
- engaging communities in the social determinants of health.

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## Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### Nepal

#### E-2020 country brief

Status: **Off track**

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#### Overview

**Nepal has achieved a significant reduction in its malaria burden in recent years; the country reported 585 indigenous cases in 2018, down from nearly 3900 cases in 2010.**

Much progress has been made. The country is strengthening its surveillance system and using the 1-3-7 approach to investigate cases. Effective vector control has resulted in a yearly decline of indigenous cases of malaria.

However, imported malaria is a major challenge. The 535 imported malaria cases reported in 2018 represent almost 50% of the total burden – mostly from malaria-endemic neighbours and other high-risk countries where Nepali migrants go to work. Elsewhere, malaria cases are being reported in hard-to-reach areas that were previously considered low to no risk. As such, these places had been considered as low priority for malaria services and funding.

Faced with ongoing challenges, Nepal must accelerate its response to reach zero malaria, including through more effective vector control and a rapid response to suspected cases. The country should also provide universal access to quality assured malaria diagnosis and treatment as well as broaden partnerships with non-health sectors. Armed with a plan for effective strategies to fight malaria, Nepal is determined to be free of this disease by 2025.

#### At a glance

- **585** indigenous malaria cases in 2018
- **535** imported malaria cases in 2018
- **0** malaria deaths in 2018
- Dominant malaria species: *Plasmodium vivax* (85%)
- High-risk populations: ethnic minorities; mobile populations (e.g. forest workers, seasonal migrants); people living in border areas

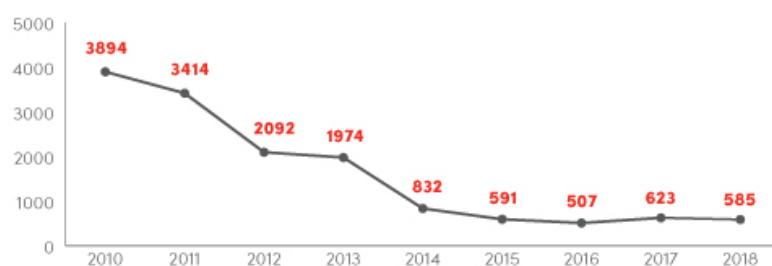
## Successes

- revised National Malaria Strategic Plan is being in line with malaria elimination;
- updated malaria surveillance and treatment protocol;
- surveillance system strengthened to include web-based reporting;
- 1-3-7 approach implemented;
- revised malaria risk stratification.

## Challenges

- inadequate human resources for malaria at the provincial and local level ;
- early detection and rapid response to cases;
- seasonal importation of cases due to migration;
- new areas with malaria cases, including hard-of-access mountain districts;
- private sector compliance with the national malaria treatment protocol and case-based surveillance;
- implementation of an integrated vector management programme.

## Malaria impact



Source: [World malaria report 2019](#)

## Malaria

### Paraguay

#### E-2020 country brief

Status: **Certified malaria-free**

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#### Overview

**With zero reported cases of indigenous malaria since 2012, Paraguay was certified malaria-free by WHO in June 2018 – the first country in the Americas to be granted this status in 45 years.**

Paraguay's success in achieving malaria-free certification was backed by free universal health services and a strong malaria surveillance system, ensuring cases were detected early, investigated promptly and classified correctly. Community volunteers played an important role in case detection. Legislation guaranteed the steady, long-term financing for Paraguay's national malaria programme. In addition, public information campaigns on the diagnosis, treatment and prevention of malaria have been designed to change public health behaviour among populations living in at-risk areas.

To prevent the re-establishment of malaria, Paraguay holds trainings across general health services to maintain vigilance and ongoing engagement with community volunteers. This ensures the prompt detection and treatment of cases. To monitor changes related to the risk of imported malaria, authorities in the national malaria programme collaborate across sectors and ministries.

#### At a glance

- **0** indigenous malaria cases since 2012
- **0** introduced malaria cases in 2018
- **5** imported malaria cases in 2018
- Dominant malaria species prior to reaching zero indigenous cases: *Plasmodium vivax* (100%)

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#### Elements of success

- free universal health services and a strong malaria surveillance system;
- community volunteers for case detection;

- congressional legislation guaranteeing long-term financing for malaria;
- strengthened epidemiological surveillance, robust case management, and promotion of behaviour change among populations in at-risk areas.

