

Situation Summary

In the Region of the Americas, the risk of new yellow fever outbreaks of varying magnitudes is high. While immunization is one of the most successful public health interventions to prevent this disease, vaccination coverage has stagnated over the past decade. The COVID-19 pandemic, among other factors, has led to vaccination activities being affected, impacting yellow fever vaccination coverage (1,2).

Due to the yellow fever cases reported in 2023 in the Region (2 in Bolivia and 3 in Brazil) and for the above mentioned, it is **urgent that health authorities ensure they have a strategic reserve inventory that allows them to maintain routine vaccination and at the same time respond to eventual outbreaks**. In addition, it is necessary for countries to guarantee vaccination coverage greater than or equal to 95% in a homogeneous manner.

Yellow Fever epidemiological update in the Region of the Americas

In 2022, between epidemiological week (EW) 1 and EW 52, confirmed cases of yellow fever were reported in three countries in the Region of the Americas: Bolivia (5 confirmed cases), Brazil (during the 2021-2022 seasonal period reported 5 cases including 4 deaths), and Peru (7 confirmed cases, including 5 deaths) (**Figure 1**).

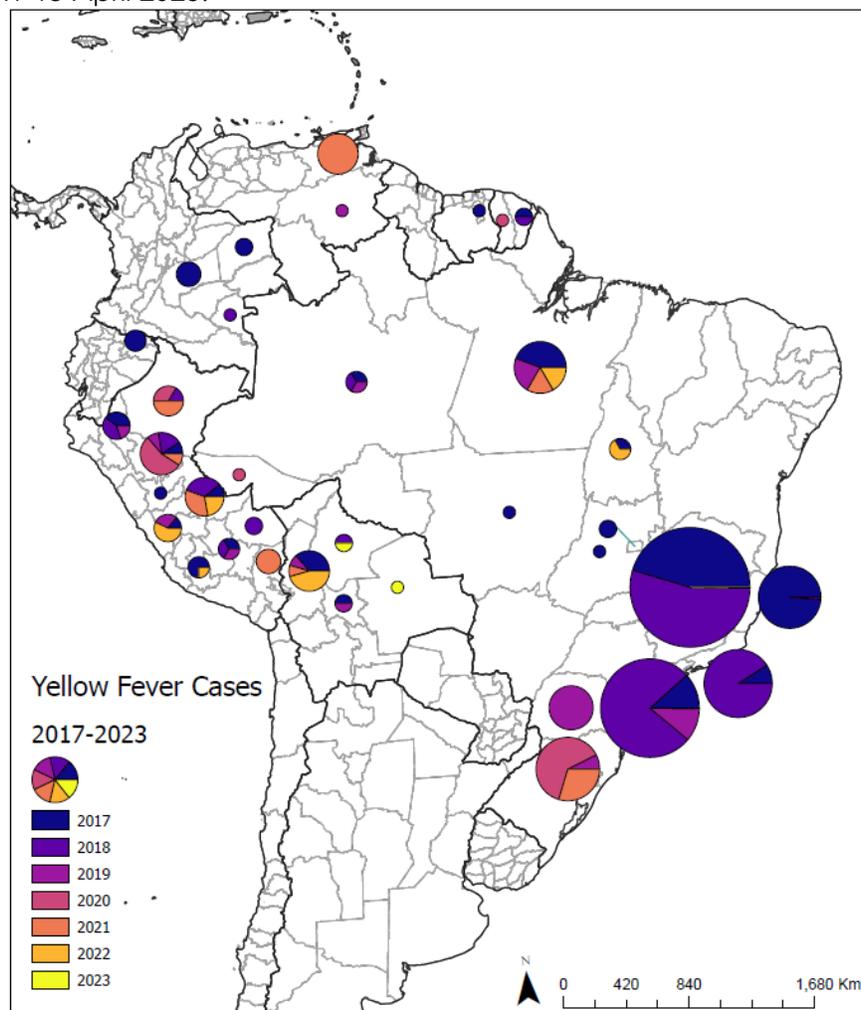
So far in 2023, human cases have been recorded in Bolivia (two cases) and Brazil (three cases).

The following is a summary of the situation in selected countries.

In **Bolivia** (3,4,5), a positive case of yellow fever was detected in the municipality of Santa Ana de Yacuma, Beni department, which was confirmed by real-time PCR analysis. This is a 9-year-old boy with no history of yellow fever vaccination or travel outside the municipality, with a date of onset of symptoms on 27 February 2023. To date, the patient has been discharged and has recovered and is in good general health. Additionally, a second positive case of yellow fever was detected in the municipality of Puerto Suárez, Santa Cruz department, on the border with Brazil, which was confirmed by PCR and serology analysis. This is a 17-year-old patient, with no history of vaccination, who was serving in the military regiment. The date of onset of symptoms was 23 March 2023 with fever and subsequently presents diffuse abdominal pain and malaise, which is why on 27 March he was admitted to the Príncipe de Paz Hospital in the municipality of Puerto Suárez. The patient died on April 13 due to cerebral hemorrhage and liver failure.

