



## COUNTRY SITUATIONAL ANALYSIS

Guyana is located in the northeast of South America. Guyana has been free of yellow fever since 1968, thanks to vaccination programs, and the country has not been known to have any sylvatic transmission of yellow fever since. Vaccination coverage in childhood remains over 90%.

Since the reintroduction of the *Aedes aegypti* mosquito, dengue has become a major public health problem and has progressively increased in incidence and geographical spread. In addition, two other arboviruses were introduced during the last decade: chikungunya and zika. Their dramatic spread and morbidity highlight the capacity of these viruses to create public health concerns.

## ECOLOGICAL FACTORS AND CLIMATE<sup>1</sup>

Guyana has an extensive tropical rainforest ecosystem; this includes large areas of evergreen mountain forest, swampy savannah in the highlands, and sandy hills. The forest area is 94% of the land cover, with 6% used for agricultural activities. Agriculture and natural resources such as forestry, fishing, and mining provide economic activity in Guyana.

## VECTOR DISTRIBUTION AND INCIDENCE

High vector infestation levels were found in entomological surveys.<sup>3</sup>

## EPIDEMIOLOGY

Guyana has been free of yellow fever since 1968. The entire territory is considered endemic, with regional disparities in immunization in hard-to-reach populations and the potential influx of migratory movements from border countries with active transmission (Brazil, Suriname, Venezuela [Bolivarian Republic of]).

## YELLOW FEVER HIGHLIGHTS

<b>EYE strategy risk categorization</b>	High
<b>Routine Immunization introduction (year)</b>	2000
<b>Latest official coverage estimates (2021)</b>	93%
<b>Gavi eligibility</b>	No
<b>International Coordinating Group on vaccine provision requests</b>	No
<b>Last disruptive yellow fever outbreak</b>	1968
<b>Vaccination proof for entry/exit?</b>	Yes
<b>Diagnostic capacity</b>	No
<b>Fragility, conflict, and violence status</b>	No

## DEMOGRAPHICS<sup>2</sup>

<b>Total population</b>	750 000
<b>Annual population growth rate</b>	0.4%
<b>Life expectancy</b>	72 years (female); 67 years (male)
<b>Percentage of population living in urban dwellings</b>	27%
<b>Percentage of urban population living in slums</b>	31%

<sup>1</sup> World Bank. Climate change knowledge portal for development practitioners and policy makers: Guyana. Washington, DC: World Bank; 2021. Available from: <https://climateknowledgeportal.worldbank.org/country/guyana>

<sup>3</sup> Nathan MB. Critical review of *Aedes aegypti* control programs in the Caribbean and selected neighboring countries. J Am Mosq Control Assoc. 1995 Mar;9(1):1-7. PMID: 8468568.

<sup>2</sup> World Bank. Understanding poverty: Open Data. Washington, DC: World Bank; 2020. Available from: <https://www.bancomundial.org/es/understanding-poverty>

## Endemic areas

The entire territory is endemic.

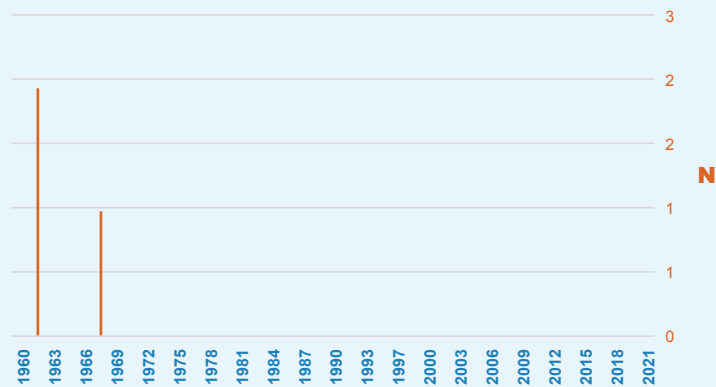
## PAST OUTBREAKS

Only isolated cases since 1960. Last human case occurred in 1968.

### Trend of past outbreaks<sup>4</sup>

Last reported cases occurred in 1962 (2 cases) and 1968 (1 case), related to sylvatic acquisition.

