

26 January 2017

---

### Situation summary in the Americas

In 2016, Brazil, Colombia, and Peru reported confirmed cases of yellow fever. In 2017, Brazil reported suspected and confirmed cases of yellow fever, while Peru and Colombia reported probable cases.

In **Brazil** in 2015, nine cases of yellow fever were confirmed in three states: Goiás (6), Pará (2), and Mato Grosso do Sul (1), with a case fatality rate of 55%. In 2016, seven cases were confirmed in the states of Goiás (3), São Paulo (2), and Amazonas (2),<sup>1</sup> with a case fatality rate of 71%.

In 2017, up to 26 January, 550 human cases of yellow fever were reported (72 confirmed, 23 discarded and 455 suspected cases remain under investigation), including 105 deaths (40 confirmed and 65 under investigation). A case fatality rate of 55% among confirmed cases and 14% among suspected cases that remain under investigation were reported.

Suspected cases and confirmed cases are distributed in 6 states based on probable site of infection (Bahia, Espírito Santo, Goiás, Mato Grosso do Sul, Minas Gerais, and São Paulo). In relation to the confirmed deaths, 37 occurred in the state of Minas Gerais and 3 in the state of São Paulo. The table below summarizes this information (**Table 1**). **Figure 1** shows the distribution of confirmed yellow fever cases based on symptom onset date in Minas Gerais.

In addition, 268 epizootics were reported in non-human primates (NHP), with a total of 777 NHP deaths, of which 7 resulted positive for yellow fever (3 in the state of São Paulo and 4 in the state of Espírito Santo).

In response to this situation, public health authorities at the federal, state and municipal levels are implementing various activities, including the distribution of 5.3 million vaccines to the states of Minas Gerais, Espírito Santo, São Paulo, Bahia, and Rio de Janeiro.

At this stage, there is no evidence that *Aedes aegypti* is implicated in the transmission of ongoing outbreaks. However, the potential risk of re-urbanization cannot be ruled out.

It is expected that additional cases will be detected in other states in Brazil given the internal movement of people and infected monkeys and the low vaccination coverage in areas that were previously considered not considered to be at risk for yellow fever transmission.

---

<sup>1</sup> Brazil Ministry of Health, available at:

<http://portalsaude.saude.gov.br/index.php/cidadao/principal/agencia-saude/27402-ministerio-da-saude-atualiza-casos-de-febre-amarela>

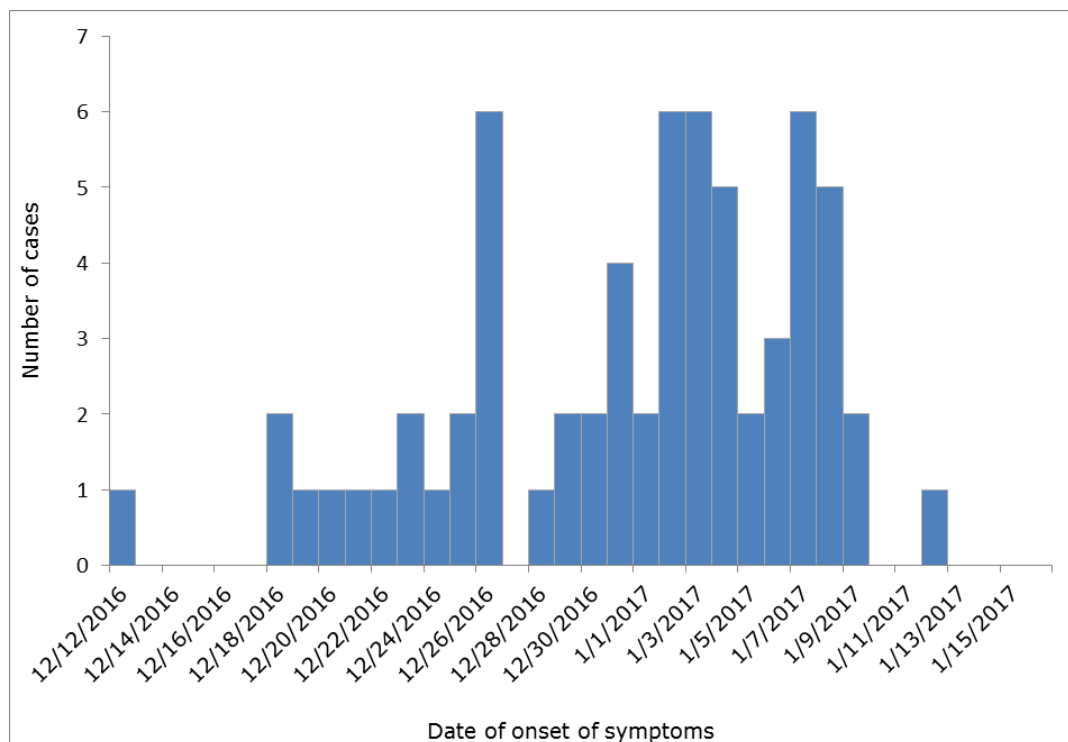
**Table 1.** Distribution of human cases of yellow fever according to probable site of infection. Brazil, 1 December 2016 to 26 January 2017

