

Situation Summary

Between epidemiological week (EW) 1 and EW 9 of 2019, ten countries in the Region of the Americas have reported confirmed cases occurring between December 2018 and February 2019: Argentina, the Bahamas, Brazil, Canada, Chile, Colombia, Costa Rica, Mexico, the United States of America, and the Bolivarian Republic of Venezuela. No fatal cases have been reported in 2019.

In 2018, there were 12 countries¹ in the Region of the Americas that reported confirmed measles cases, and only two of these countries reported fatal cases: Brazil and Venezuela.

The following is an update of the epidemiological situation in the countries that have reported confirmed cases in 2019.

Argentina reported a confirmed imported measles case, in a 35-year-old male resident of Rosario city, Santa Fe Province, with no known vaccination history. Rash onset was on 17 February after having returned to Argentina on 5 February from a business trip to Hong Kong, Special Administrative Region (SAR) of the People's Republic of China.

Laboratory tests conducted by the National Reference Laboratory for urine samples and nasopharyngeal swabs were positive for measles by the qRT-PCR technique. Genotyping identified genotype B3. Sequence data has been compared with those available in the MeaNS database; however, no similar sequence was found, which suggests that the strain is recently circulating.

Included in the measures implemented by national authorities upon case detection are contact tracing and control measures (administration of vaccine or gamma globulin). Currently, the follow-up of contacts continues.

The **Bahamas** reported a confirmed imported case of measles. The case is a 4-year-old male child with no history of vaccination who was visiting from France and arrived in the Bahamas on 10 February 2019 while en route to a privately-owned island. Rash onset was on 18 February 2019, and the same day, the child sought medical attention with his parents. On 21 February 2019, the serum samples tested at an international laboratory were IgM-positive for measles.

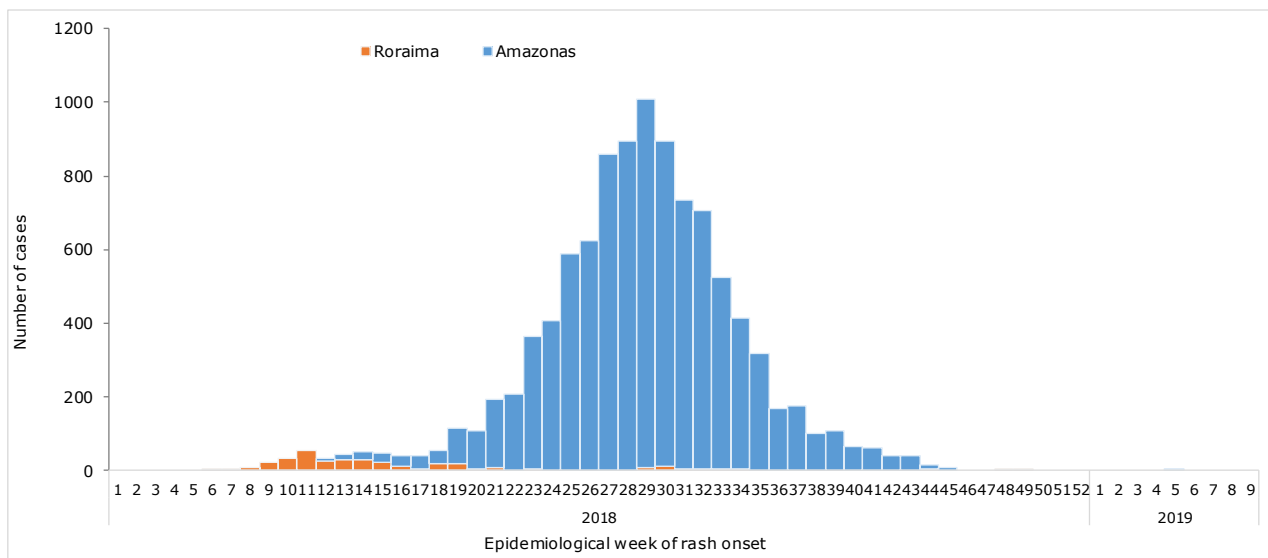
¹ Antigua and Barbuda, Argentina, Brazil, Canada, Chile, Colombia, Ecuador, Guatemala, Mexico, Peru, the United States of America, and Venezuela.

