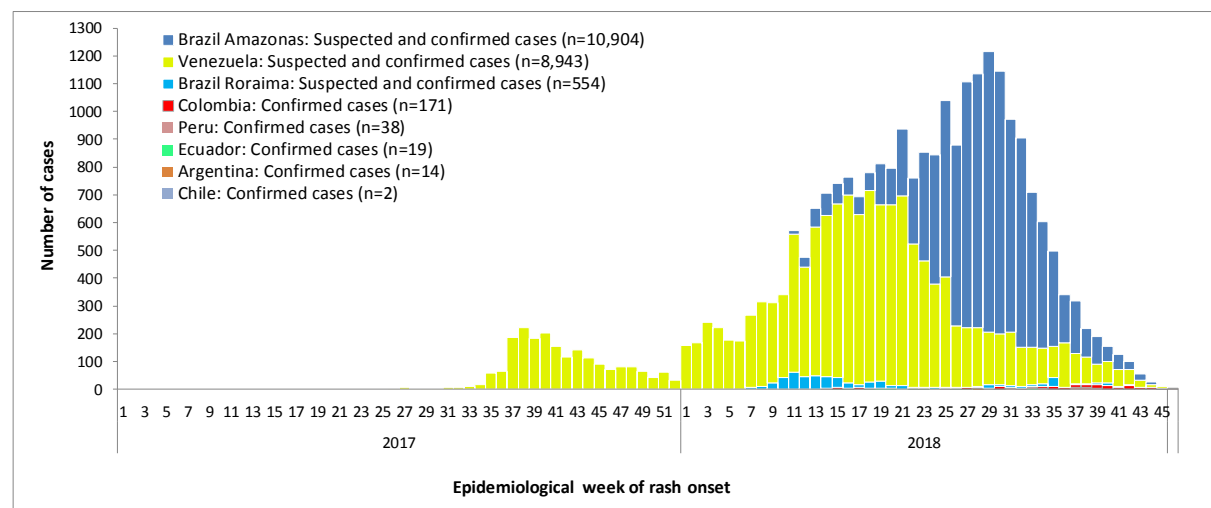


Situation Summary

In 2018, as of 30 November, a total of 16,039 confirmed measles cases, including 86 deaths, have been reported in 12 countries of the Region of the Americas: Antigua and Barbuda (1 case), Argentina (14 cases), Brazil (9,898 cases, including 13 deaths), Canada (27 cases), Chile (2 cases), Colombia (171 cases), Ecuador (19 cases), Guatemala (1 case), Mexico (5 cases), Peru (38 cases), the United States of America (220 cases), and the Bolivarian Republic of Venezuela (5,643¹ cases, including 73 deaths). Chile is now part of the list of countries that have reported confirmed cases of measles in 2018.

Figure 1 shows the distribution of measles by epidemiological week (EW) in countries that reported confirmed cases in South America in 2018.

Figure 1. Distribution of reported cases of measles by epidemiological week of rash onset in South American countries, 2017 to EW 45 of 2018.



Source: Information reported by the IHR National Focal Points of Argentina, Brazil, Colombia, Ecuador, Peru, and Venezuela and information published by the Ministries of Health and reproduced by PAHO/WHO.

Since the 24 October 2018 PAHO/WHO Epidemiological Update on Measles², an additional 7,948 confirmed measles cases were reported, including 1 death, in 6 countries of the Region

¹ **Correction:** The total initially published on 30 November 2018 erroneously included the 727 cases reported in 2017. This total was corrected to 5,643 on 6 December 2018.

² PAHO/WHO. Epidemiological Update: Measles. 24 October 2018, Washington, D.C.: PAHO/WHO; 2018. Available at: <https://bit.ly/2PrrVr>

Suggested citation: Pan American Health Organization / World Health Organization. Epidemiological Update: Measles. 30 November 2018, Washington, D.C.: PAHO/WHO; 2018

(7,706 cases and 1 death in Brazil, 2 cases in Canada, 2 cases in Chile, 42 cases in Colombia, 78 cases in the United States, and 118³ cases in Venezuela).