State	N° of municipalities with confirmed cases	N° of reported cases	N° of suspected cases (deaths)	N° of confirmed cases (deaths)	N° of discarded cases
<b>Central-West Region</b>					
Goias	1	1	1 (1)	0	0
Mato Grosso do Sul	1	1	1 (0)	0	0
<b>North East Region</b>					
Bahía	3	7	6 (0)	0	1
<b>Southeast Region</b>					
Espírito Santo	18	33	32 (3)	1	0
Minas Gerais	51	502	415 (61)	68 (37)	19
São Paulo	3	3	0 (0)	3 (3)	0
<b>Total</b>	<b>77</b>	<b>547*</b>	<b>455 (65)</b>	<b>72 (40)</b>	<b>20*</b>

\* Three cases that had been notified in the Federal District were discarded.

**Fuente:** Secretary of Health Surveillance. Ministry of Health of Brazil

**Figure 1.** Distribution of confirmed cases of yellow fever by onset of symptoms date, Minas Gerais, Brazil, 2016-2017



**Source:** Minas Gerais State Secretary of Health

In **Colombia**, during EW 2 of 2017, a probable case of yellow fever was reported, corresponding to a 20-year-old man. The probable site of infection was Meta department. In this department, two cases were also reported in 2016.

In **Peru**, 79 probable and confirmed cases of yellow fever were reported in 2016, including 24 deaths, with 30% of case fatality rate. As of EW 2 of 2017, a probable case was reported in the department of Cusco, a department that reported two cases in 2016.

## Recommendations

The current outbreaks and upsurge of yellow fever activity in Brazil extend beyond the areas that have been considered at risk for yellow fever transmission since 2013<sup>2</sup>, thus signaling the need to reconsider the risk assessment in order to inform both, national immunization policy and recommendations for travelers.

The WHO Secretariat has revised the areas at risk for yellow fever transmission in Brazil<sup>3</sup> based on the information provided by the Ministry of Health of Brazil to the Pan American Health Organization, Regional Office of the World Health Organization (PAHO/WHO) and taking into account that the health authorities of Bahia and Espírito Santo states have revised their areas at risk for yellow fever transmission.

The newly determined areas deemed to be at risk for yellow fever transmission, illustrated in **Figure 2**, represent the first preliminary and precautionary step of a dynamic risk assessment process that, as the epidemiological situation evolves, will continue to be jointly refined in the coming weeks by the WHO Secretariat, the Ministry of Health of Brazil, and the Scientific and Technical Advisory Group on Geographical Yellow Fever Risk Mapping (GRYF)<sup>4,5</sup>.

The developments about the risk assessment work currently in progress will be published on the PAHO/WHO and WHO websites, as previously done.

The newly defined areas at risk for yellow fever transmission in Brazil present the following differences with respect to those defined in the 2013 maps:

- **Bahia State:** extension of the areas at risk for yellow fever transmission with the inclusion of the following municipalities in the south and south-west of the States: Alcobasa; Belmonte; Canavieiras; Caravelas; Ilheus; Itacare; Mucuri; Nova Visosa; Porto Seguro; Prado; Santa Cruz Cabralia; Una; Urusuca; Almadina; Anage; Arataca; Barra do Chosa;

---

<sup>2</sup> Please see, the World Health Organization (WHO) publication "International Travel and Health, 2016"

<sup>3</sup> The revision took into account the following factors: evidence of transmission cycles currently sustaining the outbreaks and upsurge of human cases of yellow fever; Distribution of newly occurring yellow fever epizootics; Distribution of newly occurring human cases of yellow fever; Shared ecosystem in terms of typology of forests, non-human primates population, hydrogeological basins; Domestic travel and trade routes; Risk assessments by health authorities of Bahia and Espírito Santo States; Administrative borders of the municipalities.

