

Situation summary in the Americas

From epidemiological week (EW) 1 to EW 26 of 2017, **Brazil, Colombia, Ecuador, Peru**, the Plurinational State of **Bolivia**, and **Suriname** have reported suspected and confirmed yellow fever cases.

The following is an update on the situation in Brazil, the Plurinational State of Bolivia, Ecuador, and Peru. No changes in the number of reported cases have been reported in the other countries.

In **Brazil**, since the beginning of the outbreak in December 2016 up to 31 May 2017, there were 3,240 suspected cases of yellow fever reported (792 confirmed, 1,929 discarded, and 519 under investigation), including 435 deaths (274 confirmed, 124 discarded, and 37 under investigation). The case fatality rate (CFR) among confirmed cases is 35%.

According to the probable site of infection,¹ suspected cases correspond to 407 municipalities, while the confirmed cases were distributed among 130 municipalities in 8 states (Espírito Santo, Goiás, Mato Grosso, Minas Gerais, Pará, Rio de Janeiro, São Paulo, and Tocantins) and the Federal District.

With regard to the confirmed fatal cases and their probable site of infection, one corresponds to the Federal District, 85 to Espírito Santo, one to Goiás, one to Mato Grosso, 165 to Minas Gerais, four to Pará, 7 to Rio de Janeiro, and 10 to São Paulo. In the states with more than 5 confirmed deaths, the CFR among confirmed cases is 50% in São Paulo, 41% in Rio de Janeiro, 34% in Minas Gerais, and 33% in Espírito Santo.

No cases were confirmed in new municipalities in Espírito Santo (ES), Minas Gerais (MG), São Paulo (SP), and Rio de Janeiro (RJ) in the last month. The dates of symptoms onset of the most recently confirmed cases are 18 April 2017 (MG),² 19 April (SP), 29 April (ES), and 10 May (RJ).³

¹ There are also 12 discarded cases that were reported by other Federal Units.

² Minas Gerais Health Secretariat. Yellow fever epidemiological report (26/06). Available at: <http://www.saude.mg.gov.br/component/gmg/story/9545-atualizacao-situacao-epidemiologica-da-febre-amarela-26-06>

³ Brazil Ministry of Health. Report #43. Available at: <http://portalsaude.saude.gov.br/index.php/o-ministerio/principal/leia-mais-o-ministerio/619-secretaria-svs/l1-svs/27300-febre-amarela-informacao-e-orientacao>

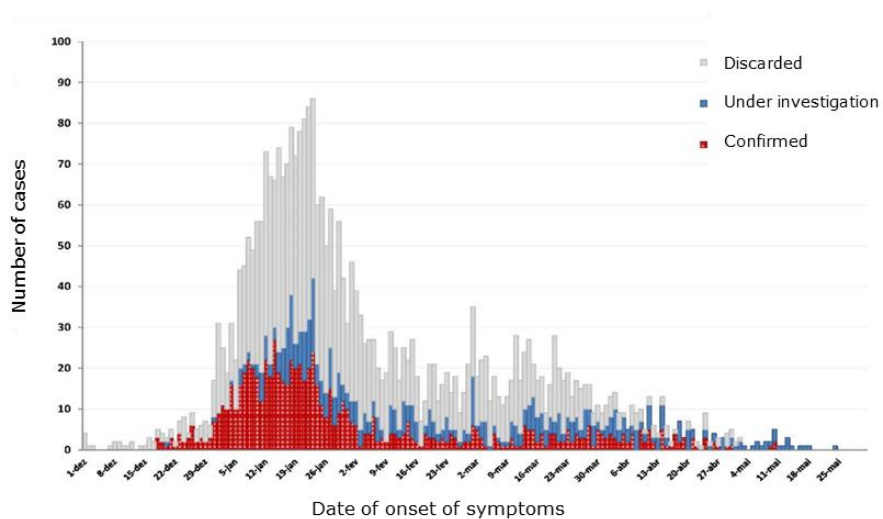
The state of Pará reported four confirmed cases in EW 13 of 2017, and the state of Tocantins reported a confirmed case in EW 16 of 2017. In addition, a case was confirmed in the state of Goiás and another case in the state of Mato Grosso, in an area known to be at risk for yellow fever.

Although no confirmed cases have been reported to date in the state of Bahia, since the beginning of the year up to 8 May 2017, a total of 255 epizootics were reported in 78 municipalities; 54 of these epizootics were positive for yellow fever by RT-PCR in 28 municipalities, and 4 were in neighborhoods of Salvador city, capital of the Bahia state.⁴

To date, the *Aedes aegypti* vector has not been reported to have a role in transmission. However, confirmed epizootics in large cities, such as Vitoria in Espírito Santo⁵ and Salvador in Bahia,³ represent a high risk for a change in the transmission cycle.