In **Brazil**, between EW 6 of 2018 and EW 9 of 2019, there were 10,334 confirmed cases reported (**Figure 1**), including 12 deaths. Since the 18 January 2019 PAHO/WHO Epidemiological Update on Measles², an additional 60 confirmed cases were reported.

There are 11 federal units that have reported confirmed measles cases: Amazonas (9,804 cases, 6 deaths), Bahía (3 cases), the Federal District (1 case), Pará (87 cases, 2 deaths), Pernambuco (4 cases), Rio Grande do Sul (46 cases), Rio de Janeiro (19 cases), Rondônia (2 cases), Roraima (361 cases, 4 deaths), São Paulo (3 cases), and Sergipe (4 cases). For all of the federal units reporting cases, with the exception of one case in Rio Grande do Sul and one in São Paulo, genotype D8 lineage MVi/HuluLangat.MYS/26.11 was identified, similar to that circulating in Venezuela and other countries in the Region.

The most recent confirmed cases imported from Venezuela had rash onset in EW 7 of 2019 and were reported in Pará State.

Figure 1. Confirmed measles cases by EW of rash onset. Amazonas and Roraima states, Brazil, EW 1 of 2018 to EW 9 of 2019.



Source: Data published by the Amazonas and Roraima State Secretariats of Health and reproduced by PAHO/WHO.

The following is a brief summary of the epidemiological situation in the states of Amazonas and Roraima.

In the state of Amazonas, between 6 February 2018 and 26 February 2019, there were 11,422 suspected cases reported, including 6 deaths. Of the total suspected cases, 9,804 were confirmed, 1,607 were discarded, and 11 remain under investigation. The most recent confirmed case had rash onset on 31 January 2019 (EW 5) and the most recent case under investigation had rash onset on 17 February 2019 (EW 8) in Manaus.

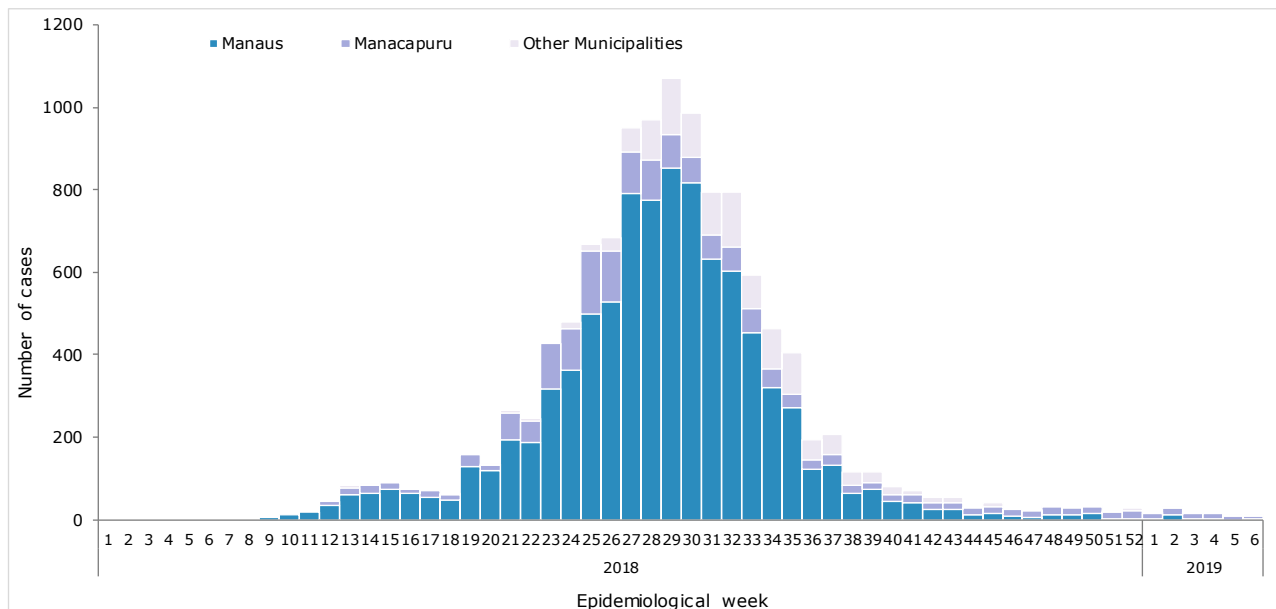
Of the confirmed cases, 55.6% (5,451) are male.