The genotype D8, lineage MVi/HuluLangat.MYS/26.11, which was initially identified among cases in Venezuela, has since been reported among confirmed cases in Argentina, Brazil, Colombia, Ecuador, and Peru (the countries are listed in alphabetical order and not in the order of outbreak occurrence).

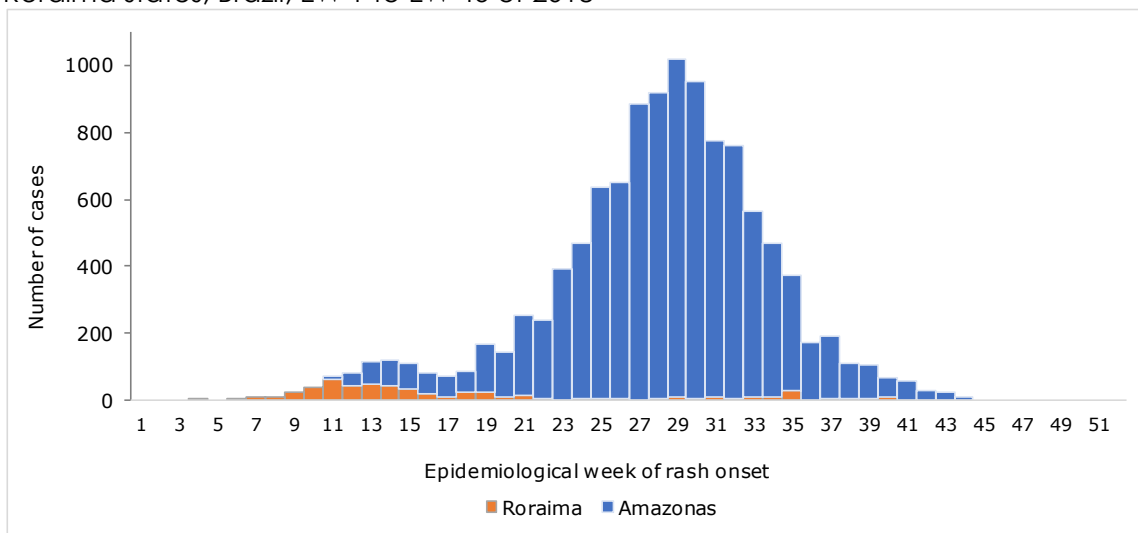
The following is an update of the situation in countries with ongoing outbreaks.

In **Argentina**, since the 24 October 2018 PAHO/WHO Epidemiological Update on Measles, no new confirmed cases have been reported. Accordingly, the total of confirmed measles cases between EW 11 and EW 38 of 2018 remains 14. The genotyping performed on samples from 10 cases reported in March identified one case as genotype D8, lineage Mvs/Osaka/JPN/29.15D8, while in 9 out of 11 samples of cases reported since EW 25 of 2018, genotype D8, lineage Mvi/Hulu Langat.MYS/26.11, was identified.

In **Brazil**, the outbreak began in EW 6 of 2018 in the state of Roraima and spread to Amazonas State three weeks later (**Figure 2**). Subsequently, cases were reported in 8 federal units: the Federal District, Pará, Pernambuco, Rio de Janeiro, Rio Grande do Sul, Rondônia, São Paulo, and Sergipe (these are listed in alphabetical order and not in the order of the occurrence of cases). Genotype D8 was identified with an identical lineage to the cases reported in Venezuela (2017 and 2018) in the federal units of: Amazonas, Rio Grande do Sul, Rio de Janeiro, Pará, Rondônia, Roraima, São Paulo, and Sergipe.

Between EW 6 and EW 46 of 2018, there were 9,898 confirmed cases, including 13 deaths, reported in the federal units of: Amazonas (9,447 cases, 6 deaths), the Federal District (1 case), Pará (26 cases, 3 deaths), Pernambuco (4 cases), Rio Grande do Sul (45 cases), Rio de Janeiro (19 cases), Rondônia (2 cases), Roraima (347 cases, 4 deaths), São Paulo (3 cases), and Sergipe (4 cases).