Suggested citation: Pan American Health Organization / World Health Organization. Epidemiological update: Yellow fever in the Region of the Americas. 25 April 2023, Washington, D.C.: PAHO/WHO; 2023.

Figure 1. Geographic distribution of human cases of yellow fever in the Region of the Americas, from January 2017 to April 2023.



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 Map production:
 PAHO Health Emergencies Department (PHE)
 Health Emergency Information and Risk Assessment Unit (HIM)



Source: Data provided by countries or published by the Ministries of Health and reproduced by PAHO/WHO.

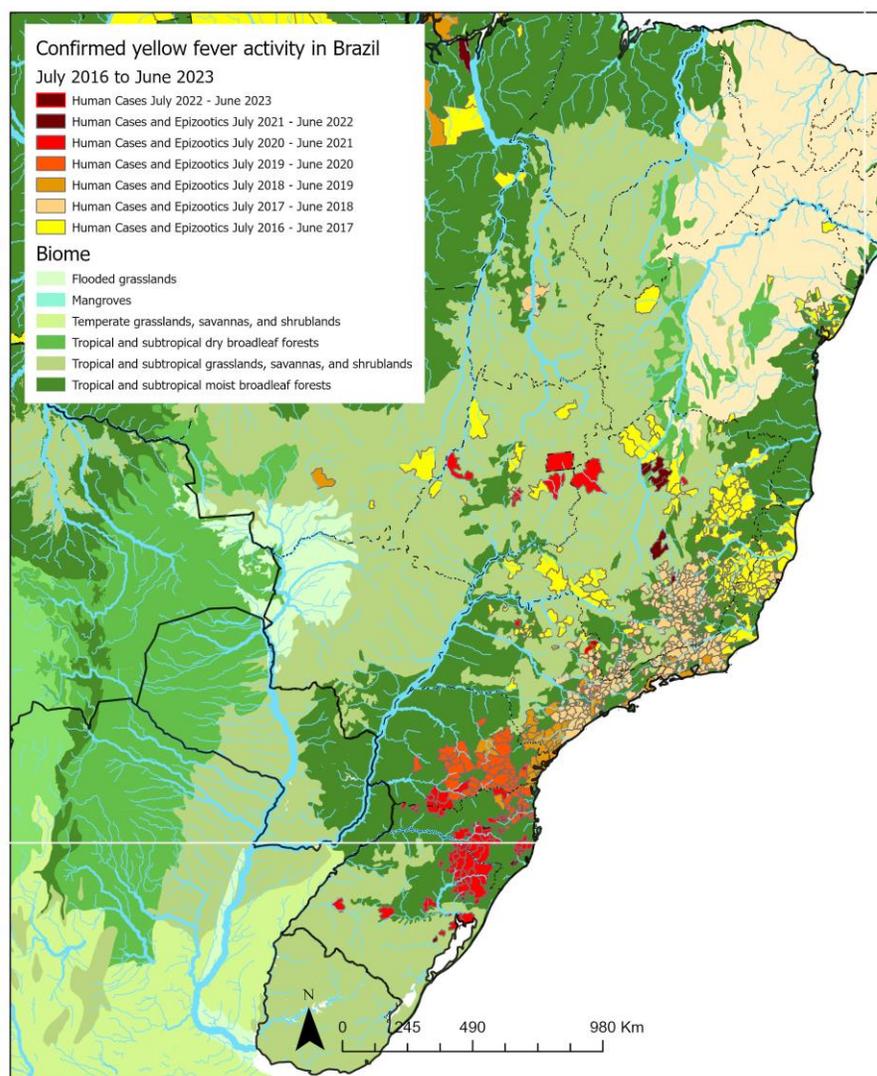
In **Brazil** (6), large outbreaks were recorded between the end of 2016 up to 2020, mainly affecting the states of the southeast region (São Paulo, Minas Gerais, Rio de Janeiro, and Espírito Santo), with 2,256 confirmed cases.

Between July 2021 and June 2022, 5 confirmed cases, including 4 deaths, were reported from the states of Pará (Afuá and Oeiras do Pará municipalities) and Tocantins (São Salvador do Tocantins e Gurupi municipality). The 5 confirmed cases had a history of exposure to wild areas, due to work and/or leisure activities.