² PAHO/WHO Epidemiological Update: Measles. 18 January 2019, Washington, D.C.: PAHO/WHO; 2019. Available at: <https://bit.ly/2QXV1hU>

Of the 62 municipalities in the state of Amazonas, 46 have reported confirmed cases. The municipality of Manaus accounts for 78.7% (8,985) of the suspected cases and 82% (8,055) of the confirmed cases reported in the state. The cumulative incidence rate for the state is 273.0 cases per 100,000 population, and the municipalities with the highest incidence rate are: Manacapuru (994.2 cases per 100,000 population), followed by Juruá (458.6 cases per 100,000 population), and Manaus (378.1 cases per 100,000 population).

Since EW 30 of 2018, a decreasing trend in the epidemiological curve of cases has been observed in the state (**Figure 2**).

Figure 2. Reported measles cases by municipality and EW of rash onset. Amazonas State, Brazil, EW 1 of 2018 to EW 6 of 2019.



Source: Data published by the Amazonas State Secretariat of Health and reproduced by PAHO/WHO.

The highest incidence rate for confirmed cases by age group is among children under 1-year-old (2,190.5 cases per 100,000 population), followed by 15 to 19-year-olds (552.1 cases per 100,000 population), 20 to 29-year-olds (358.6 cases per 100,000 population), 1 to 4-year-olds (354.1 cases per 100,000 population), 30 to 39-year-olds (188.8 cases per 100,000 population), and 40 to 49-year-olds (117.4 cases per 100,000 population).

In the state of Roraima, between 4 February 2018 and 22 February 2019, there were 596 suspected cases reported, including 4 deaths. Of the total suspected cases, 361 were confirmed, 223 were discarded, and 12 remain under investigation. The most recent confirmed case had rash onset on 3 December 2018 (EW 49) and the most recent case under investigation had rash onset on 17 February 2019 (EW 8).

Of the confirmed cases, 54.2% (195) are male, 61% (219) are Venezuelan, 38% (139) are Brazilian, and 1% (3 cases) correspond to persons from other countries. Of the confirmed cases, 41% are indigenous (127 from Venezuela and 18 from Brazil).

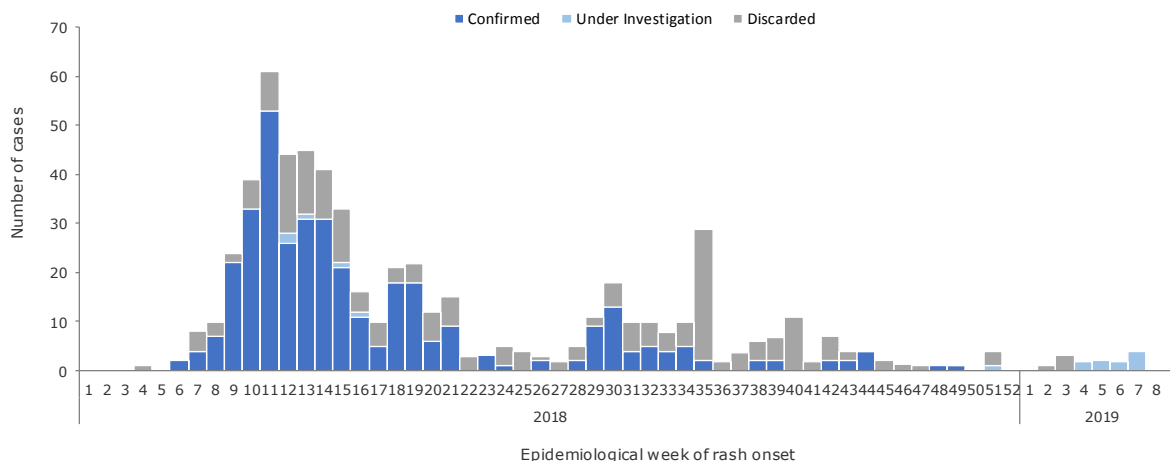
Of the 15 municipalities in the state of Roraima, 13 have reported suspected cases. The municipalities of Amajari, Boa Vista, and Pacaraima account for 90% (536) of the suspected