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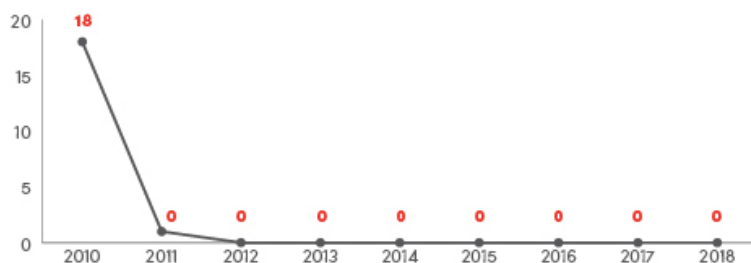
### Plan for prevention of re-establishment

The plan for prevention of re-establishment of malaria was developed based on an analysis of receptivity and risk of importation. Key strategies for prevention of malaria re-establishment include:

- training general health services to maintain vigilance and continued engagement with community volunteers to ensure early detection and treatment of cases;
- using active case detection and enhanced surveillance at health facilities to identify additional cases;
- continued training of health staff to ensure the quality of curative and epidemiological services;
- collaborating with other sectors and ministries to monitor any changes in receptivity or risk of importation and focus strategies on high-risk populations.

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### Malaria impact



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Source: [World malaria report 2019](#)



## Malaria

### Republic of Korea

#### E-2020 country brief

Status: **Off track**

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#### Overview

**In 2018, the Republic of Korea developed a new 5-year action plan, which sets 2023 as the year to achieve an official malaria-free certification from WHO. Funded entirely by the national government, the plan calls for health workers to immediately notify authorities of all positive malaria cases.**

Following elimination efforts in the 1960s and 1970s, malaria all but disappeared in the Republic of Korea. By 1984, only 2 indigenous cases were reported nationwide. However, in the 1990s, malaria re-emerged near the demilitarized zone in the north, bordering the Democratic People's Republic of Korea. Through wide-scale malaria control activities, the Republic of Korea has reduced its rate of new malaria cases by 87% since 2000 and by more than 60% since 2010.

In 2018, just over 500 indigenous and 75 imported cases were reported. Those living or travelling near the demilitarized zone, particularly in northern Gangwon and Gyeonggi provinces, as well as the northern Incheon Metropolitan City, are considered at high risk of contracting malaria. This vulnerable zone represents the Republic of Korea's greatest challenge in its anti-malaria efforts, which should include greater mosquito control and better information-sharing across programmes and borders where the risk is highest.

#### At a glance

- **501** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **75** imported malaria cases in 2018
- **4** malaria deaths since 2018
- Dominant malaria species: *Plasmodium vivax* (100%)
- High-risk populations: active duty military personnel in the demilitarized zone; veterans; populations along the demilitarized zone, particularly in northern Gangwon and Gyeonggi provinces, and northern Incheon metropolitan city

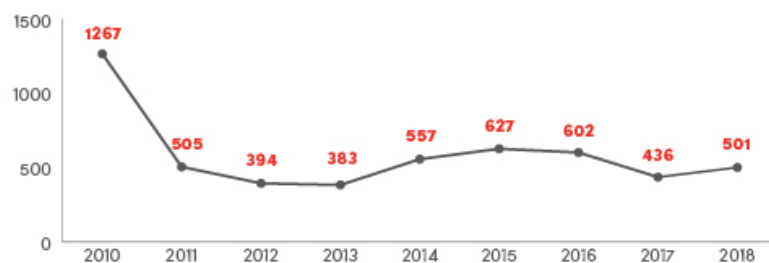
## Successes

- new 5-year action plan, setting 2023 as the year in which certification as malaria free is achieved;
- malaria programme entirely funded by the national government;
- immediate notification of all positive cases.

## Challenges

- implementing mosquito control activities in the demilitarized zone;
- sharing information across programmes and borders where the risk is highest;
- improving cooperation with the public sector.

## Malaria impact



Source: [World malaria report 2019](#)

## Malaria

### Saudi Arabia

#### E-2020 country brief

Status: **Somewhat off track**

#### Overview

Saudi Arabia recorded 61 indigenous malaria cases in 2018, a 65% decrease over 2017, when the country reported 177 cases. Despite the huge influx of pilgrims and a complex situation with neighbouring countries, Saudi Arabia has not reported a significant number of indigenous malaria cases over the past few years.

However, the 2517 imported cases reported in 2018 show the country's vulnerability in border areas, especially among high-risk populations such as undocumented migrants from neighbouring Yemen as well as communities living along the border with the war-torn country.

