

Situation summary in the Americas

Since epidemiological week (EW) 1 to EW 16 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 and Peru.

In **Brazil**, since the beginning of the outbreak in December 2016 up to 20 April 2017, there were 2,900 cases of yellow fever reported (681 confirmed, 1,451 discarded, and 768 suspected under investigation), including 372 deaths (234 confirmed, 103 discarded, and 35 under investigation). The case fatality rate (CFR) is 34% among confirmed cases.

According to the probable site of infection,¹ the cases were reported in 386 municipalities, while the confirmed cases were distributed among 115 municipalities in 6 states (Espírito Santo, Minas Gerais, Pará, Rio de Janeiro, São Paulo, and Tocantins). This week, a new state, Tocantins, confirmed a case of sylvatic yellow fever in an unvaccinated resident of the Xambioá, located in the northern part of the state.²

With regard to the confirmed fatal cases and their probable site of infection, 165 were in Minas Gerais, five in São Paulo, 58 in Espírito Santo, four in Pará, and two in Rio de Janeiro. In descending order, the CFR among confirmed cases by state is 100% in Pará, 50% in São Paulo, 35% in Minas Gerais, 31% in Espírito Santo, and 20% in Rio de Janeiro.

Between the release by the Brazil Ministry of Health of yellow fever bulletins on 12³ and 19⁴ April, the number of cases reported in the state of Minas Gerais remained unchanged at 1,130, with the last confirmed case having onset of symptoms on 14 March 2017.⁵

¹ There are also 54 discarded cases that were reported by other Federal Units.

² Information is available at: <http://to.gov.br/noticia/2017/4/24/vacina-contra-febre-amarela-deve-ser-tomada-apenas-uma-vez/>

³ Information is available at: <http://www.saude.mg.gov.br/component/gmg/story/9282-informe-epidemiologico-da-febre-amarela-12-04?layout=print>

⁴ Information is available at: <http://www.saude.mg.gov.br/component/gmg/story/9296-informe-epidemiologico-da-febre-amarela-19-04?layout=print>

⁵ Information is available at: http://www.saude.mg.gov.br/images/noticias_e_eventos/000_2017/2-abril-maio-junho/12-04_Atualizacao-FA.pdf

In the state of Espírito Santo, following the second increase in the number of cases observed since EW 9 of 2017, a number of additional suspected cases continued to be reported; the occurrence of new confirmed cases in the susceptible unvaccinated population that may still be present in the state cannot be discarded. Local and state authorities are continuing to conduct activities aimed at increasing vaccination coverage. The municipalities that report the highest number of confirmed cases are Ibatiba (22), Colatina (20), and Santa Leopoldina (18).⁶

In Rio de Janeiro, an increase in the number of suspected cases was observed between 15 and 25 March. Of the 11 confirmed cases, 8 had as probable site of infection the municipality of Casimiro de Abreu, while the remainder had the municipalities of São Fidelis, Porciúncula, and Maricá (one case in each municipality).⁷

Moreover, in the state of Pará, the number of confirmed cases continued to be 4 in EW 13 of 2017, while the state of Tocantins presented a confirmed case during EW 16 of 2017.

The confirmed case in the state of Tocantins is an unvaccinated young resident of Xambioá who worked in the jungle area and died in January 2017. This is the first death due to yellow fever reported in the state in 17 years.

To date, *Aedes aegypti* has not been reported to have a role in transmission. However, confirmed epizootics in large cities, such as Vitoria in Espírito Santo⁸ and Salvador in Bahia,⁹ represent a high risk for a change in the transmission cycle.

Figure 1 shows the trend in the number of reported cases, according to classification (confirmed, discarded, under investigation), in the 4 states that account for 99% of all the confirmed cases.

