

Eliminating malaria in ALGERIA

With only 6 local malaria cases in 2014, Algeria is working to eliminate malaria in the near future.

At a Glance¹

- 6** Local cases of malaria (83% *P. falciparum*)
- 0** Deaths from malaria
- 0** % population living in areas of active transmission (total population: 38.9 million)
- 0.0002** Annual parasite incidence (cases/1,000 total population/year)
- 0.1** % slide positivity rate

Goal: Eliminate malaria from Algeria by the end of 2015.² (Algeria has not officially updated this goal but is continuing to make progress toward elimination.)

Malaria Transmission Limits

Malaria transmission is too low to generate risk maps. The World Health Organization classifies Algeria in the elimination phase.

Source: World Health Organization, World Malaria Report, 2015

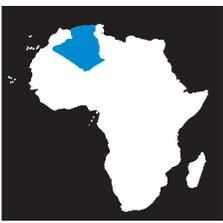
Overview

Algeria reported just 266 local malaria cases in 2014, of which six were local, and is categorized in the elimination phase by the World Health Organization (WHO).¹ The country has had a historically low case burden, averaging 200 annual cases throughout the 1990s, although importation from neighboring countries has been a constant threat.¹⁻³ Between 2013 and 2014, Algeria experienced a 63 percent decline in local malaria cases. The majority of Algeria's local cases in 2014 were due to *Plasmodium falciparum*.¹ The primary vectors responsible for malaria transmission are *Anopheles labranchiae* and *An. sergentii*; secondary vectors include *An. multicolor* and *An. hispaniola*, and *An. gambiae* has been detected along the southern border with Mali.^{4,5}

Algeria currently does not have any active foci of malaria transmission, although 260 imported malaria cases were reported in 2014.¹ Most malaria cases are reported in the southern region of the country, in the provinces of Tamanrasset and Adrar, which share borders with Mali and Niger.^{6,7} Algeria is using geographic information systems (GIS) mapping to more effectively identify imported cases of malaria, conduct epidemiological surveys around each positive case, and implement entomological surveillance to prevent onward transmission among the local population.⁷ Active case detection, quality assurance for malaria diagnostics, and radical treatment with primaquine have all recently been implemented.¹ Algeria had a national goal to eliminate malaria by the end of 2015 but is currently still in the elimination phase.²

Progress Toward Elimination

Algeria was under French rule from 1830 to 1962, which shaped the direction of its early malaria control campaigns. The Pasteur Institute, founded in 1887 in Paris, and today the world's leading infectious disease research center, created an office in Algeria in 1894 to pioneer research on malaria



epidemiology, vector control, and surveillance.⁸ The institute prompted Algeria to officially create a malaria control service that initially focused on environmental management techniques such as draining stagnant water and distributing prophylactic malaria drugs.⁹

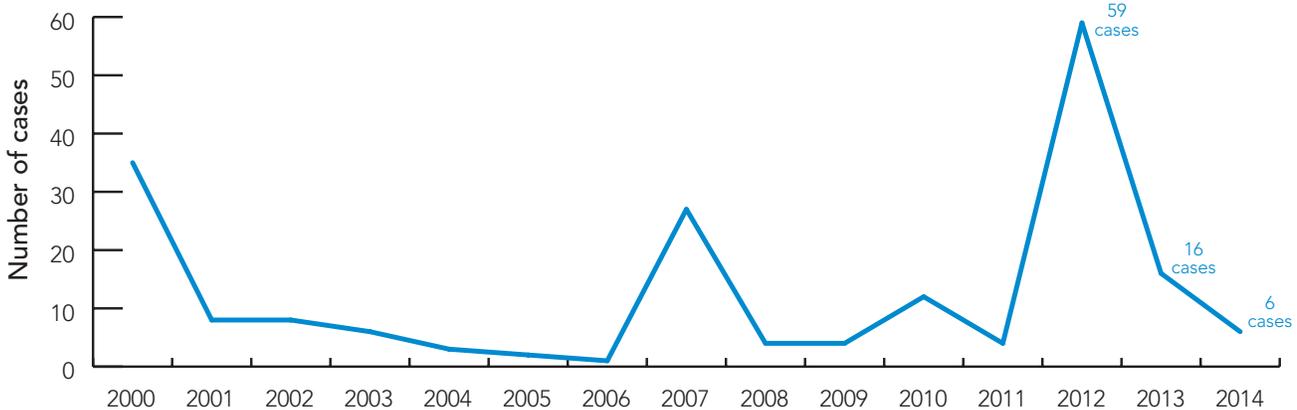
Beginning in the 1920s, additional methods to control malaria were implemented, including the use of larvivorous fish and mass drug administration (MDA), referred to as “quinization.”^{3,9} As a result of these control measures, malaria incidence had substantially declined prior to 1945. Indoor residual spraying (IRS) campaigns using DDT began in 1948 and became the main control method, supported by larval control and MDA. The average number of reported cases was 5,300 annually between 1948 and 1953.³