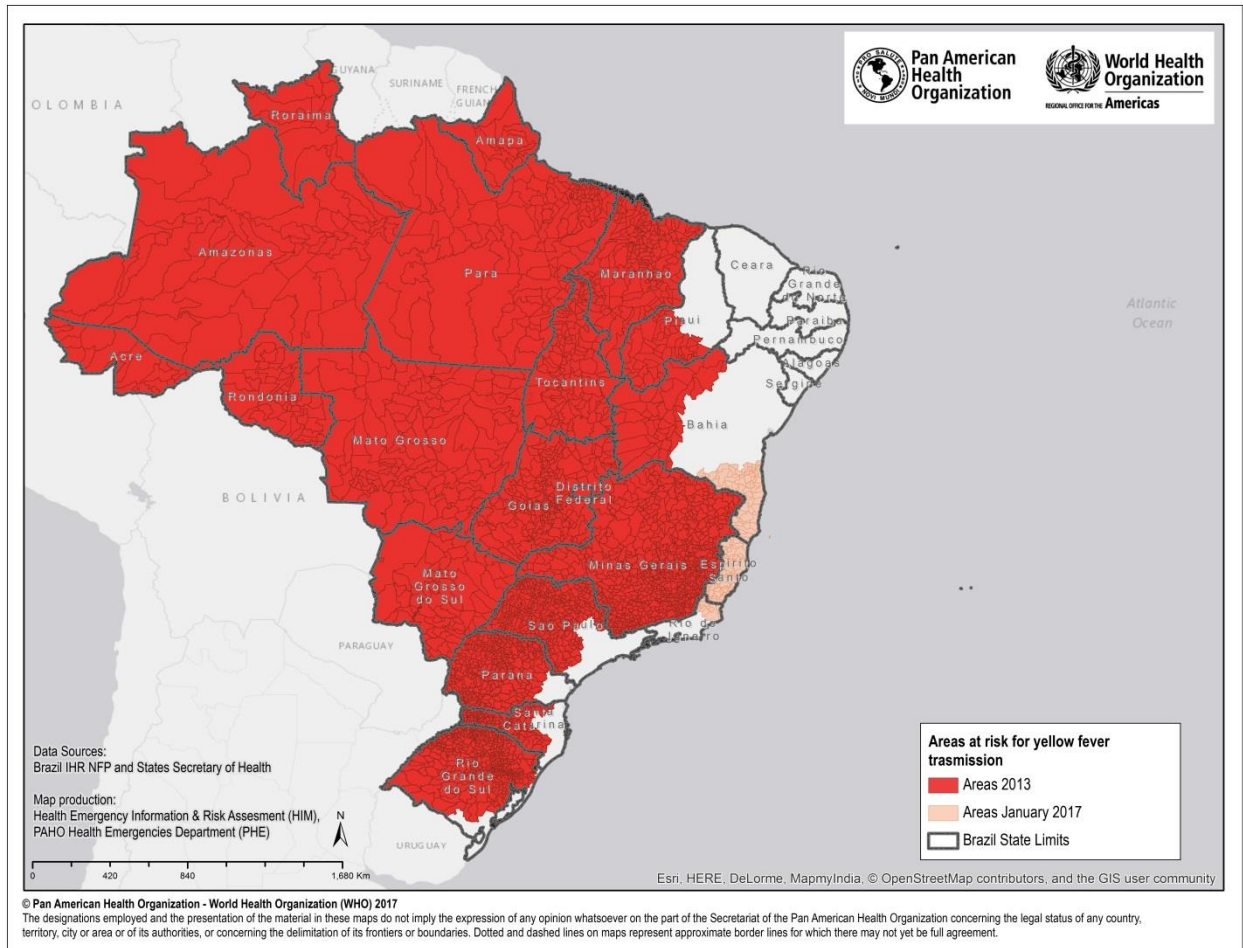
<sup>4</sup> The further reclassification of the areas at risk for yellow fever transmission in Brazil, with related refined recommendations for vaccination against yellow fever in travelers, will be driven by the application of the criteria presented at [http://www.who.int/ith/yellow-fever-risk-mapping/risk\\_mapping/en/](http://www.who.int/ith/yellow-fever-risk-mapping/risk_mapping/en/), and summarized in the table available at: [http://www.who.int/ith/yellow-fever-risk-mapping/risk\\_mapping\\_table1.jpg](http://www.who.int/ith/yellow-fever-risk-mapping/risk_mapping_table1.jpg).