cases and 89% (323) of the confirmed cases reported in Roraima. The incidence rate in Roraima is 48.2 cases per 100,000 population, and the municipalities with the highest incidence rates are: Pacaraima (314.5 cases per 100,000 population), Amajari (72.6 cases per 100,000 population), Cantá (61.6 cases per 100,000 population), Rorainópolis (50.8 cases per 100,000 population), and Boa Vista (48.5 cases per 100,000 population).

As of EW 15 of 2018, there was a decrease in the number of suspected and confirmed cases, and between EW 32 and EW 35 of 2018 an increase in cases was reported, affecting the municipalities of Boa Vista and Amajari; another slight increase occurred in EW 7 of 2019 (**Figure 3**).

The highest incidence rate by age group is among children under 1-year-old (812.1 cases per 100,000 population), followed by 1 to 4-year-olds (245.7 cases per 100,000 population), 5 to 9-year-olds (106.9 cases per 100,000 population), 10 to 14-year-olds (66.6 cases per 100,000 population), and 15 to 19-year-olds (51.0 cases per 100,000 population).

Figure 3. Cases of measles (confirmed, discarded, and under investigation) by EW of rash onset. Roraima State, Brazil, EW 1 of 2018 to EW 9 of 2019.



Source: Data published by the Roraima State Secretariat of Health and reproduced by PAHO/WHO.

Additionally, on 20 February 2019, Brazil reported a measles outbreak on a cruise ship. As of 28 February, there were 32 suspected cases reported, of which 18 were laboratory-confirmed. All of the confirmed cases are in crewmembers. Four suspected cases were reported in passengers. Prior to the arrival of the cruise ship in Brazil on 2 December 2018, the ship had traveled through the Mediterranean, and it is expected to remain in Brazil until April 2019. The genotype identified in this outbreak is D8 with genomic differences to the D8 virus identified in the outbreak in Brazil in 2018 in the states of Amazonas, Roraima, and Pará, nor is it similar to the sporadic cases of genotype D8 reported in Brazil in 2018.

In **Canada**, as of EW 6 of 2019, there were 5 confirmed measles cases. Genotype B3 was identified in one case and genotype D8 lineage MVs/Gir Somnath.IND/42.16/ was identified in 2 cases. Most of the cases reported in 2019 are associated with an outbreak affecting school-aged children in Vancouver that was originally linked to importation.

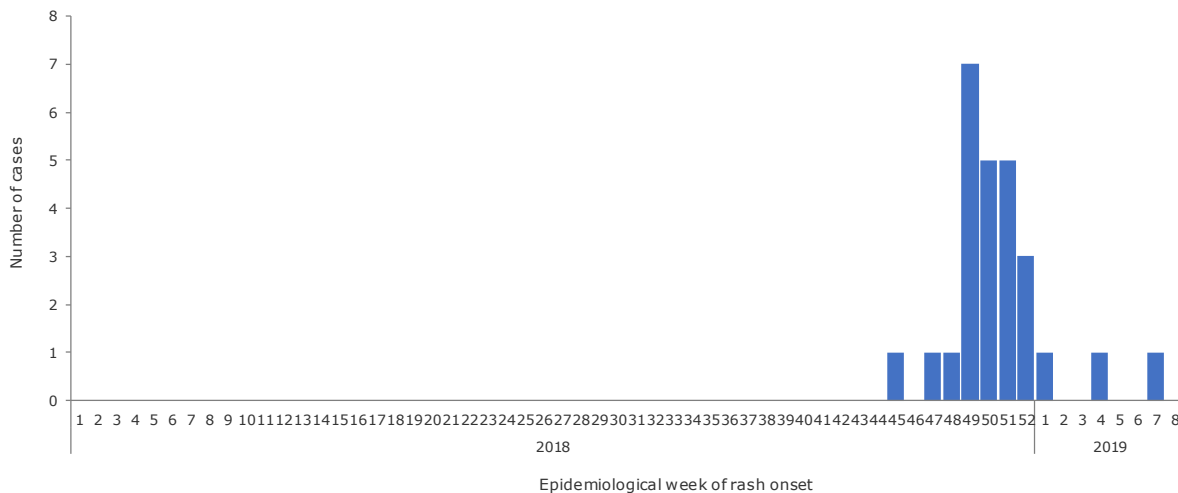
In **Chile**, between EW 45 of 2018 and EW 8 of 2019, there were 26 confirmed measles cases (**Figure 4**), of which 8 were imported and 18 were import-related. Fourteen of the cases

