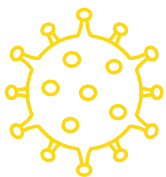


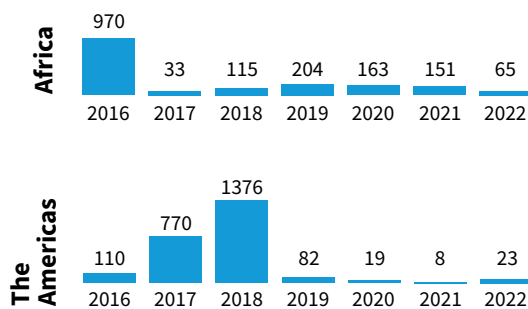
## 264 million

people protected against yellow fever in Africa via vaccination campaigns since 2017



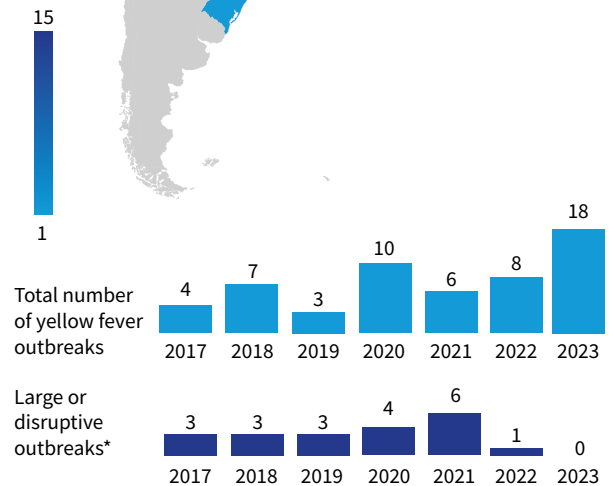
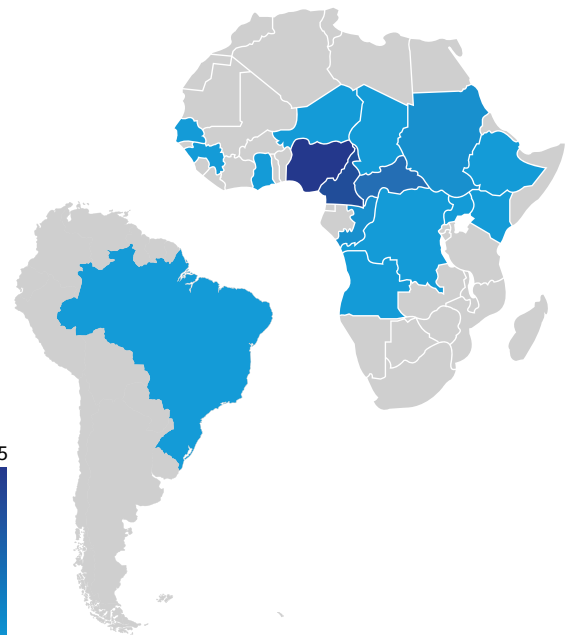
## 4106

confirmed yellow fever cases in Africa & the Americas since 2016\*



\* 2023 data to be confirmed in late 2024.

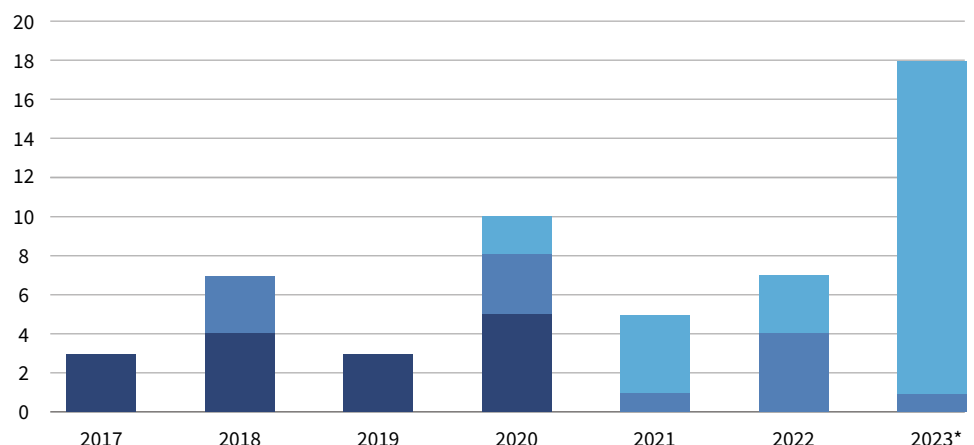
## 56 outbreaks between 2017 to 2023



\*Large or disruptive outbreaks: 5 or more cases in close space and time requiring response in endemic areas. Or >1 case in an area previously without yellow fever.

