



Eliminating malaria in the PHILIPPINES



The Philippines achieved an 87 percent decline in reported malaria cases between 2000 and 2014 and aims to eliminate malaria by 2030.

Overview

The Philippines is a densely populated archipelago of more than seven thousand islands and is working to eliminate malaria subnationally, province by province. Reported malaria cases in the country declined by 87 percent between 2000 and 2014, from 36,596 to 4,903 cases. During that same time period, deaths due to malaria declined by 98 percent, from 536 to only 10 deaths. In 2014, 81 percent of the 4,903 reported cases in the country were due to *Plasmodium falciparum* and 17 percent were due to *P. vivax*; *P. malariae* and *P. knowlesi* accounted for less than 1 percent of reported cases.^{1,2} Malaria transmission occurs year-round but is typically higher during the rainy season, peaking during July through September and declining by October.^{1,2} The primary vector is *Anopheles flavirostris*, which breeds in clear, slow-flowing streams in foothills and in rice paddies. Secondary vectors include *An. maculatus*, *An. litoralis*, and *An. balabacensis*.^{3,4} Although 61 percent of the population is at risk for malaria transmission, only seven percent is considered at high risk, and most transmission occurs in the provinces of Palawan, Tawi-Tawi, Sulu, and Maguindanao. High risk groups include forest workers, subsistence farmers, and indigenous peoples.^{1,2}

The Philippines reoriented its malaria strategy to elimination in 2008, adopting a subnational elimination approach at the provincial level, and by 2011, procedures for assessment and declaration of provincial malaria-free status were formalized. By the end of 2013, the country had declared 27 of its 80 provinces malaria-free, with an additional three provinces ready for evaluation after maintaining zero indigenous cases for five years.^{2,5} One of those three provinces, Abra, completed its assessment and was declared malaria-free in February 2015.⁶ The Philippines is now working to eliminate malaria in an additional 22 provinces by 2020, with a goal of national elimination in all 80 provinces by 2030. Strategies to achieve these goals are outlined in the new National Strategic Plan for the Control and Elimination of Malaria (NSPCEM) in the Philippines, 2014–2020, which emphasizes universal access to malaria diagnosis, treatment and prevention, strengthened

At a Glance¹

- 4,903** Total cases of malaria (81% *P. falciparum*)
- 10** Deaths from malaria
- 61** % of population at risk (total population: 99.1 million)
- 0.05** Annual parasite incidence (cases/1,000 total population/year)
- 1.6** % Slide positivity rate

program capacity, sustained funding, and high quality, evidence-based elimination interventions.⁵ Further support for its elimination goals come from the Philippines' partnership in the Asia Pacific Malaria Elimination Network (APMEN), a network composed of 18 Asia Pacific countries and other stakeholders working together to eliminate malaria in the region.⁷

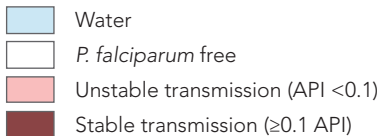
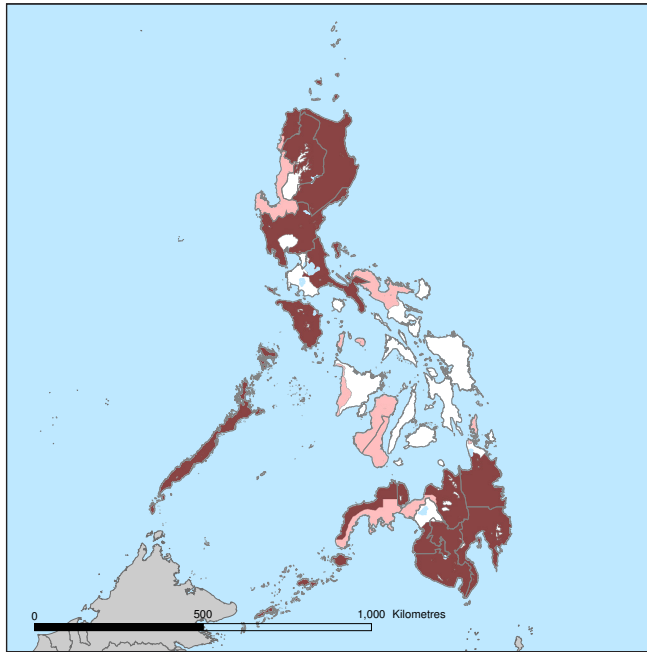
Progress Toward Elimination