required hospitalization, and no deaths were reported. Genotype D8 lineage MVi/HuluLangat.MYS/26.11, similar to the one circulating in other countries of the Region, was identified in 18 cases. Of note, genotyping has not been carried out for all of the cases, as those with an epidemiological link to a prior case are considered part of the same outbreak.

With respect to the most recent imported case, rash onset was on 11 February 2019. The case is a 46-year-old male whose probable site of infection is Miami, Florida, United States, or Dubai, United Arab Emirates. Genotype D8 lineage MVs/GirSomnath.IND/42.16 was identified.

Of the total cases reported, 54% are male and 57% are children under 1-year-old. Cases were reported in the Metropolitan (24 cases) and Biobío (2 cases) regions.

Figure 4. Confirmed measles cases by EW of rash onset. Chile, EW 45 of 2018 to EW 8 of 2019.



Source: Data received from the Chile International Health Regulations (IHR) National Focal Point (NFP) and reproduced by PAHO/WHO.

In **Colombia**, between EW 10 of 2018 and EW 9 of 2019, there were 241 confirmed measles cases with no deaths reported (**Figure 5**). Genotyping performed on samples for 50 cases indicated genotype D8, similar to that circulating in other countries in the Region.

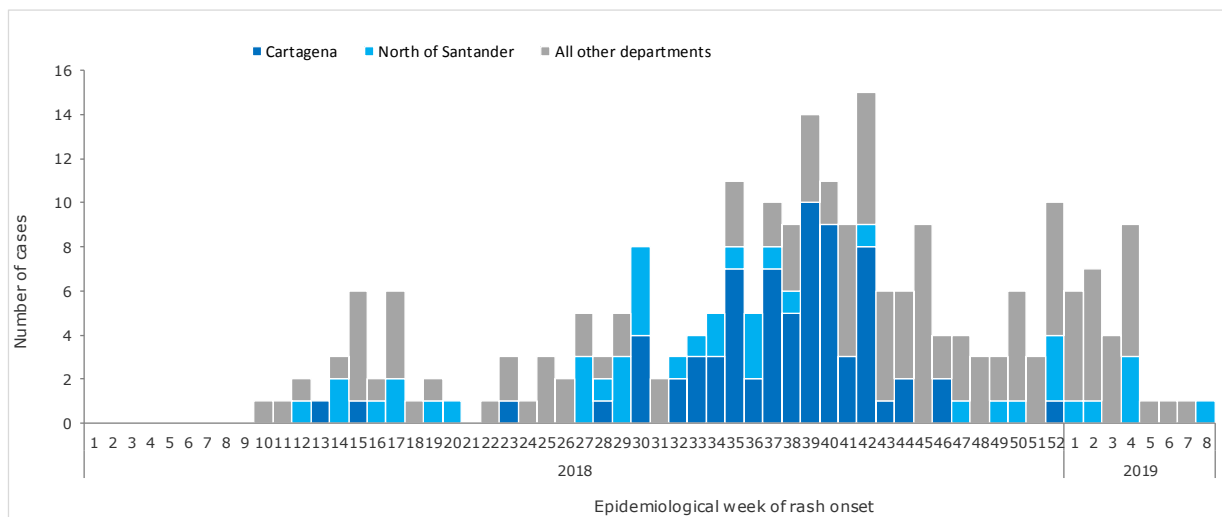
The most recent confirmed case had rash onset on 18 February 2019, and confirmed cases reported in the last four weeks were in the departments of Cesar, La Guajira, Norte de Santander, and Cundinamarca.

