



Yellow fever in the Region of the Americas: Vaccine reserve stockpile management

26 May 2022

Situation Summary in the Region of Americas

Between 2016 and 2018, two waves of yellow fever transmission were observed in the Region of the Americas. During the first wave, which occurred between 2016 and 2017, confirmed cases of yellow fever were reported in seven countries and territories in the Region: Bolivia, Brazil, Colombia, Ecuador, French Guiana, Peru, and Suriname. During the second wave, between 2017 and 2018, six countries and territories in the Region of the Americas reported confirmed cases of yellow fever: Bolivia, Brazil, Colombia, Ecuador, French Guiana, and Peru. During both waves, the highest number of human cases and epizootics were recorded in several decades, with Brazil reporting the highest proportion of cases. The observed increase was related to several factors, including favorable ecosystem conditions that led to the spread of the virus and an unvaccinated population in endemic areas.

Between 2019 and 2021, three countries in the Region of the Americas reported confirmed cases of yellow fever: Brazil, Peru, and Venezuela. In November 2020, a new transmission corridor was identified in the South Region of Brazil, with epizootics occurring among non-human primates (NHP) in Paraná and Santa Catarina states, with routes of transmission spreading towards Rio Grande do Sul State and with the possibility of reaching the bordering countries such as Argentina and Paraguay.

Vaccination coverage

Between 2019 and 2020, the level of yellow fever vaccination coverage declined in 9 of the 13 countries and territories that have yellow fever endemic areas within the Region of the Americas. In 2020, 11 of the 13 endemic countries/territories did not achieve coverage of 95% or greater, and in 7 countries, the coverage was less than 80% (**Figure 1**).

The COVID-19 pandemic has impacted the level of compliance with surveillance indicators for vaccine-preventable diseases. The restrictions imposed on movement as well as concerns about the pandemic have limited primary healthcare activities, including preventive services such as vaccinations. This has led to a subsequent decrease in the proportion vaccinated for yellow fever and an increase in the proportion of the population that is susceptible. Compounding factors include the migrant situation in the Region prior to and during the pandemic, and the impact of COVID-19 on health systems. Therefore, the risk of new outbreaks of yellow fever of varying magnitudes occurring in the Region of the Americas is high.

Suggested citation: Pan American Health Organization / World Health Organization. Yellow fever in the Region of the Americas: Vaccine reserve stockpile management. 26 May 2022, Washington, D.C.: PAHO/WHO; 2022

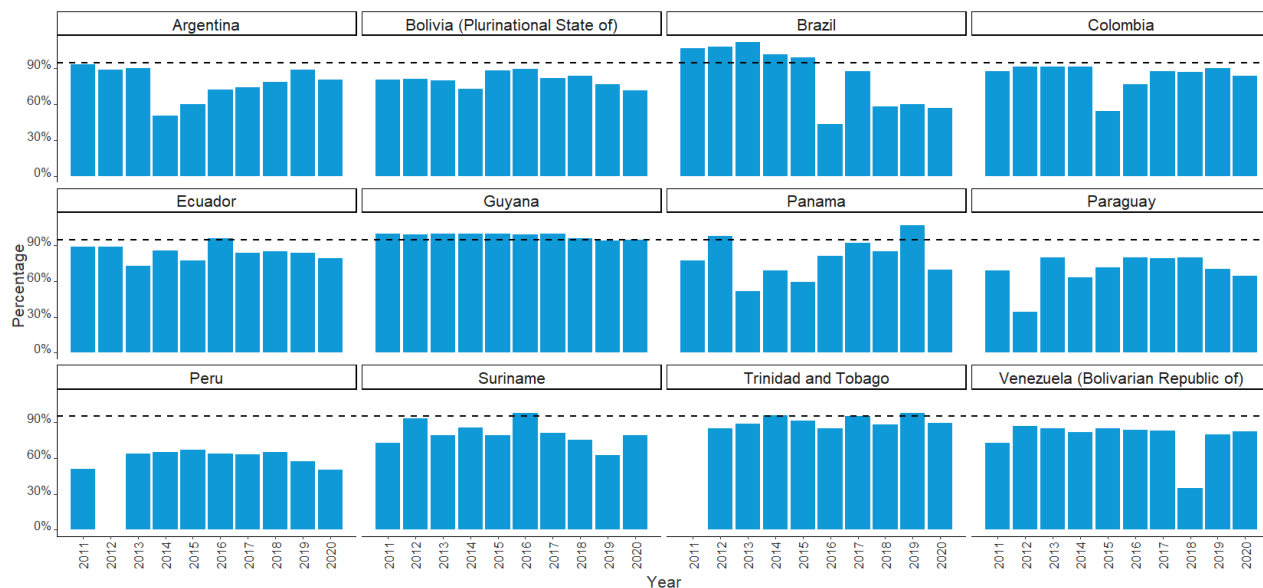
To prevent epidemics of yellow fever in high-risk areas with low vaccination coverage, it is essential that outbreaks are quickly identified and controlled through vaccination.