Number of Yellow Fever Cases in Guyana, 1960-2021



## ARBOVIRAL ACTIVITY

**Dengue** Dengue outbreaks started in Guyana in 1998. Since then, occurrence persisted over the years, with co-circulation of serotypes. Guyana reported 10 561 cases during 1998–2021.<sup>5</sup> Some studies suggest a significant under-reporting of dengue and that surveillance should be strengthened.<sup>6</sup>

**Chikunguña** Chikungunya emerged in Guyana in 2014, with a second epidemic wave in 2015, and a reduced number of case incidence in 2016. During 2014–2016, Guyana reported to the Pan American Health Organization (PAHO) over 27 690 cases of chikungunya.<sup>7</sup>

**Zika** Zika cases emerged in Guyana during late 2015, with 34 confirmed cases between 2015 and 2016, and 3 confirmed cases of congenital syndrome associated with the Zika virus.<sup>8</sup>

4 Pan American Health Organization. Statistics and maps - yellow fever: Number of cases and deaths, 1960-2012. Washington, DC; PAHO. Available from: [https://www3.paho.org/hq/index.php?option=com\\_content&view=article&id=8866:2013-statistics-maps-yellow-fever&Itemid=40022&lang=en#gsc.tab=0](https://www3.paho.org/hq/index.php?option=com_content&view=article&id=8866:2013-statistics-maps-yellow-fever&Itemid=40022&lang=en#gsc.tab=0)

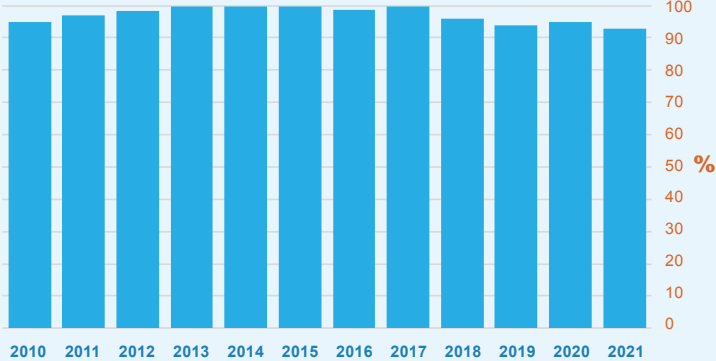
5 Pan American Health Organization. Health information Platform for the Americas (PLISA). Data reported by Ministries and Institutes of Health of the countries and territories in the Americas. Washington, DC; PAHO; 2022. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en/dengue-regional-en/315-reg-dengue-incidence-en.html>

6 Palmer CJ, Validum L, Vorndam VA, Clark GG, Validum C, Cummings R, et al. Dengue in Guyana. *Lancet*. 1999 Jul 24;354.9175-304.

7 Pan American Health Organization. Chikungunya fever in the Americas. Number of reported cases. Washington, DC; PAHO; 2018. Available from: <https://www.paho.org/en/topics/chikungunya>

8 Pan American Health Organization. Zika cases and congenital syndrome associated with Zika virus reported by countries and territories in the Americas, 2015-2018. Cumulative cases. Washington, DC: OPS; 2018. Available from: [https://www3.paho.org/hq/index.php?option=com\\_docman&view=download&category\\_slug=casos-acumulados-pdf-8866&alias=43298-casos-acumulados-zika-4-en-ero-2018-298&Itemid=270&lang=es](https://www3.paho.org/hq/index.php?option=com_docman&view=download&category_slug=casos-acumulados-pdf-8866&alias=43298-casos-acumulados-zika-4-en-ero-2018-298&Itemid=270&lang=es)