Malaria has very likely been present in the Philippines for centuries, but there was little documentation of it prior to the early 1900s. In 1905, the malaria rate was reported as 662 per 100,000 population, and malaria was responsible for over 41,000 deaths.^{8,9} Malaria control efforts began as early as 1906 when the Bureau of Health provided malaria education in schools and distributed free quinine in malarious districts. *Gambusia affinis* fish were introduced in 1913 but were not continued; that same year, the malaria rate was down to 230 per 100,000 population, possibly as a result of the quinine distribution.^{8,9} In 1926, the Malaria Control Division of the Philippine Health Service was formed with support from the Rockefeller Foundation. The Malaria Control Division conducted malaria surveys, supervised malaria prophylaxis, and field-tested interventions, including environmental management and spraying with Paris green larvicide. By 1930, the malaria rate had dropped to 124 per 100,000 population.^{9,10}

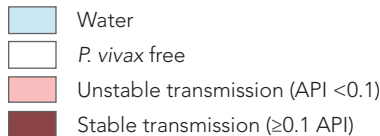
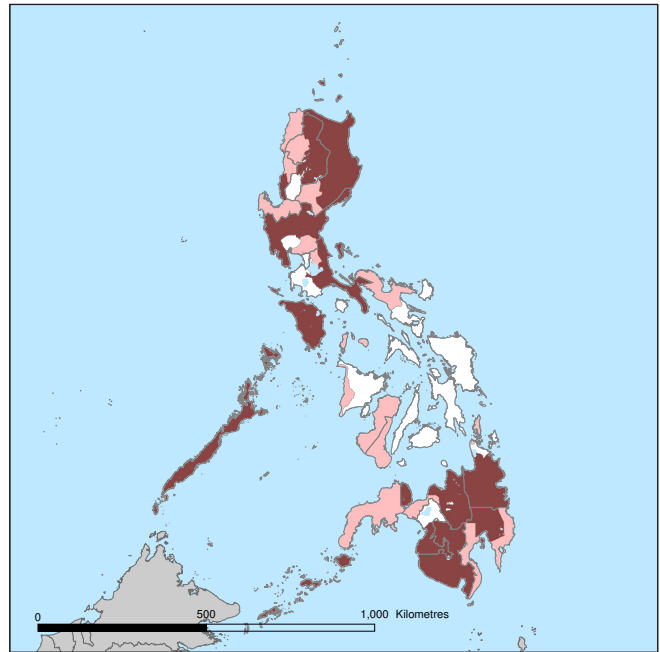


Malaria Transmission Limits

Plasmodium falciparum



Plasmodium vivax



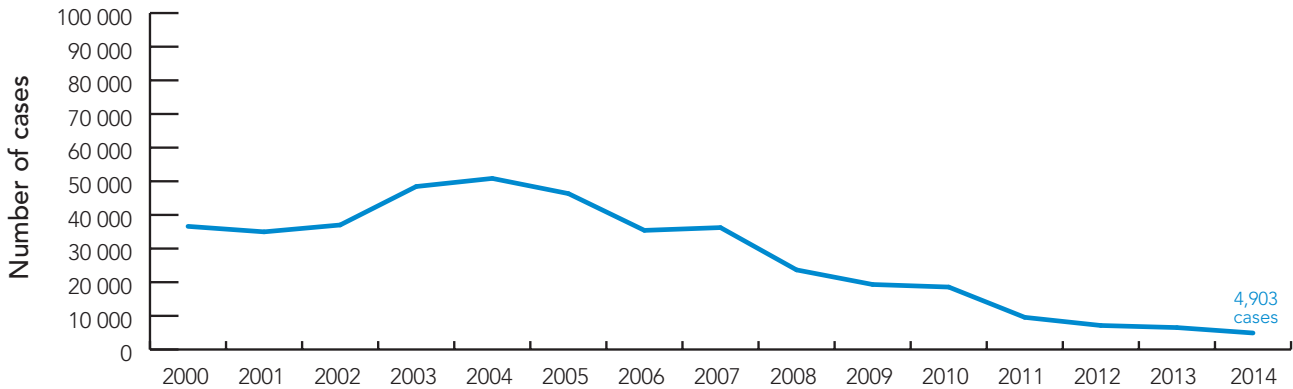
P. falciparum/*P. vivax* malaria risk is classified into no risk, unstable risk of <0.1 case per 1,000 population (API) and stable risk of ≥0.1 case per 1,000 population (API). Risk was defined using health management information system data and the transmission limits were further refined using temperature and aridity data. Data from the international travel and health guidelines (ITHG) were used to identify zero risk in certain cities, islands and other administrative areas.