Confirmed cases have been reported in the departments of Antioquia, Arauca, Atlántico, Bolívar, Cauca, Cesar, Córdoba, Cundinamarca, La Guajira, Magdalena, Norte de Santander, Risaralda, Santander, and Sucre, and in the districts of Barranquilla, Bogotá, Cartagena, and Santa Marta. The districts of Barranquilla and Cartagena and the department of Norte de Santander account for 68% of the total confirmed cases.

The cumulative incidence rate in the country is 0.22 cases per 100,000 population, and the highest incidence rates were reported from the following territorial entities: Cartagena (5.3 cases per 100,000 population), Barranquilla (2.4 cases per 100,000 population), and Bolívar (1.1 cases per 100,000 population).

The highest incidence rate by age group for cases associated with importation or secondary transmission among Colombians were reported among children under 1-year-old (6 cases per 100,000 children under 1-year-old), followed by children aged 1 to 4-years-old (1.74 cases per 100,000 population).

Figure 5. Confirmed measles cases by EW of rash onset. Colombia, EW 10 of 2018 to EW 8 of 2019.



Source: Data provided by the Colombia International Health Regulations (IHR) National Focal Point (NFP) and reproduced by PAHO/WHO.

Costa Rica reported a confirmed measles case; the case is a 5-year-old male child of French nationality with no history of vaccination who arrived in Costa Rica with his parents on 18 February from Paris, France. Rash onset was on 20 February and the case was laboratory-confirmed. In addition, laboratory tests (real-time PCR for measles virus) were carried out on nasopharyngeal aspirate and urine samples from the parents, which were positive (although they did not present with symptoms compatible with measles), bringing the total to 3 confirmed cases.

Mexico reported a laboratory-confirmed imported measles case. The case is a 54-year-old female resident of Nuevo León State with travel history to Paris, France, and to Houston, Texas, United States. The case had no history of measles vaccination and had rash onset on 10 February 2019. The case was confirmed through serological (IgM detection) and molecular (RT-PCR) tests conducted by the State Public Health Laboratory. Genotype B3 was identified. Seventy-one contacts are being followed-up, all of whom are asymptomatic to date.

In the **United States**, between 1 January and 21 February 2019, there were 159 confirmed measles cases reported in 10 states, corresponding to 6 outbreaks³. States which have reported confirmed cases are California, Colorado, Connecticut, Georgia, Illinois, Kentucky, New York, Oregon, Texas, and Washington.

In 2018, 17 outbreaks were reported in the United States; outbreaks in New York State, New York City, and New Jersey reported the highest number of cases. Cases occurred primarily among unvaccinated persons in Orthodox Jewish communities. These outbreaks were

³ Outbreaks defined as 3 or more related cases.

associated with travelers who imported measles from Israel, where a large outbreak is occurring. In 2018, 82 cases were imported from other countries, which is the highest number of imported cases since measles was eliminated in the United States in 2000.

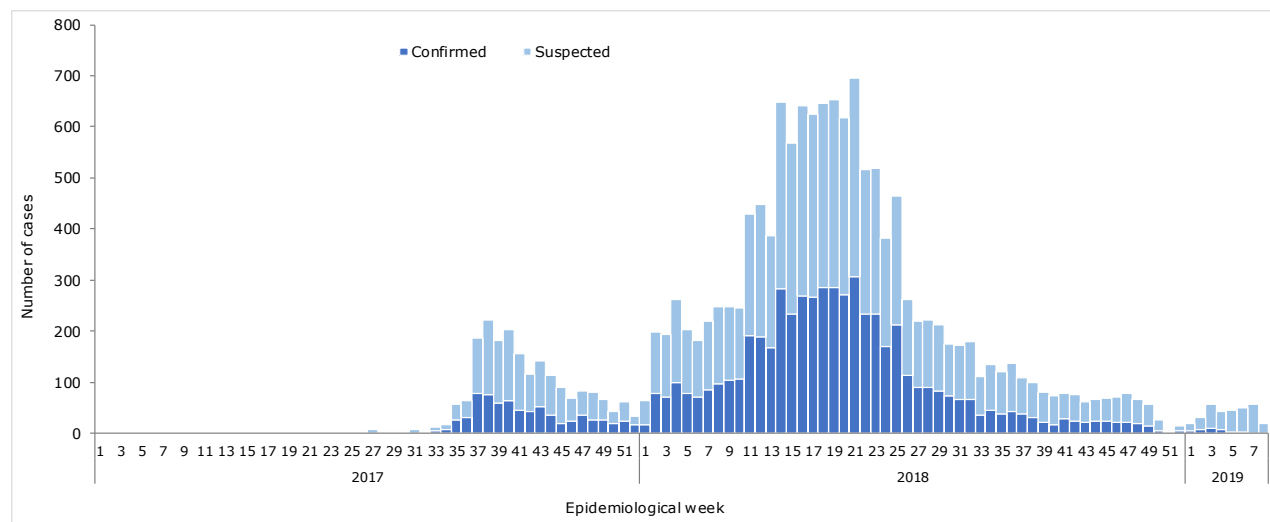
Information is updated periodically on the U.S. Centers for Disease Control and Prevention (CDC) website, available at: <https://bit.ly/2iMFK71>.