However, malaria control activities stagnated during the Algerian War of Independence from the French (1954–1962), and malaria cases increased to nearly 100,000 over the decade. After gaining independence in 1962, Algeria signed a memorandum of cooperation with WHO to create the central office for malaria elimination and launched a phased malaria elimination strategy that was immediately effective in

reducing its malaria burden.³ With this new strategy, Algeria instituted IRS using DDT and administered antimalarial drugs on a mass-scale, starting in the east where malaria was most endemic. By 1973, nearly half the inhabitants of Algeria were protected by IRS. The southern region was excluded from the campaign because it was largely undeveloped at the time, although malaria transmission was present.⁹

Between 1968 and 1978, *P. falciparum* cases had disappeared entirely and *P. vivax* cases fell by 98 percent from 12,530 to only 30. This achievement prompted Algeria to declare the successful elimination of *P. falciparum* in 1978.^{7,10} The development of the trans-Saharan highway across Algeria’s southern border contributed to an increase in human migration beginning in the 1970s, thus leading to a rise in imported malaria even as total cases were declining.¹² In the 1980s, a low level of local *P. vivax* malaria cases ranging from 30 to 200 cases annually was reported. During this period, IRS was ceased but cases continued to be monitored and treated.^{3,11} By 1985, 95 percent of all cases reported in Algeria were imported.⁷ In 1987, only 63 cases of *P. vivax* were reported, 11 of which were local cases.⁹

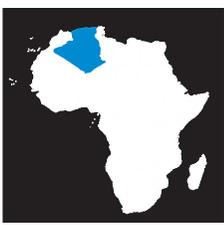
Reported Malaria Cases*



Algeria’s malaria burden has been historically low, with the majority of all cases imported across the country’s southern borders.

*Graph shows total reported cases from 2000–2007; as of 2008, only local cases are shown.

Source: World Health Organization, World Malaria Report 2015



In 1989, the Algerian government underwent a political restructuring. Over the following decade, unemployment rose by 20 percent and gross domestic product fell by 45 percent, which changed the structure of the health system and contributed to a rise in malaria incidence through 1991.¹³ Malaria incidence fluctuated throughout the 1990s but averaged 200 cases per year; most of these were imported from neighboring countries to the south.^{14,15}

In 2009, Algeria called for increased control at its borders through regional cooperation with Mauritania, Tunisia, Niger, Mali, and Libya in order to prevent illegal and unregulated migration.¹⁶ While these measures were political in nature, the increased focus on cross-border collaboration is essential for preventing the ongoing importation of malaria. In addition, Algeria is now using GIS mapping and entomological surveillance to document the movement of mosquito vectors carrying malaria in the southern region and border areas.¹⁷ The national malaria program is working to maintain epidemiological surveillance, strengthen capacity for testing and diagnosis, standardize treatment, increase training for health personnel involved in malaria control, and develop measures to prevent malaria importation.¹⁴

Eligibility for External Funding^{18–20}

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

Economic Indicators²¹

GNI per capita (US\$)	\$5,480
Country income classification	Upper middle
Total health expenditure per capita (US\$)	\$314
Total expenditure on health as % of GDP	7
Private health expenditure as % of total health expenditure	26

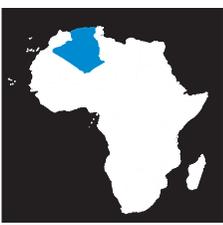
Challenges to Eliminating Malaria

Trans-Saharan migration

For the past two decades, the majority of malaria cases reported in Algeria have been imported, primarily from malaria-endemic Niger and Mali. The trans-Saharan highway transects the Sahara from northern Algeria to southern Nigeria, and acts as a major artery for trade across borders. Algeria's southern borders with Niger and Mali are relatively porous, although each country is only connected to Algeria by one partially paved road. Due to the increase in population movement into Algeria from the south, there is an increased risk of a resurgence of malaria.¹² Political instability in the region has also contributed to increased migration into Algeria, and in May 2014, the Algerian government announced the closure and militarization of its borders with all countries except for Tunisia.^{22,23} These restrictions may help prevent the continued importation of malaria.

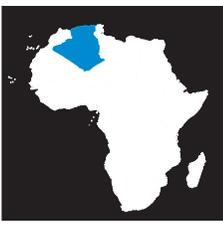
Conclusion

Algeria has demonstrated its ability to successfully control malaria at low levels and has had very few local cases since 2000. However, due to population movement, cases are frequently imported across its southern border, requiring Algeria to maintain a robust surveillance and response system to prevent outbreaks in order to achieve national malaria elimination in the near future.



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About This Briefing

This Country Briefing was developed by the UCSF Global Health Group's Malaria Elimination Initiative. 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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