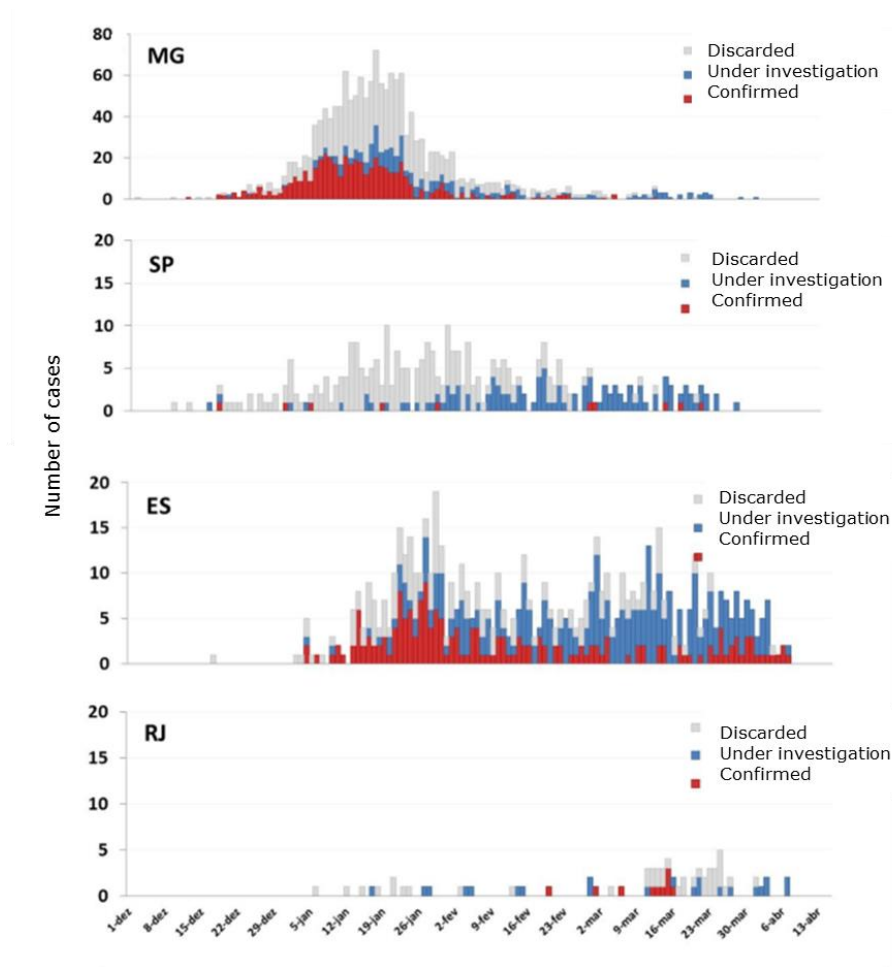
⁶ Information is available at: <http://saude.es.gov.br/Not%C3%ADcia/saude-vacinacao-contra-febre-amarela-continua>

⁷ The probable site of infection of the case of Porciúncula is under investigation, while the case of Maricá is from the rural area of the municipality. Information is available at: <http://www.febreamarelarj.com.br/site/ara/Boletim-Epidemiologico-Febre-Amarela-20-04-2017.pdf>

⁸ Municipalities with confirmed epizootics. Available at: <http://saude.es.gov.br/Not%C3%ADcia/febre-amarela-silvestre-94-notificacoes-descartadas>

⁹ Confirmation of yellow fever in four monkeys in the neighborhoods of Vila Laura, Paripe, and Itagira in Salvador. Available at: http://www.saude.ba.gov.br/novoportal/index.php?option=com_content&view=article&id=11761:-estado-intensifica-acoes-de-controle-do-virus-da-febre-amarela&catid=13:noticias&Itemid=25