Malaria control activities were disrupted during World War II but resumed shortly after its conclusion. From 1946 to 1950, the United States Public Health Service implemented the Philippine Public Health Rehabilitation Program, which experimented with the country's first use of DDT for vector control.¹⁰ A formal malaria control program was launched in 1955, and in 1956, the program adopted a goal of elimination in accordance with the World Health Organization's Global Malaria Eradication Program (WHO GMEP). The elimination strategy, implemented by the Joint Philippine-American Malaria Eradication Program, consisted primarily of indoor residual spraying (IRS) with DDT and mass drug administration with chloroquine and primaquine in at-risk areas.^{2,10}

However, due to financial difficulties and the decentralization of the Philippines Bureau of Health in 1959, national funding for the program was not sustained, activities were interrupted, and the annual incidence of malaria subsequently increased between 1960 and 1965.¹¹ In 1966, the Philippine government recentralized the malaria program and passed the Malaria Eradication Act, with the goal of consolidating all elimination activities at the central level and improving coordination and supervision down to the local level. External assistance for the program was provided by WHO and the United States Agency for International Development (USAID).^{2,11} Between 1960 and 1970, malaria morbidity declined from 160 to 75 per 100,000 population, but in 1973, political



Reported Malaria Cases



Malaria burden in the Philippines has significantly declined in recent years, largely due to improved targeting of interventions through evidence-based micro-stratification and intensified local capacity to manage and sustain malaria elimination efforts.

*The Philippines does not distinguish between local and imported when reporting case numbers

Source: World Health Organization, World Malaria Report 2015

- GOALS:⁵**
1. By 2020, reduce malaria incidence by 80 percent relative to 2013 baseline.
 2. By 2020, increase number of malaria-free provinces to 50.
 3. National malaria elimination by 2030.

unrest and significant declines in external funding led to a sharp increase in malaria cases.²

Malaria services were decentralized for a second time in 1983, and the program reoriented its objective from elimination to control in light of the high malaria burden (106 cases per 100,000 population).² While policies and guidelines were still set by the central Bureau of Health, now known as the Department of Health (DOH), implementation of malaria control activities became the responsibility of provincial and municipal health offices that were not adequately trained, staffed, or financed. As a result, a large increase in reported cases occurred in the late 1980s.^{2,11} This trend reversed in the 1990s as capacity of the local health offices improved and the Philippines adopted new control strategies recommended by WHO. These strategies included targeting of interventions based on stratification of malarious areas, use of insecticide alternatives to DDT, introduction of insecticide treated nets (ITNs), discontinuation of presumptive diagnosis and

treatment, and the establishment of procedures for surveillance and outbreak response. Between 1992 and 1999, cases dropped from 95,778 to 37,061, a decline of 61 percent.^{1,2}

In 2001, the Roll Back Malaria (RBM) program launched in the Philippines with the aim of working with local health units to promote community involvement, improve availability and quality of prompt and effective malaria treatment, train health workers on case management and prevention methods, strengthen epidemic preparedness, and promote operational research. Reported cases initially increased after the launch of RBM activities, most likely due to improved diagnostic capacity, but have been on a steady decline since 2004, from 50,850 to just 4,903 cases in 2014.^{1,12}

Since 2003, the Philippines DOH and its implementing partners have received grant support from the Global Fund for malaria control and elimination efforts, primarily targeting rural and indigenous communities in the most underserved



and vulnerable areas of the country. Round 2 grants totaling nearly US\$40 million were disbursed to the Tropical Disease Foundation and the Pilipinas Shell Foundation with the aim of increasing access to quality diagnostic and treatment services, scaling up vector control, and strengthening sustainable, community-based malaria control efforts in the 25 provinces responsible for more than 90 percent of national cases.¹³ This work was continued under three additional grants until 2010, when all existing Global Fund malaria grants were consolidated into a single grant with an emphasis on accelerating progress towards malaria elimination. In 2012, US\$24 million was earmarked for phase two of the grant to sustain the Philippines' malaria control and elimination efforts through 2014.¹⁴

