Cape Verde is pursuing spatially progressive elimination, has achieved a 93 percent decrease in reported malaria cases between 2001 and 2011, and is working to eliminate malaria by 2020.

**Overview**

Cape Verde is composed of a 10-island archipelago, nine of which are inhabited, in the Atlantic Ocean, approximately 600 kilometers from the coast of West Africa. The country, categorized in the pre-elimination phase by the World Health Organization (WHO), has substantially reduced its malaria burden between 2001 and 2011, from 115 cases to 36 cases, only seven of which in 2011 were indigenous. While *P. vivax* and *P. malariae* transmission is possible in Cape Verde, no cases have been reported since 1994. *Anopheles arabiensis*, of the Anopheles gambiae complex, has been the only vector responsible for malaria transmission, although some doubts have been raised as to the geographic distribution of this vector, emphasizing the need for additional vector studies.

Due to many factors, all of Cape Verde’s population is considered at risk for malaria. Based on several entomological (presence or absence of *An. arabiensis*) and epidemiological (occurrence or not of local transmission) factors, the archipelago can be classified in three distinct groups: 1) islands with the mosquito vector and local transmission (Santigo and Boavista), 2) islands with the vector but no local transmission (Santo Antão, Sao Vicente, Maio and Fogo), and 3) islands that lack both vectorial capacity and indigenous malaria transmission (Sal and Brava). Transmission is

**Malaria Transmission Limits**

*Plasmodium falciparum*

<table>
<thead>
<tr>
<th>Water</th>
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<tr>
<td><em>P. falciparum</em> free</td>
</tr>
<tr>
<td>Unstable transmission (API &lt;0.1)</td>
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<tr>
<td>Stable transmission (≥0.1 API)</td>
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*P. falciparum* 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.
unstable in Cape Verde, with peaks between September and November.\(^5\) Malaria cases in 2009 were most concentrated among individuals older than age 20, with males being affected at a rate of three times more than females.\(^4\)

As Cape Verde reoriented its programmatic focus from malaria control to elimination in 2007\(^6\), effective case management, epidemic responsiveness, and the use of focal interventions emerged as vital components to its malaria strategy. In 2011, Cape Verde received Round 10 funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria to interrupt malaria transmission with bi-annual spraying campaigns and systematically test all suspected cases.\(^4\) With continued financial and political commitment, strengthened surveillance, and targeted vector control, Cape Verde seeks to eliminate malaria by 2020.\(^7\)

**Progress Toward Elimination**

Prior to the 1950s, malaria severely afflicted all Cape Verde islands (\textit{Plasmodium falciparum, P. vivax} and \textit{P. malariae} were detected), with recurrent epidemics and annual incidence rates exceeding 100 per 1,000 persons.\(^6\) From 1950 to 1955, widespread epidemics made malaria the fourth highest source of mortality in Cape Verde; it accounted for 194 deaths per 1,000 population and thousands of cases.\(^5\) Under the WHO’s Global Malaria Eradication Program, Cape Verde effectively eliminated malaria from all inhabited islands except for Santiago by deploying aggressive indoor residual spraying (IRS) campaigns with DDT and, between 1953 and 1960, larviciding and active case detection.\(^6\) By 1967, zero local malaria transmission was achieved across all islands, leading to the disbanding of Cape Verde’s IRS programs by 1969.\(^6\) After the elimination program was disbanded, routine malaria activities in Cape Verde were abandoned as well. By 1973 Santiago was struck with a massive malaria resurgence; between 1977 and 1980 two epidemics gripped the entire archipelago. In response, IRS activities were reinstated for five years, leading to the successful interruption of malaria transmission between 1983 and 1985.\(^6\)

Nonetheless, local transmission returned in 1986, four years following the end of IRS application, when Santiago reported 30 malaria cases.\(^6\) From 1987 to 1988, a malaria (predominantly \textit{P. falciparum}) epidemic surged through Santiago, with

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**GOAL:** Achieve national malaria elimination by 2020.\(^7\)

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**Reported Malaria Cases**

[Graph showing reported malaria cases from 1990 to 2011]

Total cases have declined between 2001 and 2011, from 100 to 36 respectively (with only seven local cases in 2011), due to rapid detection and response to the occasional focalized rises in malaria.