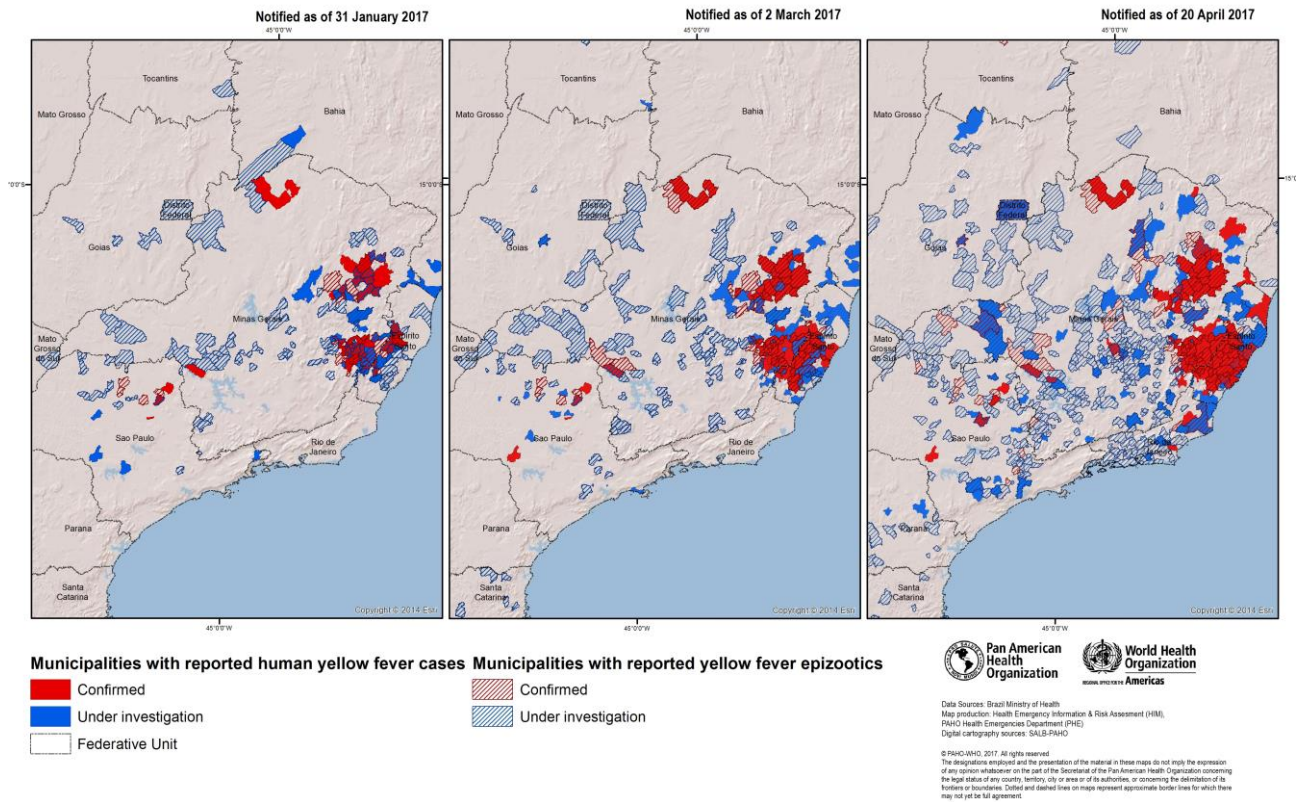
Figure 1. Distribution of reported yellow fever cases by date of symptoms onset and probable state of infection. Brazil, 1 December 2016 to 13 April 2017.



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

Figure 2 illustrates the municipalities with confirmed cases and cases under investigation, as well as confirmed epizootics, and epizootics under investigation that correspond to the cumulative total in three different dates.

Figure 2. Geographic distribution of reported human yellow fever cases and yellow fever epizootics, 31 January, 2 March, and 20 April 2017.



Source: Data published by the Brazil Ministry of Health (Monitoring of yellow fever cases and deaths), compiled and reproduced by PAHO/WHO

Since the beginning of the outbreak up to 20 April 2017, a total of 3,245 nonhuman primates (NHP) epizootics were reported, of which 474 were yellow fever confirmed, 1,277 remain under investigation, and 88 were discarded. Between the release by the Brazil Ministry of Health of bulletins # 36 and 37 concerning yellow fever,¹⁰ an additional 296 epizootics in NHP were added.