Backed by the government's fully-funded malaria programme, the country remains committed to reaching its goal of elimination by 2020. Its successes include biannual meetings of the independent national malaria elimination advisory committee and the deployment of mobile units to serve undocumented migrants from neighbouring countries.

To get to zero, Saudi Arabia will need to strengthen vector control along its border and increase the number of professionals working in entomology and malaria case management.

#### At a glance

- **61** indigenous malaria cases in 2018
- **133** introduced malaria cases in 2018
- **2517** imported malaria cases in 2018
- **0** malaria deaths in 2018
- Dominant malaria species: *Plasmodium falciparum* (97%)
- High-risk populations: Undocumented migrants from neighbouring Yemen, communities living along the border with Yemen

#### Successes

- no significant increases in indigenous malaria cases despite the huge influx of pilgrims and a complex situation with neighbouring countries;
- malaria programme fully funded by the national government;
- biannual meeting of an independent national malaria elimination advisory committee;
- deployment of mobile units focused on undocumented migrants from neighbouring countries.

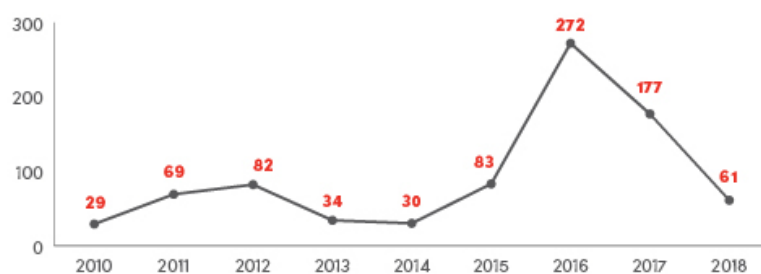
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## Challenges

- cross-border population movements, especially with neighbouring Yemen;
- need to strengthen vector control operations in malaria foci along the border with Yemen;
- shortage of highly qualified and experienced professionals in entomology and case management.

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## Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### South Africa

#### E-2020 country brief

Status: **Off track**

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#### Overview

South Africa reported just over 9500 indigenous cases of malaria in 2018 – less than half of the 22 000 cases seen in 2017. To reduce the disease burden, the country has made extra funding from its national treasury available for malaria. Among other malaria control measures, the country has widened the geographical areas slated for indoor insecticide spraying.

However, imported cases of malaria in 2018 numbered over 8700, likely related to the cross-border movement of populations from areas of higher risk for the disease, including migrant workers from bordering malaria-endemic countries as well as residents of South Africa travelling to these places.

Still, the government intends to reach its elimination goal despite current staffing shortages and supply chain challenges. Through the regional Elimination 8 initiative, 14 border posts have been set up in high-risk areas to improve access to timely malaria diagnosis and treatment for mobile and migrant populations, reducing the risk of onward transmission.

#### At a glance

- **9540** indigenous malaria cases in 2018
- **0** introduced malaria cases in 2018
- **5742** imported malaria cases in 2018
- **69** malaria deaths in 2018
- Dominant malaria species: *Plasmodium falciparum* (100%)
- High-risk populations: migrant labourers from neighbouring malaria-endemic countries; residents of South Africa travelling to malaria-endemic countries for work and to visit friends and relatives

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#### Successes

- more than 50% decline in the number of indigenous malaria cases since 2017;
- mobilization of extra funding for malaria from the national treasury;
- increasing indoor residual spraying coverage.

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## Challenges

- staffing shortages and moratorium on new appointments;
- supply chain challenges;
- increasing importation of malaria cases.

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## Malaria impact



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Source: [World malaria report 2019](#)

## Malaria

### Suriname

#### E-2020 country brief

Status: **On track**

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#### Overview

**The coastal area of Suriname has been malaria-free for many decades, but transmission still occurs in the interior of the country. In 2018, 30 indigenous malaria cases were reported, down significantly from an estimated 1700 cases in 2010.**

In 2006, with support from the Global Fund to Fight AIDS, Tuberculosis and Malaria, Suriname implemented large-scale interventions such as extensive health promotion, mass-distributions of insecticide-treated bed nets, indoor spraying of insecticides in high-risk areas, and active case detection surveys. This led to a steep decrease in the number of malaria cases.

Suriname's malaria programme has developed a network of health workers in mining areas and diagnostic testing posts have been established at its borders. In 2018, only 5 malarious areas were recorded. The somewhat high number of 198 imported cases in 2018 is attributed to the cross-border movement of migrant miners from French Guiana.