In **Venezuela**, between EW 26 of 2017 and EW 52 of 2018, a total of 9,116 suspected cases (1,307 in 2017 and 7,809 in 2018), including 6,202 confirmed measles cases (727 in 2017 and 5,475 in 2018), have been reported (**Figure 6**). The cases in 2018 were confirmed by laboratory (2,416), clinical diagnosis (2,274), and epidemiological link (785). There were 76 deaths reported: 2 in 2017 (in Bolívar) and 74 in 2018 (37 in Delta Amacuro, 27 in Amazonas, 6 in Miranda, 3 in the Capital District, and 1 in Bolívar). Between 1 January and 27 February 2019, there were 283 cases reported, of which 40 were confirmed. The most recent confirmed case had rash onset on 17 February 2019⁴.

The cumulative incidence rate in the country during 2017-2019 is 19.6 cases per 100,000 population. The highest incidence rates have been reported in: Delta Amacuro (212.3 cases per 100,000 population), the Capital District (114.7 cases per 100,000 population), Amazonas (79.9 cases per 100,000 population), Bolívar (53.8 cases per 100,000 population), Vargas (48.7 cases per 100,000 population), and Miranda (37.9 cases per 100,000 population).

Confirmed cases reported between EW 44 and EW 50 of 2018 were in the states of Apure (4 cases), Barinas (5 cases), Bolívar (9 cases), Carabobo (10 cases), the Capital District (13 cases), Cojedes (1 case), Delta Amacuro (1 case), Falcón (5 cases), Lara (4 cases), Mérida (6 cases), Miranda (3 cases), Monagas (4 cases), Vargas (1 case), and Zulia (64 cases).

Figure 6. Reported measles cases by EW of rash onset. Venezuela, 2017-2019 (until EW 8).



Source: Venezuela Ministry of Popular Power for Health data and reproduced by PAHO/WHO.

⁴ Note: The data in this analysis reflects the current case numbers; however, there may be some delays in the reporting and completeness of the information. The data is also subject to change as the information for each case is updated and validated.

Health authorities in Venezuela have implemented a series of vaccination strategies aimed at interrupting the circulation of the virus. In addition to vaccination campaigns, other implemented actions include: intensified acute febrile syndrome surveillance and block vaccinations with the measles-rubella (MR) vaccine as well as selective vaccination of contacts of suspected and confirmed cases in persons up to 39-years-old.

Measles in indigenous communities

In **Brazil**, in Roraima State, a total of 183 suspected cases have been reported among indigenous populations, of which 145 were confirmed. The majority of cases are from the Auaris Indigenous Health District which borders Venezuela.

In **Venezuela**, between EW 1 and EW 52 of 2018, there were 508 confirmed measles cases among indigenous populations⁵ in Amazonas (153 cases, of which 134 were in the Sanema, 16 in Yanomami⁶, 2 in Yekuana, and 1 in Baniva ethnic groups); Bolivar (1 case in the Pemón ethnic group), the Capital District (1 case in the Wayú ethnic group), Delta Amacuro (328 cases, all in the Warao ethnic group); Monagas (21 cases, of which 19 were in Warao, 1 in Shaima, and 1 in Eñepa ethnic groups); and Zulia (4 cases in the Wayú ethnic group). Additionally, 62 deaths were reported, of which 35 were in Delta Amacuro (all in the Warao ethnic group) and 27 were in Amazonas (all in the Sanema ethnic group).