434 and 814 cases, respectively, including 12 malaria-attributable deaths in 1988. Focal IRS was reinstated on Santiago by 1989, helping to drive down the country’s overall malaria burden to only 38 cases in 1990. During the last two decades, several smaller and more localized malaria epidemics have occurred on Santiago, with spikes of 107 cases in 1995, 128 cases in 2000 and 100 indigenous cases in 2001.2,4 While these malaria outbreaks affect smaller portions of Cape Verde’s population, their virulence is quite powerful; for instance, the epidemic in Santiago from 1995 to 1996 left over 40 percent of residents with the same chloroquine-resistant strain of \textit{P. falciparum}.9

From 1973 to 1990, Cape Verde documented 3,367 malaria cases, averaging approximately 198 cases annually.4 Between 1990 and 2009, fewer than 1,300 malaria cases have been confirmed in Cape Verde for an average of about 50 cases per year. Approximately 94 percent of these cases were documented on Santiago and deemed autochthonous.5 All other autochthonous cases that were documented took place on Boa Vista after 2003. Only 31 malaria-attributable deaths have been recorded in Cape Verde since 2000.1 The National Integrated Disease Surveillance and Response (IDSR) program began in 2003, classifying malaria as a disease that necessitated weekly reporting and systematic case investigation. By 2007, Cape Verde released a technical guide for malaria surveillance, specifying the need to distinguish autochthonous cases from those that were likely imported.

Larval control has served as Cape Verde’s main vector intervention against malaria, using larvivorous fish like \textit{Gambuisa affinis}, occasional draining of water reservoirs, and application of larvicides and petroleum derivatives to non-drinking and drinking water sources. IRS is only implemented in localized areas in Santiago and in response to malaria outbreaks.4 Chloroquine and sulfadoxine remained Cape Verde’s first-line antimalarial drugs until 2007, when the country replaced them with artemisinin-based combination therapies (ACTs) as the new first-line treatments for uncomplicated malaria.4 Cape Verde’s guidelines for case management were updated in 2008 to include testing all suspected malaria cases with rapid diagnostic tests (RDTs) and microscopy.4

Launched in 2009, the Cape Verde National Malaria Pre-elimination Strategic Plan for 2009–2013 focuses activities around the goal of reducing malaria transmission to less than one case per 1,000 population by 2015.7 However, formal malaria elimination activities were postponed when Cape Verde experienced a serious dengue epidemic in 2009.10 In October 2011, Cape Verde was awarded a Round 10 grant from the Global Fund; the grant specifically supports integrated vector control for malaria, improving case management, and formally establishing an Integrated Disease Surveillance and Response Unit to improve the monitoring and investigation of malaria cases.10

### Eligibility for External Funding

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

### Economic Indicators

| GNI per capita (US$) | $3,540 |
| Country income classification | Lower middle |
| Total health expenditure per capita (US$) | $158 |
| Total expenditure on health as % of GDP | 5 |
| Private health expenditure as % total health expenditure | 25 |

### Challenges to Eliminating Malaria

**Prompt responses to malaria outbreaks**

With the islands’ high propensity for epidemics, progress toward malaria elimination in Cape Verde largely depends on the surveillance system and its ability to respond to emerging malaria outbreaks. Cape Verde’s malaria surveillance system is currently hindered by incomplete and delayed reporting of cases, inadequate monitoring of parasitological and entomological trends, and frequent stock-outs of RDTs and ACTs.4 In addition, inequalities of access to medical care persist across islands, challenging Cape Verde’s ability to detect spikes in cases and to prevent resurgences in malaria-free areas. As of 2011, for example, one of the islands had only a single health post, which lacked RDTs and microscopy.
to serve over 3,000 residents in a region where malaria cases have occurred. Nearly all malaria program activities revolve around Santiago, which presently has the highest malaria burden in Cape Verde, but this singular focus poses a risk for malaria outbreaks and reintroduction to the other islands with potential for malaria transmission.

Importation of malaria within islands and between mainland Africa
Cape Verde's small population and isolation from West Africa's intense malaria transmission has helped the country achieve progress toward elimination. Nonetheless, outbreaks have frequently occurred in Cape Verde; they have been attributed to increased immigration to Cape Verde from mainland Africa and international traffic from tourism. The resource imbalance for malaria control and surveillance between Cape Verde's nine inhabited islands puts the country at risk for reintroduction, especially after heavy rainfall. For Cape Verde to reach elimination, improved surveillance systems that detect imported malaria will be critical.

Sustained financial commitment
Cape Verde currently receives funding through a Round 10 Global Fund grant to pursue malaria elimination. The grant amount—just over US$ 1.3 million—is unlikely to cover all of the costs needed to achieve malaria elimination. As a result, Cape Verde will need to determine ways to consistently sustain the country's financial investments for malaria elimination.

Conclusion
Cape Verde has been able to maintain a relatively low burden of malaria over many decades despite period outbreaks and constant threat of sustained reintroduction from mainland Africa. Through enhanced surveillance systems and sustained financial support from the Global Fund, Cape Verde is working toward its goal of malaria elimination by 2020.

Sources
Transmission Limits Maps Sources


About This Briefing

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