Figure 2. Reported measles cases (confirmed and suspected) by EW of rash onset. Amazonas and Roraima states, Brazil, EW 1 to EW 46 of 2018



Source: Data published by the Brazil Ministry of Health and reproduced by PAHO/WHO.

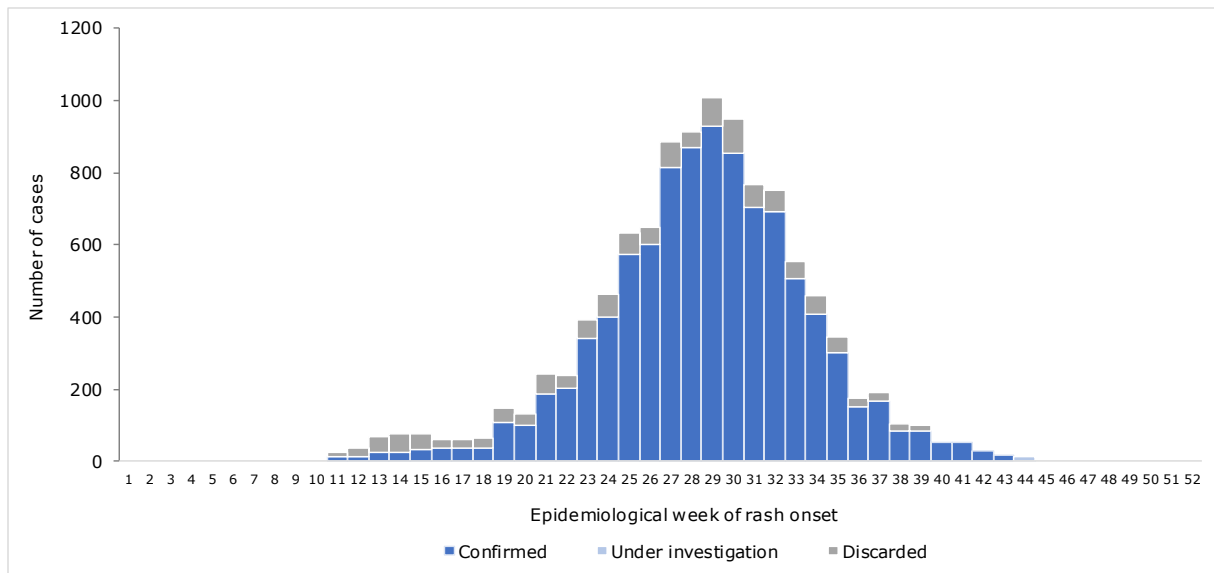
³ **Correction:** The total initially published on 30 November 2018 erroneously included the 727 cases reported in 2017. This total was corrected to 118 on 6 December 2018.

The following is a brief summary of the ongoing outbreaks in the states of Amazonas and Roraima.

In the state of Amazonas, the outbreak that began in EW 9 of 2018 is ongoing and, as of EW 46, 10,904 suspected cases, including 6 deaths, have been reported. Of the total suspected cases, 9,477 were confirmed, 1,418 were discarded, and 9 remain under investigation. Of 62 municipalities in the state, 51 have reported confirmed cases. However, 91.7% the cases have been reported from the municipalities of Manaus and Manacapuru.

Since EW 30 of 2018, a decreasing trend in cases has been observed (**Figure 3**), with a weekly average of suspected and confirmed cases reported during the last 8 weeks (EW 39 to EW 46 of 2018) of 2 cases and 30 cases, respectively. The majority of new confirmed cases in the last 11 weeks (EW 36 to EW 46 of 2018) were recorded in the municipalities of Manaus, Manacapuru, Parintins, Coari, Iranduba, Itacoatiara, Tefé, Maués, Novo Airão, Juruá, Manaquirí, and Careiro.

Figure 3. Reported measles cases by EW of rash onset. Amazonas State, Brazil, EW 1 to EW 46 of 2018.



Source: Data published by the Brazil Ministry of Health and reproduced by PAHO/WHO.

