

# MEXICO

## Dengue Fever

Since the beginning of 2019, a regional epidemic cycle of dengue has broken out in Latin American and the Caribbean. According to the government, as of 2 September, Mexico has 11,593 confirmed cases of dengue, including 798 cases of severe dengue. However, the total number of probable cases is expected to be much higher by the end of 2019. 70% of the cases are primarily within five of Mexico's provinces: Chiapas, Jalisco, Veracruz, Oaxaca, and Quintana Roo (GoM 02/09/2019). Veracruz de Ignacio de la Llave (Veracruz) a state with a population of over 8.1 million, has the highest total number of dengue (3,234) (GoM 02/09/2019 GoV 2017). As of 31 August, Veracruz has 3,234 confirmed cases of dengue, including 82 cases of severe dengue, and 2 confirmed deaths (GoM 02/09/2019). This number is already higher than the figure for the entirety of 2018 for Veracruz, which had 2,239 cases of dengue and 95 cases of severe dengue (GoM 12/2018). Given that the rainy season is expected to continue until October, this number could continue to increase.

### NEED FOR INTERNATIONAL ASSISTANCE



### IMPACT



Incident rate of Dengue Fever across Mexico States (GoM 02/09/2019)

## Anticipated scope and scale

The Government of Mexico predicts there will be 74,200 probable cases of dengue by the end of 2019. In 2018 there were roughly 25,000. 16 states in Mexico have confirmed cases dengue so far, of which the **state of Veracruz** currently has the highest number. Vulnerable populations include those in **poverty**, who account for 58% of the state's population. **Children** under 14 are also highly susceptible to the current outbreak; they account for almost a quarter of the population in Veracruz. **The ongoing rainy season**, which last year resulted in widespread flooding across 21 municipalities within Veracruz, could heighten the number of dengue cases.

## Key priorities



**+ 2.1M**  
children living Veracruz

**Health facilities**  
determine capacity to handle the outbreak

**Prevention measures**  
to control outbreak

## Humanitarian constraints



There are no access constraints directly related to the dengue fever outbreak. However, security risks due to the prevalence of gangs in the region may pose security risks. Furthermore, with the ongoing rainy season future flooding could occur, which could block or restrict road access.

### Limitations

More information is needed on the caseload of Dengue Fever in Veracruz and the ability of the health sector to respond to the current outbreak.

## Crisis impact

Dengue is found in Mexico – and Veracruz – every year (PAHO 2016). In 2018, the government determined there were 12,706 across Mexico (GoM 12/2018). The government of Mexico confirms that so far for 2019 there are 11,593 cases of dengue, but accounting for probable cases may place the number much higher. The Pan American Health Organisation (PAHO) states that the total number is 39,700; , it is not clear whether PAHO includes probable cases in their number, which would explain the larger figure (PAHO 09/08/2019). This suggests that there is a possibility that the 3,234 government confirmed cases in Veracruz is in fact higher, if including probable cases. However, Government sources state there is nothing alarming about the current outbreak, as dengue outbreaks fluctuate in cycles over the years. Contradictions to this exist, and claim that the number of cases so far is still too high to be average (Yucatan Times 04/09/2019). The population of children within the state is most at risk; in 2019 the highest cases of severe dengue, a potentially deadly strain of the disease, has been found in children between 5 and 9 years of age (GoM 02/09/2019).

### DENGUE CON SIGNOS DE ALARMA Y DENGUE GRAVE

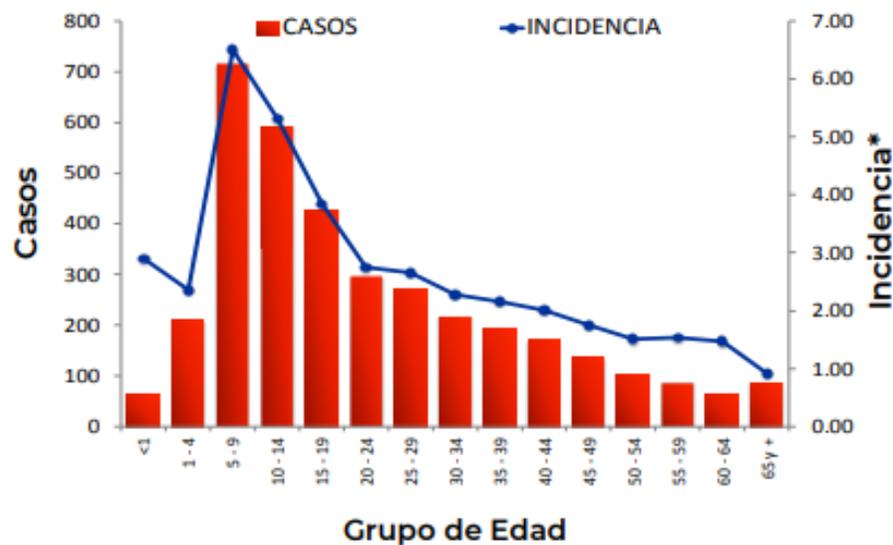


Figure 1: Extreme dengue cases and cases with warning signs, Mexico, 2019 (GoM)