Several vaccination strategies are recommended to prevent outbreaks: routine vaccinations for children at least 1 year of age and for residents (susceptible) of endemic areas up to 60 years of age, mass vaccination campaigns to increase coverage in countries with at risk areas, and vaccinations for persons traveling to areas where the disease is endemic.

Health authorities of the countries in the Region are undertaking significant efforts to achieve and maintain adequate yellow fever vaccination coverage. However, there are major challenges related to ensuring the supply of the yellow fever vaccine, which could be exacerbated by delays in the supply chain as a result of the pandemic and the current conflict in Eastern Europe.

For this reason, it is urgent that health authorities ensure they have a strategic inventory reserve that allows them to maintain routine vaccinations and simultaneously respond to potential outbreaks. In addition, it is necessary for countries with scheduled preventive vaccination campaigns for increasing coverage resume their plans and guarantee vaccination coverage of 95% or greater in a homogeneous manner.

Figure 1. Yellow fever vaccination coverage by year and country. Select countries in the Region of the Americas. 2011-2020.



Source: WHO/UNICEF WUENIC vaccination coverage estimates. October 2021. Available at: <https://bit.ly/3c2ZAEr>

Epidemiological situation for yellow fever in 2022

In 2022, as of epidemiological week (EW) 18, confirmed cases of yellow fever have been reported in three countries in the Region: Bolivia (5 confirmed cases), Brazil (3 confirmed cases), and Peru (2 confirmed cases). A summary of the situation in these countries is presented below.

In **Bolivia**, between EW 1 and EW 18 of 2022, 14 suspected cases of yellow fever in humans were reported, of which 5 cases were confirmed by the national reference laboratory. Four

of the 5 confirmed cases were fatal. The probable places of infection for the 5 confirmed cases were in the municipalities of Caranavi, Guanay, and Teoponte, in the north of La Paz Department. Of the 5 confirmed cases, 4 are male, and all are between 18 and 60 years of age with no history of yellow fever vaccination. All of the 5 confirmed cases had a history of exposure to wild and/or forested areas due to work activities.

In **Brazil**, between July 2021 and EW 18 of 2022, 547 suspected cases of yellow fever in humans were reported, of which 4 were laboratory-confirmed, all fatal. The probable places of infection for the 4 laboratory-confirmed fatal cases were in the states of Pará (Afuá and Oeiras do Pará municipalities) and Tocantins (São Salvador do Tocantins municipality). All 4 of the cases are male between 20 and 29 years of age with no history of yellow fever vaccination. All of the cases had a history of exposure to wild and/or forested areas due to work and/or leisure activities. During the same period, 1,093 suspected yellow fever epizootics were reported among NHP, of which 25 (2.3%) were confirmed by laboratory criteria. No human cases of yellow fever have been reported where yellow fever epizootics have been reported in primates.

In **Peru**, between EW 1 and EW 17 of 2022, 3 probable cases were reported, of which 2 were confirmed by laboratory and 1 case is under investigation. All 3 had a history of exposure to wild and/or forested areas due to agricultural work activities. The 2 confirmed cases are young adults between 19 and 35 years of age, one of whom had a history of vaccination and whose probable vaccine failure is under investigation. The confirmed cases, both fatal, were reported in Junín (1 case) and Ucayali (1 case) Departments. The case under investigation was reported from San Martín Department.

Recommendations for health 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 and taking the necessary actions to keep them informed and vaccinate travelers** going to areas where yellow fever vaccination is recommended. Similarly, PAHO/WHO recommends for Member States to **have 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 their **risk assessment and estimate 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 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.

¹ PAHO/WHO. Epidemiological Update: Yellow Fever, 7 December 2018, Washington, D.C. PAHO/WHO. 2018, available at: <https://bit.ly/3LK7Fxi>

Sources of information

1. Report from the **Brazil** International Health Regulations (IHR) National Focal Point (NFP), received by PAHO/WHO by email.
2. **Brazil** Ministry of Health. Yellow fever epidemiological bulletins. Available in Portuguese at: <https://bit.ly/3izoTBU>
3. Report from the **Plurinational State of Bolivia** International Health Regulations (IHR) National Focal Point (NFP), received by PAHO/WHO by email.
4. Report from the **Peru** International Health Regulations (IHR) National Focal Point (NFP), received by PAHO/WHO by email.
5. **Peru** Ministry of Health. Situation Room for Health Situation Analysis: Yellow fever. Available at: <https://bit.ly/3ipBreL>
6. PAHO/WHO. Epidemiological Updates on Yellow Fever. Available at: <https://bit.ly/3PHTM67>

Useful links

1. PAHO/WHO. Yellow fever. Available at: <https://bit.ly/3MIC7co>
2. PAHO/WHO. Laboratory Diagnosis of Yellow Fever Virus Infection. Available at: <https://bit.ly/3wLJtVU>
3. PAHO/WHO. Updated requirement for the International Certificate of Vaccination or Prophylaxis (ICVP) with proof of vaccination against yellow fever. 22 March 2017. Available at: <https://bit.ly/3MMCF00>