Since the 24 October 2018 PAHO/WHO Epidemiological Update on Measles, the incidence rate of confirmed cases at the state level has increased from 49.5 to 263.9 cases per 100,000 population; likewise, there was an increase in incidence rates among children under 1-year-old and among children aged 1 to 4-years-old, increasing from 555.7 to 2,080.9 cases per 100,000 population and from 100.6 to 338.6 cases per 100,000 population, respectively.

The most recent confirmed case had rash onset in EW 43 and the most recent cases under investigation had rash onset in EW 44.

In the state of Roraima, the outbreak started in EW 6 of 2018. While there was a decrease in the weekly number of suspected and confirmed cases as of EW 19 of 2018, an increase has been observed between EW 29 and EW 35 of 2018 (**Figure 4**), mainly in the municipalities of Boa Vista and Amajari. As of EW 46 of 2018, a total of 554 cases, including 4 deaths, have

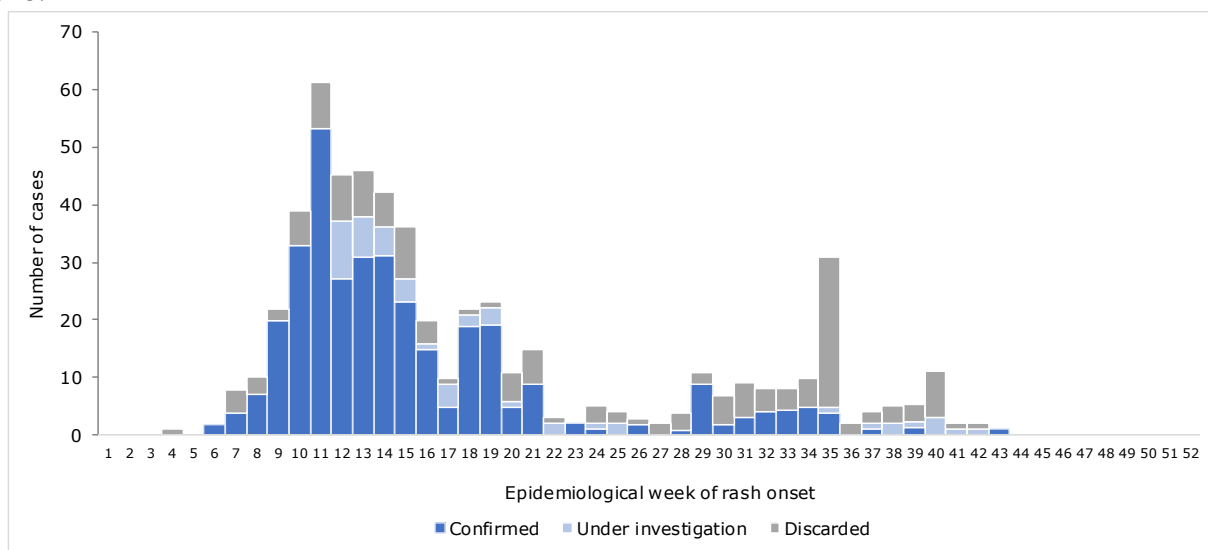
been reported in the state; of these, 347 were confirmed, 157 were discarded, and 50 remain under investigation. The weekly average number of cases reported during the last 8 weeks (EW 39 to EW 46 of 2018) is one case, the lowest weekly average since the beginning of the outbreak; during this period, only 2 cases were confirmed.

Thirteen of the 15 municipalities in the state have reported suspected cases, though 87% of suspected cases and 86% of confirmed cases have been reported from three municipalities: Amajari, Boa Vista, and Pacaraima. New cases reported in the last 8 weeks were reported in the municipalities of Boa Vista, Rorainópolis, and Cantá.

Similar to that which has been observed in Amazonas since the 24 October 2018 PAHO/WHO Epidemiological Update on Measles, there has been an increase in the incidence rate in Roraima State, though to a lesser extent. The incidence rate in Roraima State increased from 74.4 to 78.2 cases per 100,000 population. Among children under 1-year-old, the incidence rate has increased from 713.1 to 782.4 cases per 100,000 population and from 227.9 to 238.1 cases per 100,000 population among children aged 1 to 4-years-old.