During the current monitoring period (July 2022 to June 2023), up to EW 11, 1,009 events involving dead non-human primates (monkeys) were reported. Of this total, 5 (0.5%) were confirmed by laboratory criteria in the states of Minas Gerais (n=2), São Paulo (n=1), Paraná (n=1) and Rio Grande do Sul (n=1). In the same period, 300 suspected human cases were reported and 3 were confirmed

in the states of São Paulo (n=2) and Amazonas (n=1), including one death (São Paulo). Of the 3 confirmed cases, all had a history of exposure to wild and/or forested areas due to work and/or leisure activities (**Figure 2**).

Figure 2. Geographical distribution of yellow fever cases in humans and epizootics. Brazil, January 2017 to April 2023.



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

In **Peru** (7), between EW 1 and EW 52 of 2022, 7 cases were laboratory-confirmed. All had a history of exposure to wild and/or forested areas due to agricultural work activities. The cases were reported in the departments of Junín (4 cases), Ucayali (2 cases) and Ayacucho (1 case). Of the 7 confirmed reported cases, 5 died; the deaths occurred in the departments of Junín (3 deaths) and Ucayali (2 deaths). Between EW 1 and EW 13 of 2023, 4 probable cases of yellow fever were reported, still under investigation.

Guidance for national authorities

The Pan American Health Organization / World Health Organization (PAHO/WHO) encourages Member States with risk areas for yellow fever to continue their efforts to strengthen surveillance in yellow fever endemic areas, in addition to **immunizing the at-risk population, taking the necessary actions to keep them informed, and to vaccinate travelers** going to areas where yellow fever vaccination is recommended. Similarly, PAHO/WHO recommends for Member States to **have a vaccine reserve stockpile**, depending on the availability of vaccines in the country, which will allow for responding to potential outbreaks.

Vaccination

The yellow fever vaccine is safe and affordable and provides effective immunity for the disease among 80%-100% of persons vaccinated after 10 days and 99% immunity after 30 days. A single dose is enough to confer immunity and protection for life, without the need for a booster dose.

PAHO/WHO reiterates its recommendations to national authorities:

1. **Universal vaccination** of children in endemic countries at 12 months of age, administered simultaneously with the measles, mumps, and rubella (MMR) vaccine.
2. Endemic countries that have follow-up campaigns for measles/rubella among children under 5 years of age should take advantage of the opportunity to **integrate** yellow fever vaccination and administer these two vaccines simultaneously.
3. Update the **risk assessment and estimates of the susceptible population**, considering changes in ecological factors, migrations, vaccination coverage, socio-economical activities, as well as the risk of urbanization, to guide vaccination measures and control.
4. Vaccination of the population in risk areas, **reaching at least 95% coverage** among residents in these areas (urban, rural, and jungle), through different strategies:
 - a. In healthcare facilities, make rational use of the vaccine and avoid missed vaccination opportunities.
 - b. In the community, when the yellow fever vaccine is more widely available, countries should carry out **catch-up campaigns**, identifying under-vaccinated populations, professional and occupational risk groups, and age groups with suboptimal coverage; for example, young males who do not readily accept vaccination.
5. Ensure vaccination of all travelers to endemic areas at least 10 days before travel.
6. **Maintain a reserve inventory in the country** which allows for ensuring routine vaccination and responding in a timely manner if there are outbreaks.

Yellow fever vaccination recommendations for international travelers are available at: <https://www.who.int/es/travel-advice>.

The guidelines for laboratory diagnosis and vaccination are the same as those published in the 7 December 2018 Yellow Fever Epidemiological Update¹.

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6. Brazil International Health Regulations (IHR) National Focal Point (NFP). 10 April 2023 email report. Brasilia; 2023. Unpublished.
7. Peru International Health Regulations (IHR) National Focal Point (NFP). 5 April 2023 email report. File; 2023. Unpublished.

Useful links

- Pan American Health Organization / World Health Organization. Yellow fever. Washington DC: PAHO/WHO; 2023 [cited 25 April 2023]. Available from: <https://bit.ly/3HcyOcG>
- Pan American Health Organization / World Health Organization. Epidemiological Alerts and Updates. Washington DC: PAHO/WHO; 2023 [cited 25 April 2023]. Available from: <https://bit.ly/40FzIFA>
- Pan American Health Organization / World Health Organization. Laboratory Diagnosis of Yellow Fever Virus infection. 9 September 2018. Washington DC: PAHO/WHO; 2018 [cited 25 April 2023]. Available from: <https://bit.ly/3NiA95w>

¹ Pan American Health Organization / World Health Organization. Epidemiological Update: Yellow Fever. 7 December 2018. Washington, D.C: PAHO/WHO; 2018 [cited 25 April 2023]. Available from: <https://bit.ly/3LK7Fxi>

- World Health Organization. Immunization Agenda 2030: A Global Strategy to Leave No One Behind. Geneva: WHO; 2023 [cited 25 April 2023]. Available from: <https://bit.ly/3aZmVdc>
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