## YELLOW FEVER VACCINATION COVERAGE

Routine immunization in childhood <sup>9</sup>		Vaccination coverage <sup>10</sup>																										
Yellow fever vaccine introduced	Yes	<p><b>Childhood Yellow Fever Vaccination Coverage in Guyana, 2010-2021, in Percentages</b></p>  <table border="1"> <caption>Childhood Yellow Fever Vaccination Coverage in Guyana, 2010-2021, in Percentages</caption> <thead> <tr> <th>Year</th> <th>Coverage (%)</th> </tr> </thead> <tbody> <tr><td>2010</td><td>95</td></tr> <tr><td>2011</td><td>95</td></tr> <tr><td>2012</td><td>95</td></tr> <tr><td>2013</td><td>95</td></tr> <tr><td>2014</td><td>95</td></tr> <tr><td>2015</td><td>95</td></tr> <tr><td>2016</td><td>95</td></tr> <tr><td>2017</td><td>95</td></tr> <tr><td>2018</td><td>95</td></tr> <tr><td>2019</td><td>95</td></tr> <tr><td>2020</td><td>95</td></tr> <tr><td>2021</td><td>95</td></tr> </tbody> </table> <p>Guyana's immunization program has been effectively executed. Yellow fever vaccine coverage has remained consistent at over 95%, and at comparable rates to MMR-1. Also, any impact of the COVID-19 pandemic was observed on vaccination coverage.</p>	Year	Coverage (%)	2010	95	2011	95	2012	95	2013	95	2014	95	2015	95	2016	95	2017	95	2018	95	2019	95	2020	95	2021	95
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2021	95																											
Level	Nationwide																											
Year of introduction	2000																											
Age vaccine is administered (months)	12																											
Vaccine schedule	Single dose																											
Integration with first doses of measles, mumps, and rubella vaccine (MMR-1)	Yes																											
Gap MMR1/yellow fever vaccine to monitor program	Yes																											
Vaccination campaigns <sup>9</sup>																												
Catch-up campaigns implemented during the last 20 years		Yes																										
Preventive mass vaccination campaigns implemented during the last 20 years		Yes																										
<p>In 1999, a nationwide vaccination campaign for residents aged 1–59 years achieved 99% coverage. However, disparities in the regional coverage, particularly within the hinterland regions where the rugged terrain makes access difficult as well as the nomadic behavior of residents in these areas, make tracing difficult. From 2015 to 2017, mass door-to-door immunization campaigns targeted the adult population and travelers to at-risk countries.</p>																												
Reactive vaccination campaigns implemented during the last 20 years		No																										
Vaccination in international travelers <sup>9</sup>		Yes																										
Guyana offers yellow fever vaccination to travelers departing to at-risk countries																												
Vaccination in internal travelers <sup>9</sup> (mobile population to high-risk areas in the country)		Yes																										
Registration system to record vaccination data <sup>9</sup>		Nominal immunization registry system on paper																										
Vaccine program funding <sup>9</sup>																												
Sources of financing		Government																										
Gaps in funding during the past 5 years		No																										
Does the country require financial support?		Yes																										

9 Pan American Health Organization. Comprehensive Family Immunization Unit: Survey for mapping of national policies on yellow fever vaccination and their implementation. Washington, DC; PAHO, 2021. Unpublished data.

10 World Health Organization. Data compiled from WHO vaccine-preventable diseases: monitoring system reported through the Joint Reporting Form. Geneva: WHO; s.f. Available from: <https://immunizationdata.who.int/pages/coverage/yfv.html?CODE=GUY&YEAR>

## INTERNATIONAL HEALTH REGULATIONS<sup>9</sup>

Does the country request proof of vaccination against yellow fever at points of entry?			Yes
LABORATORY DIAGNOSTIC CAPACITY <sup>9</sup>		SURVEILLANCE <sup>9</sup>	
Member of Arbovirus Diagnosis Laboratory Network of the Americas	Yes	National guidelines for surveillance	Yes
National Reference Laboratory	Via CARPHA (The Caribbean Public health Agency)	Type of surveillance for human cases	Syndromic-case based
Report to PAHO	Yes	Type of surveillance for nonhuman primates	Passive
Testing capacity for yellow fever:		Entomological surveillance	Yes, but limited
IgM antibody capture enzyme-linked immunosorbent assay (MAC-ELISA)	Yes	Entomo-virologic surveillance	No
Plaque reduction neutralization test	No	Reactive case investigation	No data
RT-PCR blood specimens	Yes	YELLOW FEVER CONTROL STRATEGIES	
RT-PCR tissue specimens	No	Multiannual immunization plan	Yes
RT-PCR wild type virus <i>versus</i> vaccine	No	Risk assessment methodology <sup>9</sup>	Yes
Immunohistochemistry	No	Vector control activities	Yes
Virus isolation	Yes	Diagnosis	Yes
External quality assessment compliance	No	Surveillance	Yes
Shortage of diagnostic supplies over the last 5 years?	--	Request for proof of yellow fever vaccine at points of entry	Yes

## POPULATION MOVEMENTS<sup>11</sup>

Guyana shares with Venezuela (Bolivarian Republic of) a long history of border conflicts. In recent years, a migrant movement from Venezuela (Bolivarian Republic of) broke through the border. With funding support from the United Nations Central Emergency Response Fund (UNCERF), Guyana's government provides help to over 3000 refugees and migrants from Venezuela (Bolivarian Republic of) who are considered in a vulnerable situation.

<sup>11</sup> Office of United Nations High Commissioner for Refugees (UNHCR). UNHCR Data. Geneva: UNHCR; s.f. Available from: <https://www.unhcr.org/en-us/data.html>