The most recent confirmed case had rash onset in EW 43 and the most recent cases under investigation had rash onset in EW 42.

Figure 4. Reported measles cases by EW of rash onset. Roraima State, Brazil, EW 1 to EW 46 of 2018.



Source: Data published by the Brazil Ministry of Health and reproduced by PAHO/WHO.

In **Chile**, between EW 45 and 48 of 2018, the Chile Public Health Institute (ISP, per its acronym in Spanish) reported two confirmed imported cases of measles.

The first case is a 42-year-old woman of Colombian nationality who had rash onset on 8 November 2018 and has been a resident of Chile for more than 10 years. The probable place of infection might be Ecuador or Colombia, as the case had stayed in both countries in the days prior to symptom onset. No secondary cases have been confirmed. Genotyping results indicated genotype D8, with the lineage results pending.

The second case is a 4-year-old male child of Venezuelan nationality who had rash onset on 23 November 2018. The case arrived in Chile on 18 November 2018 by land from the city of

Maracaibo, Zulia State, Venezuela; he traveled through Colombia, Ecuador, and Peru prior to reaching Chile through the northern part of the country. No secondary cases have been confirmed. Laboratory confirmation was carried out through serological tests and by reverse transcription polymerase chain reaction (RT-PCR); genotyping results indicated genotype D8, with the lineage results pending.

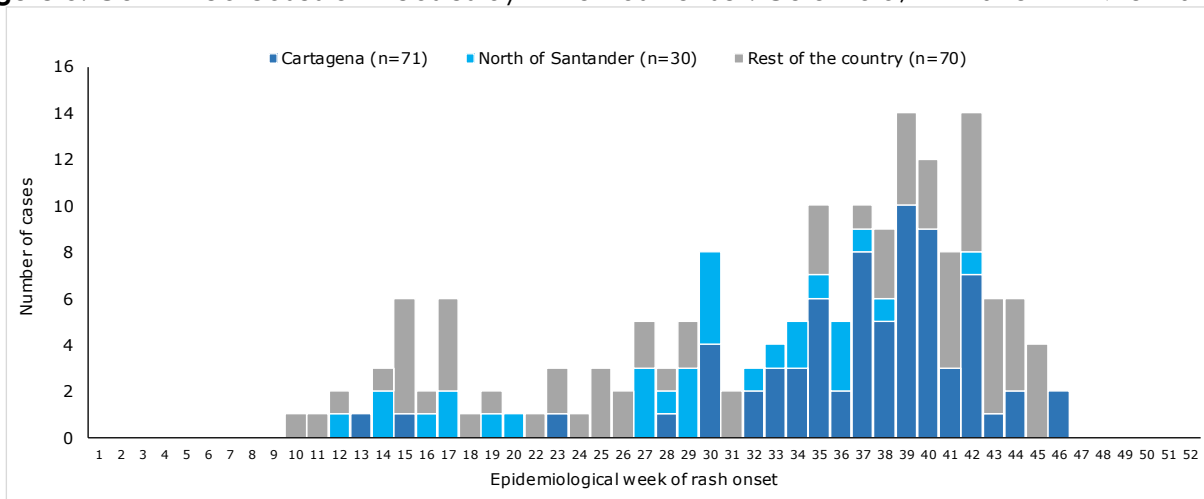
The last outbreak associated with imported cases in Chile was in 2015, with 9 confirmed cases reported and was 2 months long (viral genotype H1).

In **Colombia**, between EW 11 and EW 47 of 2018, there were 171 confirmed measles cases reported (**Figure 5**). Ages ranged from 2 months to 49 years (median 1 year), and 74 of the cases are female. Rash onset was between 8 March and 11 November 2018. Of the 171 confirmed cases, 50 were imported, 101 were import-related (27 cases of secondary transmission among persons coming from Venezuela and 74 related to imported cases among Colombians), and 20 with the source under investigation. No deaths have been reported.