Advice to national authorities

Given the continued imported cases of measles from other regions and the ongoing outbreaks in the Americas, the Pan American Health Organization/World Health Organization (PAHO/WHO) reinforces the recommendations made since February 2015 to all Member States to:

- Vaccinate to **maintain homogeneous coverage of 95%** with the first and second doses of the measles, mumps, rubella (MMR) vaccine in all municipalities.
- **Vaccinate at-risk populations** (without proof of vaccination or immunity against measles and rubella), such as healthcare personnel, persons working in tourism and transportation (hotels, airports, taxi drivers, and others) and international travelers.
- **Maintain a stock** of MR and/or MMR **vaccines and syringes** for control of imported cases in each country of the Region.
- **Strengthen epidemiological surveillance** of measles to achieve timely detection of all suspected cases of measles in public and private healthcare facilities and ensure that samples are received by laboratories within 5 days of collection and that laboratory results are available in a period of no more than 4 days.

⁵ The difference with respect to that reported in previous Epidemiological Updates is due to the retrospective adjustments made by the national authorities based on the review, consolidation, and investigation of cases in indigenous populations.

⁶ According to previous data provided by national authorities, between EW 11 and EW 27 of 2018, there were 126 confirmed cases, including 53 deaths, in the Yanomami Municipality of Alto Orinoco, Amazonas State in Venezuela.

- Provide a **rapid response** to imported measles cases to avoid the re-establishment of endemic transmission, through the activation of rapid response teams trained for this purpose and by implementing national rapid response protocols when there are imported cases. Once a rapid response team has been activated, continued coordination between the national and local levels must be ensured, with permanent and fluid communication channels between all levels (national, sub-national, and local).
- **Identify** migratory flows (arrival of foreigners) and internal flows (displaced populations) in each country, including indigenous populations, in order to facilitate access to vaccination services according to the national scheme.
- Implement a plan to immunize migrant populations in high traffic border areas, prioritizing those considered at-risk, both migrants and local residents, in these municipalities.
- **Increase vaccination coverage** and strengthen epidemiological surveillance in border areas in order to increase population immunity and rapidly detect/respond to suspected measles cases.
- During outbreaks, **establish adequate hospital case management** to avoid nosocomial transmission, with appropriate referral of patients to isolation rooms (for any level of care) and avoiding contact with other patients in waiting rooms and/or other hospital rooms.

Additionally, PAHO/WHO recommends that Member States advise all travelers aged 6 months⁷ and older who cannot show proof of vaccination or immunity **receive the measles and rubella vaccine**, preferably the triple viral vaccine (MMR), **at least two weeks prior to traveling to areas where measles transmission has been documented**. The recommendations of PAHO/WHO in relation to advice for travelers are available in the 27 October 2017 PAHO/WHO Epidemiological Update on Measles⁸.

⁷ The MMR or MR dose administered to children between 6 and 11 months old does not replace the first dose of the recommended schedule at 12 months of age.

⁸ Pan American Health Organization / World Health Organization. Epidemiological Update: Measles. 27 October 2017, Washington, D.C.: PAHO/WHO; 2017. Available at: <https://bit.ly/2l3gCSi>

Sources of Information

1. **Argentina** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
2. **The Bahamas** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
3. **Brazil** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
4. **Canada.** Public Health Agency of Canada. Measles & Rubella Weekly Monitoring Report – Week 6, 2019 (3 February to 9 February 2019). Available at: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/measles-rubella-surveillance/2019/week-6-february-3-february-9-2019.html>
5. **Chile** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
6. **Colombia** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
7. **Costa Rica** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
8. **Mexico** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
9. **United States** Centers for Disease Control and Prevention. Measles Cases and Outbreaks. Available at: <https://www.cdc.gov/measles/cases-outbreaks.html>
10. **Venezuela** International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.

Related links:

- PAHO/WHO. Vaccine-Preventable Diseases: <http://bit.ly/2G8pQwi>