Figure 1 shows the trend in the number of reported cases in Brazil, according to their current classification (confirmed, discarded, under investigation).

Figure 1. Distribution of reported yellow fever cases by date of symptoms onset and probable state of infection. Brazil, 1 December 2016 to 31 May 2017.



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

Since the beginning of the outbreak up to 31 May 2017, a total of 3,850 epizootics in nonhuman primates (NHP) were reported, of which 642 were confirmed for yellow fever, 96 were discarded, and 1,448 remain under investigation. Between the publication of yellow fever bulletins # 41 and 43 by the Brazil Ministry of Health,⁶ the number of epizootics increased by 190.

⁴ Bahia Health Secretariat. Yellow fever epidemiological update. Available at:

<http://www.suvisa.ba.gov.br/sites/default/files/Boletim%20FA%20n%2005%2008.05.2017.pdf>

⁵ Espírito Santo Health Secretariat. Municipalities with confirmed epizootics. Available at:

<http://saude.es.gov.br/Not%C3%ADcia/febre-amarela-silvestre-94-notificacoes-descartadas>

⁶ Brazil Ministry of Health. Epidemiological reports on the yellow fever situation in Brazil. Available at:

<http://portalsaude.saude.gov.br/index.php/o-ministerio/principal/leia-mais-o-ministerio/619-secretaria-svs/11-svs/27300-febre-amarela-informacao-e-orientacao>

Epizootics in NHP were reported in the Federal District and in the states of Alagoas, Amazonas, Bahia, Goiás, Espírito Santo, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Rio Grande do Norte, Rio Grande do Sul, Rio de Janeiro, Rondônia, Roraima, Santa Catarina, São Paulo, Sergipe, and Tocantins.

Reports of epizootics currently under investigation in states bordering Argentina, Bolivia, Colombia, Guyana, Paraguay, Peru, Suriname, Uruguay, and Venezuela represent a risk of spread of the virus to the bordering countries, especially in areas with similar ecosystems.

With regard to the outbreak response implemented by the Brazil Ministry of Health, between January and May 2017, a total of 26.3 million doses of yellow fever vaccine were distributed to intensify the selective vaccination strategy in 1,050 municipalities of the states of Bahia, Espírito Santo, Minas Gerais, Rio de Janeiro, and São Paulo. As of 31 May, administrative coverage equal to or greater than 95% was reached in 192 municipalities; coverage between 75 and 94.9% was reached in 381 municipalities; and, coverage of less than 75% was reached in 477 municipalities (126 of these municipalities have coverage lower than 50%).

In the Plurinational State of **Bolivia**, a new case of yellow fever was confirmed in EW 25 of 2017, raising the total number of cases confirmed in 2017 to two. The new case was probably infected in the municipality of Villa Tunari, Cochabamba Department. In this department, there had been no cases since 2013. The probable site of infection of the previous case was the municipality of Caranavi, La Paz Department. In both departments, infection sites correspond to known areas at risk for yellow fever.

In **Ecuador**, three confirmed cases of yellow fever were reported: one in EW 8, another in EW 20, and a third case in EW 26 of 2017. All three fatal cases were adults male, with no vaccination history who acquired the infection in the province of Sucumbíos.

In **Peru**, as of EW 24 of 2017, a total of 20 confirmed and probable cases of yellow fever were reported, including three deaths.⁷ Similarly to 2016, most cases occurred in the Junín department.

Recommendations

Although no new confirmed cases have been reported in Brazil since May 2017, countries such as Bolivia, Ecuador, and Peru have reported sporadic cases in known areas at risk for yellow fever, indicating that the virus continues to circulate and there is a risk of transmission in non-immunized populations. Therefore, the Pan American Health Organization, Regional Office of the World Health Organization (PAHO/WHO) urges Member States to continue efforts to detect, confirm, and adequately and timely treat cases of yellow fever. To this end, health care workers should be kept up-to-date and trained to detect and treat cases especially in areas of known virus circulation.

⁷ Epidemiological bulletin - Volume 26 – EW 24. Peru Ministry of Health. Available at: <http://www.dge.gob.pe/portal/docs/vigilancia/boletines/2017/24.pdf>

PAHO/WHO encourages Member States to take the necessary actions to keep travelers informed and vaccinated, when heading to areas where yellow fever vaccination is recommended.