Most recently, the Pilipinas Shell Foundation received US\$15 million for the period 2015–2017 to focus on 13 priority control phase provinces with the highest malaria burden.¹⁵ Between 2011 and 2013, 47 municipalities in these 13 provinces were responsible for 97 percent of national cases. In 2013, 60 percent of all cases were reported from Palawan and 25 percent from Tawi-Tawi. Under the NSPCEM 2014–2020, the DOH, in partnership with Pilipinas Shell Foundation, will pursue sustainable reduction in malaria transmission in the 13 provinces by ensuring universal access to effective control measures. In the provinces with zero or close to zero cases, the NSPCEM emphasizes strengthening of surveillance through the establishment of provincial or regional elimination hubs that will assist local health offices in responding immediately to detected cases.⁵

Eligibility for External Funding^{16–18}

The Global Fund to Fight AIDS, Tuberculosis and Malaria	Yes
U.S. Government's President's Malaria Initiative	No
World Bank International Development Association	No

Economic Indicators¹⁹

GNI per capita (US\$)	\$3,270
Country income classification	Lower middle
Total health expenditure per capita (US\$)	\$119
Total expenditure on health as % of GDP	5
Private health expenditure as % total health expenditure	62

Challenges to Eliminating Malaria

Indigenous populations

In the 13 highly malaria endemic provinces of the Philippines, indigenous peoples make up 16 percent of the total population but contribute 35 percent of all malaria cases. Indigenous groups tend to live in geographically remote areas and their livelihoods depend on forest-based activities, putting them at increased risk for malaria exposure. These groups have limited access to health and social services, and coverage of malaria diagnosis, treatment, and prevention services is low relative to the rest of the population.¹⁵

Armed conflict

Ongoing armed conflict in the Autonomous Region of Muslim Mindanao (ARMM) and parts of Luzon pose considerable challenges for malaria elimination. Conflict disrupts the delivery of health services, including diagnosis, treatment and surveillance of disease, and leads to population displacement, all of which facilitate the spread of malaria among vulnerable groups. The conflict in the Mindanao archipelago has displaced more than two million people over the previous three decades and has recently flared up in Maguindanao, one of the most malaria-endemic provinces. In addition, poverty levels in ARMM are among the highest in the country, which further limits the population's access to health services.^{2,5,20}

Vulnerability to natural disasters

The Philippines is located along the Pacific Ring of Fire and the typhoon belt, and faces a constant threat of natural disasters and extreme weather events that disrupt health services and put vulnerable populations at increased risk for the spread of disease, including malaria. Landslides, volcanic eruptions, earthquakes, and up to 20 typhoons affect the



Philippines on an annual basis. According to the 2014 World Disasters Report, Typhoon Haiyan was the deadliest disaster of 2013 and affected more than 16 million people in the central Philippines.^{2,21}

Conclusion

The Philippines has been successfully pursuing subnational elimination for years, reducing its malaria burden by nearly 90

percent over the past decade. However, political conflict, difficulty in accessing indigenous populations, and the constant threat of natural disasters present serious challenges to the malaria program. Strengthening of local capacity in the high endemic provinces and continued political and financial support for elimination will put the Philippines in a good position to achieve its goal of national elimination by 2030.

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About This Briefing

This Country Briefing was developed by the UCSF Global Health Group's Malaria Elimination Initiative, in partnership with the Philippines Department of Health. To send comments or for additional information about this work, please email Anne.Bulchis@ucsf.edu.



The **Global Health Group** at the University of California, San Francisco is an 'action tank' dedicated to translating new approaches into large-scale action that improves the lives of millions of people. Launched in 2007, the UCSF Global Health Group's **Malaria Elimination Initiative (MEI)** works at global, regional, and national levels to accelerate progress toward malaria elimination in countries and regions that are paving the way for global malaria eradication. The MEI believes that global eradication of malaria is possible within a generation.

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The **Malaria Atlas Project (MAP)** provided the malaria transmission maps. MAP is committed to disseminating information on malaria risk, in partnership with malaria endemic countries, to guide malaria control and elimination globally. Find MAP online at: www.map.ox.ac.uk.