For 2019, 16 states in Mexico have confirmed cases of dengue, the highest number being in the eastern state of Veracruz (GoM 02/09/2019). All four serotypes have been found in Veracruz in 2019, including DEN-2 which is the most deadly (PAHO 09/08/2019). Out of the 212 municipalities of Veracruz, the government has identified the municipalities of Nautla, Rafael Delgado, Benito Juarez, Ixmattlahuacan as those with the highest cases of dengue. They have a combined population of over 57,000 (GoM 02/09/2019; GoV 2017).

It is important to consider the capacity of **health** facilities in Veracruz, in response to the dengue outbreak, as primary health care is essential in mitigating, identifying, and addressing the disease. Mexico is based on both a public and private health care system; As of December 2015 there were 1,747 public health institutions in the state of Veracruz, including 1,642 outpatient clinics, 95 general hospitals, and 10 specialised hospitals (GoV 2017). As of 2015, there were 140 private medical facilities in the state (INEGI 2015). According to the National Statistics office, Instituto Nacional de Estadística y Geografía (INEGI), in 2010 4,484,837 people in Veracruz were covered by health services (INEGI 2010). This suggests that roughly 3.6 million would be left uncovered. This gap may aggravate the effects of the current dengue outbreak, as access to medical treatment is essential to mitigating negative impacts from the virus.

The Mexican government is engaged in the training of health personnel in the identification of dengue, which is essential to the provision of adequate and timely treatment (GoM 05/05/2019). However, it is not clear where in Mexico these staff have been or are being trained. Further information is required to determine whether both the public and private systems institutions can respond effectively to the current dengue outbreak.

### Humanitarian and operational constraints

There are no access constraints directly related to the dengue fever outbreak. However, the ongoing rainy season, which lasts until October, could result in future flooding impeding access to certain areas of the state. In 2018, flooding occurred in 21 states entire communities and displaced, including Benito Juraz, one of the municipalities with the highest caseload of dengue (SEGOB 09/28/2018 GoM 12/2018)

Security risks due to the prevalence of gangs in the region may pose security risks. Veracruz's strategic positioning on the Atlantic Ocean makes it an entry and exit point for drugs and other contraband. Gang violence is prevalent and has the potential to restrict the movement of the population to accessing health care. On 28 August, a gang killed 26 civilians inside of a nightclub in the city of Coatzacoalcos, Veracruz, over drug territory (Mexico News Daily 28/08/2019)

### Vulnerable groups affected

According to PAHO, the current regional outbreak has had the greatest impact on **children** under the age of 15 (PAHO 15/08/2019). In Mexico the highest number of severe dengue

cases in 2019 in the age-range of those between 5 and 9 (see Figure 1). Their young age will likely mean they have had less exposure to the virus, and therefore lack immunity (PAHO 15/08/2019). There are approximately 2.1 million children under 14 currently living in Veracruz who could be exposed to the virus, including the most deadly serotype (DEN-2) which is currently present in the state (GoV 2017).

The impact of dengue on Veracruz is determined by social, economic, and political factors (PAHO 2016). A dimension of these three elements is **poverty**; as of 2017 58% of the population was recognised as being in official poverty, and just over 17% in extreme poverty (World Bank 2017). The low income of households in Veracruz is attributed to precarious employment and low levels of pay (World Bank 2017). The poor population in the state is characterised by a lack of access to food, low levels of education, and low levels of access to social security (World Bank 2017). According to the latest census data, over 3.6 million people living in Veracruz do not have access to health care (INEGI 2010). It is not clear whether this is a direct function of poverty or not. However, low income and poverty could mean the population has less access to adequate dengue treatment., which is crucial in lowering the fatality rate (WHO 15/04/2019).

At the end of 2018 Mexico was hosting over 165,500 people of concern, including around 58,650 **refugees**, and 23,800 **asylum seekers** (UNHCR 2019). It is not clear where these refugees are situated or what their living conditions are. However, they may have less accessibility to health care.

## Aggravating factors

### Climate

The rainy season in Mexico lasts from around May until October. The climate of the majority of Veracruz is humid with abundant rains in the summer (GoV 2017). In July of this year, Veracruz received 1 month-worth of rain in just 1 week (AccuWeather 01/07/2019). Heavy rains could deteriorate the dengue situation in two ways. Firstly, heavy rains can increase the presence of standing water, facilitating the breeding of mosquitoes. Secondly, rainfall which leads to flooding can create access issues. In October 2018, Veracruz faced heavy rainfall across 21 municipalities, which led to the flooding of businesses and homes (Mexico News 20/10/2018).