To curb the threat of local outbreaks, Suriname is joining a tri-national pilot study with French Guiana and Brazil on the provision of malaria self-diagnosis and self-treatment kits to miners who are working in French Guiana. To date, Suriname is still on track to reach zero indigenous malaria cases by 2020.

#### At a glance

- **29** indigenous malaria cases in 2018
- **1** introduced malaria cases in 2018
- **198** imported malaria cases in 2018
- **0** malaria deaths in 2018
- Dominant malaria species: *Plasmodium vivax* (68%)
- High-risk populations: mobile migrant populations (e.g. gold miners)

## Successes

- The introduction of artemisinin-combination therapy, followed by active case detection and the mass distribution of longlasting insecticidal nets, led to a steep decrease in the number of reported malaria cases since 2004.
- In 2009, the Ministry of Health created a malaria programme with a specific focus on high-risk populations.
- Malaria service deliverers from the at-risk population are active in mining areas.
- Malaria screening posts have been established at the border.
- Malaria self-diagnosis and treatment kits are provided to miners as part of a pilot study with French Guiana and Brazil.

## Challenges

Cross-border movement of Brazilian migrant gold-miners from French Guiana leads to imported cases of malaria; France is not currently in a position to manage the malaria problem effectively in French Guiana, which could result in local outbreaks.

## Malaria impact



Source: [World malaria report 2019](#)



## Malaria

### Timor-Leste

#### E-2020 country brief

Status: **On track**

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#### Overview

The malaria landscape in the Democratic Republic of Timor-Leste has dramatically improved over the past 10 years, from a high of 223 002 cases in 2006, to 94 cases in 2016, to zero cases in 2018. This is a remarkable achievement for a country that only came into existence in 2000.

Altogether, 16 indigenous cases were reported in 2017 throughout the country and all were investigated. Most of these cases were reported in the Oecusse region, an exclave surrounded by Indonesia's West Timor. To interrupt transmission, health workers focused on border regions, attacking malaria through intensive vector control and surveillance.

Timor-Leste owes its success, in part, to the rapid scale-up of quality diagnosis as well as malaria treatment in remote areas, aided by community volunteers and other health staff. Insecticide-treated nets (ITNs) and indoor spraying of insecticides are the main vector control methods employed. The Ministry of Health provides universal access to ITNs.

Community mobilization is an integral part of Timor-Leste's national malaria strategy. The use of "edutainment" – education through entertainment such as songs, drama and games – helps health staff and schools fight malaria. Regular trainings for health workers on malaria diagnosis and treatment protocol inform and empower malaria staff at every level of the health system.

#### At a glance

- 0 indigenous malaria cases in 2018
- 1 introduced malaria case in 2018
- 8 imported malaria cases in 2018
- 0 malaria deaths since 2015
- Dominant malaria species: *Plasmodium vivax* (53%)
- High-risk populations: populations living in the border regions; Timorese fishermen travelling to Indonesia; farmers and their families participating in slash-and-burn agriculture in forests

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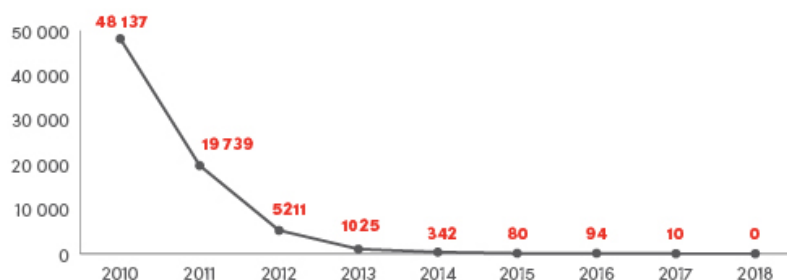
## Successes

- Zero indigenous malaria cases in 2018
  - Successful training of private sector clinicians on national malaria treatment protocols, and of laboratory technicians on malaria microscopy
  - Targeted implementation of vector control based on evidence generated through entomological surveillance and insecticide resistance monitoring
  - No stockouts of antimalarials, rapid diagnostic test kits or laboratory consumables at any level
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## Challenges

- High population mobility across the Indonesian border increases the risk of reintroduction of malaria
  - More funding sources needed (currently, 80% of the officers attached to the national malaria programme are funded by the Global Fund)
  - Reporting from private sector health facilities needs to be strengthened (currently, only 23/35 reporting)
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## Malaria impact



Note: Preliminary data for 2018 (Source: national malaria control programme reports); final figures will be published in the *World malaria report 2019*