The cases were reported in the departments of Antioquia, Arauca, Atlántico, Bolívar, Cauca, Cesar, Cundinamarca, La Guajira, Magdalena, Norte de Santander, Risaralda, Sucre, and in the districts of Barranquilla, Bogotá, Cartagena, and Santa Marta. The districts of Barranquilla and Cartagena and Norte de Santander Department account for 71% of the total confirmed cases. The highest incidence rates have been reported from the following federal entities: Cartagena (5.3 cases per 100,000 population), Bolívar (0.8 cases per 100,000 population), and Barranquilla (0.6 cases per 100,000 population). With regards to age groups, the highest incidence rates among import-related cases or cases of secondary transmission among Colombians have been observed in children under 1-year-old (4.3 cases per 100,000 population) followed by children aged 1 to 4-years-old (0.37 cases per 100,000 population).

Laboratory confirmation of all cases was conducted by the Colombia National Institute of Health through the detection of anti-measles IgM antibodies in serum and by RT-PCR in pharyngeal swab and urine samples. Genotyping from 43 cases indicated genotype D8, lineage MVi/Hulu Langat.MYS/26.11.

Figure 5. Confirmed cases of measles by EW of rash onset. Colombia, EW 10 to EW 47 of 2018.



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

In **Ecuador**, since the 24 October 2018 PAHO/WHO Epidemiological Update on Measles, no new measles cases have been confirmed, and the total number of confirmed measles cases reported between EW 13 and EW 33 of 2018 remains at 19. Genotyping performed on samples of 16 cases identified genotype D8, lineage MVi/HuluLangat.MYS/26.11.

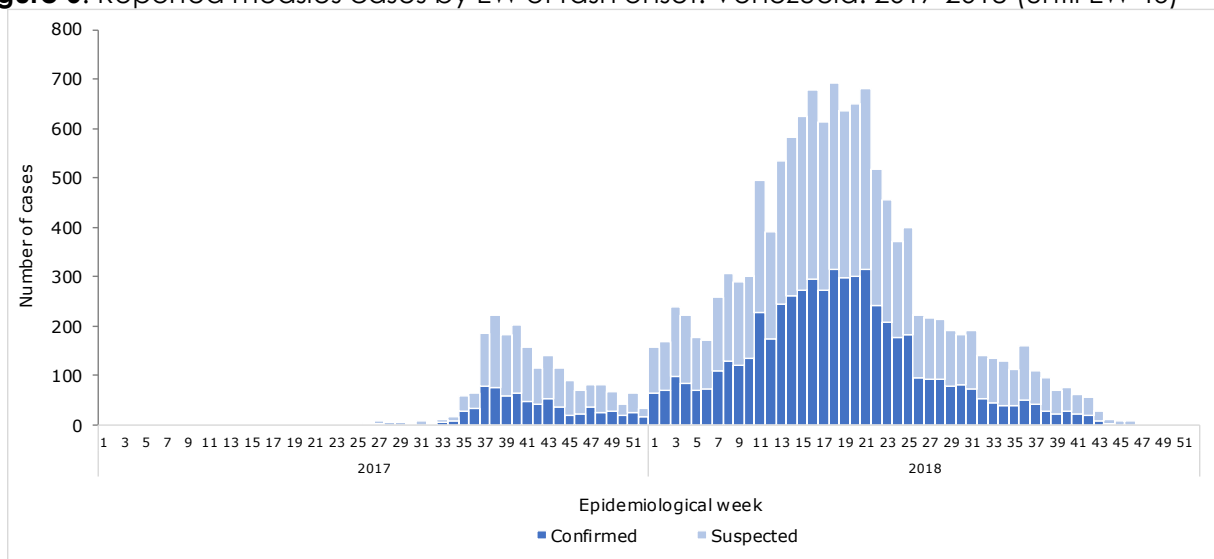
In **Peru**, since the 24 October 2018 PAHO/WHO Epidemiological Update on Measles, no new measles cases have been confirmed and the total confirmed measles cases reported between EW 8 and EW 41 of 2018, remains at 38. Genotyping results have found genotype D8, lineage MVi/HuluLangat.MYS/26.11.