### Lack of Insecticides

The lack of insecticides available within Veracruz has been cited as one of the reasons for the higher than average level of dengue cases so far in 2019. The government has received criticisms as it apparently did not utilise the allocated funds in order to purchase the necessary insecticides for the province (Yucatan Times 04/09/2019). However, official government sources claim this is untrue, and rather attribute the high caseload to the climate, the immune response of those exposed, and lack of medical attention (GoM 05/09/2019).

### Other Diseases

Other viruses and diseases are currently present in Veracruz, which could impact the ability of health care facilities to focus on the response to the dengue outbreak. For example, there are currently 2,277 cases of typhoid, with 81 new cases as of 31 August, accounting for 11% of the total number in Mexico. Additionally, there are 2,371 cases of Tuberculosis in Veracruz as of 31 August 2019 (GoM 09/09/2019). The presence of other viruses and diseases may strain the health sector, diminishing the ability of facilities to respond timely and effectively to dengue cases. Those infected with other diseases or viruses may also have a compromised immune system,

## Contextual information

### Previous outbreaks

Dengue fever is endemic to Mexico; the country experiences outbreaks every year (PAHO 2016). Veracruz also experiences yearly outbreaks. Last year there were 2,239 cases government confirmed cases in the state (GoM 12/2018).

### Cause and symptoms

Dengue fever is a mosquito-borne viral infection caused by a virus of the Flaviviridae family. The disease can be transmitted to humans via females of the *Aedes aegypti* species (WHO 15/04/2019). The disease is usually transmitted during the day, more often in the morning and before dusk (WHO 03/01/2017). Malaria-like symptoms are the most common at the beginning of dengue fever (WHO 31/08/2016). There are four serotypes of dengue present in Latin America (DEN-1, DEN-2, DEN-3, and DEN-4), the latter being the most deadly (PAHO 15/08/19).

Symptoms can take about one week to show, and include a high fever of over 40 degree C, headache, pain behind the eyes (PAHO 15/08/19). More severe dengue symptoms include rapid breathing, severe abdominal pain, persistent vomiting/blood in the vomit, fatigue, irritability, and bleeding from mucous membranes (WHO 2019). Dengue becomes severe

when it develops complications – such as organ impairment or severe bleeding – which can lead to death (WHO 15/04/19).

## Treatment

There is no reported specific treatment for dengue fever, especially not for severe dengue. However, early detection and access to quality health care lowers the fatality rate (WHO 15/04/2019). Blood transfusion can be necessary in cases of severe dengue fever (Mayo Clinic 20/04/2016).

## Key characteristics

**Population:** 130,759,000 country-level (UN Data 2018), 8 112 505 Veracruz (GoV 2017)

**Access to improved drinking water sources:** 97.2 % of urban, 92.1% rural (UN Data 2018)

**Access to improved sanitation facilities:** 88% urban, 74.5% rural (UN Data 2018)

**Urban population:** 80.2% of total population (UN Data 2018)

**Physicians:** 2.2/1000 population (UN Data 2018)

**Infant mortality rate:** 18.8/1000 live births (UN Data 2018)

**Employment:** Agriculture: 13%, Industry: 25.9%, Services: 61.2%, Unemployment: 3.6% (UN Data 2018)

## Response capacity

### Local and national response capacity

The Ministry of Health (Ministerio de Salud) of Mexico is responding to the outbreak. Over the past four decades the country has developed permanent activities in epidemiological and entomological surveillance, health promotion, and training of personnel to minimise effects of dengue. To reduce further spread of the disease, the primary activities are on eliminating breeding grounds for the mosquitos, which eradicates the larvae (GoM 2019).

Specialised sanitary brigades have been deployed across the country to eliminate areas which support hatcheries for the mosquito (GoM 05/05/2019). The latest available information from the Ministry of Health suggests that this year's dengue programme has sprayed 500,000 homes for larvae control (GoM 05/05/2019). Community prevention and control activities are crucial for mitigating further outbreaks (PAHO 09/08/2019). Due to the frequency of dengue outbreaks in the government trains health personnel every year,

although it is not clear where these trainings have taken place. There appears to be no request for international assistance in responding to the disease.

## Information gaps and needs

The impact of the dengue fever outbreak on hospitals' capacity in Veracruz remains unclear. More information is needed on the state of hospitals. It is not clear whether hospitals have been administering the vaccine for prevention of the spread of dengue.

The number of cases varies from the regional organisation PAHO and the government figures. It is unclear whether this is due to unregistered cases or political reasons. Further information is required to determine the scale of the outbreak.

More information is required on the number and location of refugees/migrants in Veracruz and their levels of access to healthcare.