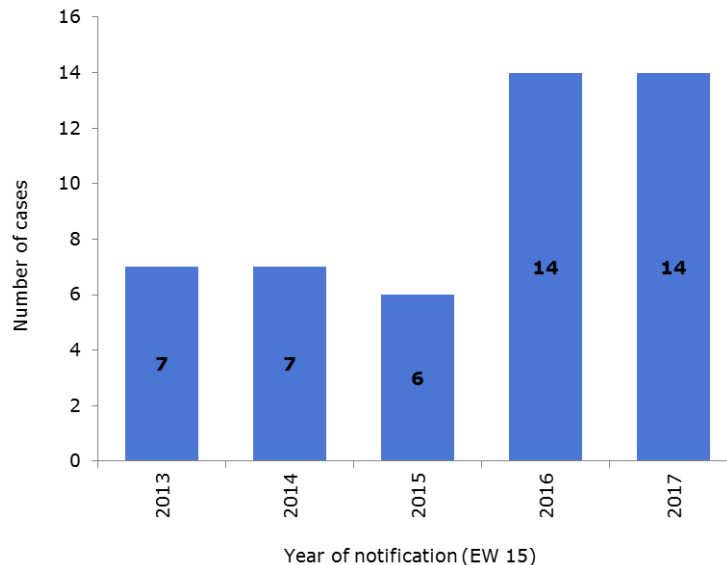
Epizootics in NHP were reported in the Federal District and in the states of Alagoas, Amazonas, Bahia, Goiás, Espírito Santo, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Rio Grande do Norte, Rio Grande do Sul, Rio de Janeiro, Rondônia, Roraima, Santa Catarina, São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

¹⁰ Monitoring of yellow fever cases and deaths in Brazil. Available in Portuguese 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>

In **Peru**, up to EW 15 of 2017, 14 confirmed and probable cases were reported, including two deaths; a similar figure was reported during the same period of 2016, which is higher than previous years (**Figure 3**). As in 2016, the department of Junín reported the largest number of confirmed and probable cases (4), followed by the departments of Ayacucho, Cusco, and San Martín (with two cases confirmed and probable each); while Amazonas, Loreto, Madre de Dios and Pasco reported one case each.

Figure 3. Distribution of yellow fever confirmed and probable cases, reported between EW 1 and EW 15. Peru, 2013-2017.



Source: Data published by the National Center for Epidemiology, Prevention and Control of Diseases - Ministry of Health of Peru; Situational Room for the Analysis of the Health Situation – EW 15 of 2017 and reproduced by PAHO/WHO

Recommendations

Given the current yellow fever situation in Brazil and the emergence of cases in areas where cases have not been detected in several years, 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.

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. There have been rare reports of serious side-effects from the yellow fever vaccine.

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% coverage¹¹ among the resident population of these areas.
- 2) Countries that are not currently experiencing outbreaks should not conduct immunization campaign. 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 nursing women who live in endemic areas, since the potential risk of transmitting the vaccine virus to the child is far lower than the benefits of breastfeeding.
- For pregnant or lactating women traveling to areas with yellow fever transmission, vaccination is recommended when travel cannot be postponed or avoided. They should 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.

¹¹ 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

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, February 2017, 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

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<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. Peru Ministry of Health – MINSA, National Center for Epidemiology, Prevention and Control of Diseases; Situational Room for Health Situation Analysis – EW 15 of 2017: Yellow Fever. Available at:
http://www.dge.gob.pe/portal/index.php?option=com_content&view=article&id=14&Itemid=121
3. Epidemiological Bulletin EW 15. Colombia National Institute of Health. 2017. Available at: <http://www.ins.gov.co/boletin-epidemiologico/Paginas/default.aspx>
4. 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