In the **United States of America**, 220 confirmed measles cases were reported between 1 January and 3 November 2018 in 26 states and the District of Columbia. The information is updated periodically on the U.S. Centers for Disease Control and Prevention (CDC) website, available at: <https://bit.ly/2iMFK71>.

In **Venezuela**, since confirmation of the first measles case in EW 26 of 2017 until EW 46 of 2018, a total of 8,943 suspected cases, including 6,370 confirmed measles cases (727 in 2017 and 5,643 in 2018), have been reported (**Figure 6**). The cases in 2018 were confirmed by laboratory (2,006), clinical diagnosis (3,113), and epidemiological link (524). The weekly average of suspected and confirmed cases in the last 8 weeks (EW 39 to EW 46 of 2018) is 27 cases and 12 cases, respectively.

The national incidence rate is 17.7 per 100,000 population, and the states with the highest incidence rates are Delta Amacuro (206.8 per 100,000 population), the Capital District (124.7 per 100,000 population), Amazonas (84.0 per 100,000 population), and Vargas (50.5 per 100,000 population). A total of 75 deaths were reported, 2 in 2017 in Bolivar and 73 in 2018 (37 in Delta Amacuro, 27 in Amazonas, 6 in Miranda, and 3 in the Capital District).

Figure 6. Reported measles cases by EW of rash onset. Venezuela. 2017-2018 (until EW 46)



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

Health authorities in Venezuela have implemented a series of vaccination strategies aimed at interrupting the circulation of the virus, including indiscriminate vaccination of children aged 6

months to 15 years with the measles-rubella (MR) vaccine, and selective vaccination of contacts of suspected and confirmed cases 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**, cases in indigenous communities have been detected since EW 1 of 2018. As of EW 46 of 2018, there have been 535 confirmed measles cases among indigenous populations in Amazonas (170 cases, of which 135 were in Sanema, 24 in Yanomami⁴, 3 in Yekuana, 3 in Baniva, 3 in Piapoco, 1 in Shaima⁵, and 1 in Yeral ethnic groups); Delta Amacuro (341 cases, all in the Warao ethnic group); Monagas (22 cases of which 20 were in Warao, 1 in Shaima, and 1 in Eñepa ethnic groups); and Zulia (2 cases, all in the Wayú ethnic group). In addition, there were 64 deaths⁶ reported, 37 in Delta Amacuro (all in the Warao ethnic group) and 27 in Amazonas (16 in the Sanema ethnic group). Additional deaths in the indigenous communities are currently under investigation.

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) urges 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 workers, people working in tourism and transportation (hotels and catering, airports, taxi drivers, and others) and international travelers.
- **Maintain a reserve** 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.
- 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

⁴ According to previous data provided by national authorities, between EW 11 and EW 27 of 2018, there were 126 confirmed (by laboratory and/or epidemiological link) cases reported, including 53 deaths, in the Yanomami municipality of Alto Orinoco, Amazonas State in Venezuela.

⁵ In the 24 October 2018 PAHO/WHO Epidemiological Update on Measles Shaima was reported as Chaima.

⁶ **Corrigendum:** A correction was made to the sum of deaths in Delta Amacuro and Amazonas with respect to number reported in the 24 October 2018 Epidemiological Update on Measles. This correction was made on 6 December 2018.

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 from abroad (arrival of foreign persons) and internal flows (movements of population groups), including indigenous populations, in each country, to facilitate access to vaccination services, according to the national scheme.
- **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 (avoiding contact with other patients in waiting rooms and/or hospitalization settings).

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 before 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 recommended first dose at 12 months old.

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

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2. Brazil Ministry of Health. Measles situation in Brazil – 2018. Report No. 23. Available at: <https://bit.ly/2NXyd1g>
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6. Ecuador International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
7. Peru International Health Regulations (IHR) National Focal Point (NFP) Report to PAHO/WHO received by email.
8. 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>