<sup>5</sup> Established in accordance to Resolution WHA68.4.

Barro Preto; Belo Campo; Buerarema; Caatiba; Camacan; Candido Sales; Coaraci; CondeUba; Cordeiros; Encruzilhada; Eunapolis; Firmino Alves; Floresta Azul; Guaratinga; Ibicarai; Ibicui; Ibirapua; Itabela; Itabuna; Itagimirim; Itaju do Colonia; Itajupe; Itamaraju; Itambe; Itanhem; Itape; Itapebi; Itapetinga; Itapitanga; Itarantim; Itororo; Jucurusu; Jussari; Lajedao; Macarani; Maiquinique; Mascote; Medeiros Neto; Nova Canaa; Pau Brasil; Piripa; Planalto; Posoes; Potiragua; Ribeirao do Largo; Santa Cruz da Vitoria; Santa Luzia; São Jose da Vitoria; Teixeira de Freitas; Tremedal; Vereda; Vitoria da Conquista.

- **Espírito Santo State:** at risk for yellow fever transmission with the exception of the urban area of Vitoria.
- **Rio de Janeiro State:** at risk for yellow fever transmission in the following northern municipalities bordering Minas Gerais and Espírito Santo States: Bom Jesus do Itabapoana; Cambuci; Cardoso Moreira; Italva; Itaperuna; Laje do Muriae; Miracema; Natividade; Porciuncula; Santo Antonio de Padua; São Fidelis; São Jose de Uba; Varre-Sai; Campos dos Goytacazes; São Francisco de Itabapoa; São João da Barra.

**Figure 2.** Areas at risk for yellow fever transmission in Brazil, 2013-2017



**The WHO Secretariat does not recommend any general restriction of travel and trade with Brazil on the basis of the information currently available on this event.**

PAHO/WHO encourages Member States to advise to travelers planning to visit areas at risk for yellow fever transmission in Brazil includes:

- vaccination against yellow fever at least 10 days prior to the travel;
- observation of measures to avoid mosquito bites;
- awareness of symptoms and signs of yellow fever;
- promotion of health care seeking behavior while traveling and upon return from an area at risk for yellow fever transmission, especially to a country where the establishment of a local cycle of transmission is possible (i.e. where the competent vector is present).

As per Annex 7 of the International Health Regulations (IHR), which was amended and entered into force in July 2016 pursuant to Resolution WHA 67.13, **a single dose of yellow fever vaccine is sufficient to confer sustained immunity and life-long protection against yellow fever disease.** Booster doses of yellow fever vaccine are not needed.

If, on medical ground, a traveler cannot be vaccinated against yellow fever, this must be certified by the relevant authorities as per Annex 6 and Annex 7 of the IHR.

## References

1. Epidemiological situation in Brazil. Brazil Ministry of Health site. Available at: <http://portalsaude.saude.gov.br/index.php/situacao-epidemiologica-dados-febre-amarela>
2. Yellow Fever: Health updates the cases and deaths. Brazil. Available at: <http://portalsaude.saude.gov.br/index.php/cidadao/principal/agencia-saude/27429-febre-amarela-saude-atualiza-casos-e-obitos>
3. Minas Gerais State Secretary of Health. Yellow fever. Available at: <http://www.saude.mg.gov.br/febre-amarela>
4. National Center for Epidemiology, Prevention and Control of Diseases - MINSA of the Ministry of Health of Peru; Situational Room for Health Situation Analysis – EW 2 of 2017: Yellow Fever. Available at: [http://www.dge.gob.pe/portal/index.php?option=com\\_content&view=article&id=14&Itemid=121](http://www.dge.gob.pe/portal/index.php?option=com_content&view=article&id=14&Itemid=121)
5. Epidemiological Bulletin EW 2. Colombia National Institute of Health. 2017. Available at: <http://www.ins.gov.co/boletin-epidemiologico/Paginas/default.aspx>
6. PAHO/WHO. Technical report: Recommendations for Scientific Evidence-Based Yellow Fever Risk Assessment in the Americas. 2013. Available at: [http://www.paho.org/hq/index.php?option=com\\_docman&task=doc\\_download&Itemid=270&gid=30613&lang=en](http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&Itemid=270&gid=30613&lang=en)
7. PAHO/WHO. Control of Yellow Fever. Practical Guide. 2005. Scientific and Technical Publication No. 603.