Vaccination

The yellow fever vaccine is safe and affordable and provides effective immunity against the disease in the range of 80 to 100% of those vaccinated after 10 days and 99% immunity after 30 days. A single dose provides life-long protection against yellow fever disease. A booster dose of yellow fever vaccine is not needed.

Given the limitations on the availability of vaccines and with the aim of promoting the rational use, PAHO / WHO reiterates its recommendations to national authorities:

- 1) Conduct an assessment of vaccination coverage against yellow fever in areas at risk at the municipal level to guarantee at least 95% coverage⁸ among the resident population of these areas.
- 2) Member States that are not currently experiencing outbreaks should not conduct immunization campaigns. Priority should be given to the use of vaccines in susceptible populations and to avoid revaccination.
- 3) Ensure vaccination of all travelers to endemic areas at least 10 days before traveling.
- 4) Depending on vaccine availabilities, Member States should have a small stock that allows them to respond to outbreaks.
- 5) Postpone routine vaccination in children in non-endemic areas until sufficient vaccines are available. Once there is availability, catch-up campaigns should be conducted to complete vaccination schedules.

Precautions

It is recommended to individually assess the epidemiological risk of contracting disease when faced with the risk of an adverse event occurring in persons over 60 years who have not been previously vaccinated.

- The vaccine can be offered to individuals with asymptomatic HIV infection with CD4+ counts ≥ 200 cells / mm³ requiring vaccination.
- Pregnant women should be vaccinated in an emergency situation and following recommendations of health authorities.
- Vaccination is recommended in lactating women who live in endemic areas, since the risk of transmitting the vaccine virus to the child is lower than the benefits of the vaccination of breastfeeding women.
- For pregnant or lactating women traveling to areas with yellow fever transmission, vaccination is recommended when travel cannot be postponed or avoided. They should

⁸ Pan American Health Organization. Regional immunization action plan. 54th Directing Council of PAHO, 67th session of the WHO Regional Committee for the Americas; 28 September – 1 October 2015; Washington (DC), United States. Washington (DC): PAHO; 2015. Available from: http://www2.paho.org/hq/index.php?option=com_content&view=article&id=13101&Itemid=42296&lang=en

receive advice on the potential benefits and risks of vaccination to make an informed decision. The benefits of breastfeeding are superior to those of other nutritional alternatives.

The following people are usually excluded from yellow fever vaccination:

- Immunocompromised individuals (Including those with thymus disorders, symptomatic HIV, malignant neoplasms under treatment, and those that are receiving or have received immunosuppressive or immunomodulatory treatments, recent transplants, and current or recent radiation therapy).
- People with severe allergies to eggs and their derivatives.

Related Links

- PAHO/WHO Yellow Fever. Available at:
http://www.paho.org/hq/index.php?option=com_topics&view=rdmore&cid=5514&Itemid=40784&lang=en
- PAHO/WHO. Guidance on Laboratory Diagnosis of Yellow Fever Virus Infection. Available at:
http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&Itemid=270&gid=38104&lang=en
- Brazil Ministry of Health. Situation report on the yellow fever outbreak. Available at:
<http://portalsaude.saude.gov.br/index.php/o-ministerio/principal/leia-mais-o-ministerio/619-secretaria-svs/11-svs/27300-febre-amarela-informacao-e-orientacao>.
- PAHO/WHO. Requirements for the International Certificate of Vaccination or Prophylaxis (ICVP) with proof of vaccination against yellow fever. Available at:
http://www.paho.org/hq/index.php?option=com_topics&view=article&id=69&Itemid=40784&lang=en
- WHO. Updates on yellow fever vaccination recommendations for international travellers related to the current situation in Brazil. Available at:
<http://www.who.int/csr/don/20-march-2017-yellow-fever-brazil/en/#>

References

1. Brazil Ministry of Health. Yellow fever reports. Available at:
<http://portalsaude.saude.gov.br/index.php/o-ministerio/principal/leia-mais-o-ministerio/619-secretaria-svs/11-svs/27300-febre-amarela-informacao-e-orientacao>
2. PAHO/WHO. Control of Yellow Fever. Field Guide. 2005. Scientific and Technical Publication No. 603. Available at:
http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&Itemid=270&gid=20159&lang=en
3. Peru Ministry of Health. Epidemiological bulletin. Volume 26 – EW 24. Available at:
<http://www.dge.gob.pe/portal/docs/vigilancia/boletines/2017/24.pdf>