### Yellow fever outbreaks in Africa incl. countries with history of preventive mass vaccination campaigns (PMVCs)

- Outbreaks in countries with history of PMVCs
- Outbreaks in countries without history of PMVCs under Yellow Fever Initiative (YFI) & EYE
- Outbreaks in countries with ongoing PMVCs under EYE



\* Includes situations with imminent epidemic threat.

## Vaccination data for 2023

~62m\*

People protected via vaccination campaigns in Africa (preventive† & reactive‡)

>184,000\*

People protected via vaccination campaigns in Latin America & the Caribbean

~17.4m\*

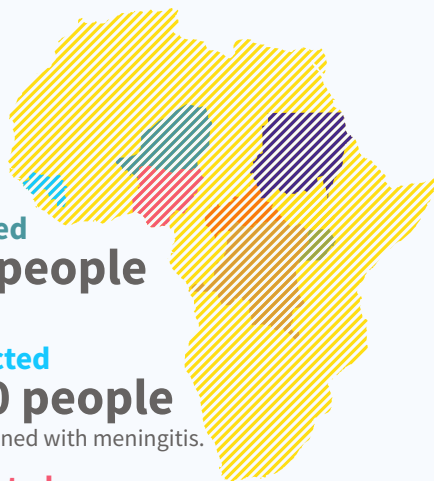
Children protected via routine immunization in Africa

>704,000\*

People protected by reactive vaccination in Africa

†Preventive mass vaccination campaigns (PMVCs) are the most efficient approach for rapidly increasing population immunity levels in high-risk areas and controlling the risk of yellow fever epidemics on a short-term basis. They target the at-risk populations older than nine months, provide shorter term but rapid increases in population immunity. ‡Reactive vaccination campaigns are launched in response to outbreaks to protect the vulnerable population. \*Numbers are best estimates based on data tracked throughout the year.

## Vaccination campaigns in Africa



**Niger protected 221,000 people** through an RVC<sup>1</sup>.

**Guinea protected ~221,000 people** through RVC combined with meningitis.

**Nigeria protected 18.7 million people** through PMVCs.<sup>2</sup>

**Sudan protected ~4 million people** through a yellow fever catch-up campaign combined with measles

**Uganda protected ~9.5m people** as part of a multi-year PMVC, which included refugees.

**Central African Republic protected ~202,000 people** people through RVCs, including seasonal workers and ethnic minority groups.

**The Democratic Republic of the Congo is protecting >29.6 million people** through PMVCs combined with measles.

<sup>1</sup> Reactive vaccination campaigns. <sup>2</sup> Preventive mass vaccination campaigns.

## Vaccination campaigns in Latin America & the Caribbean



As part of Vaccination Week in the Americas **184,454 doses of yellow fever vaccine were applied in Anguilla, Argentina, Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Jamaica, Panama, Paraguay, Peru, St Vincent and the Grenadines, Suriname, Trinidad and Tobago, and Uruguay.**

## Regional implementation achievements

### Africa

- Technical support provided for outbreak response in Guinea and Central African Republic (CAR).
- Technical support to implement PMVC activities in Uganda and the Democratic Republic of the Congo (DRC).
- Chad, DRC and Niger EYE implementation plans validated by respective ministries of health.
- CAR EYE implementation plan completed and is pending a validation workshop with the Ministry of Health.
- Training undertaken in CAR on case investigation response to the yellow fever outbreak.
- Laboratory training in Equatorial Guinea on yellow fever surveillance and case classification.
- Joint support from WHO and UNICEF to Equatorial Guinea to develop a PMVC plan and request vaccines from the Government of Brazil.
- Urban readiness and response plans completed by Nigeria.
- Africa regional meeting held for meningitis, measles, rubella, and yellow fever from 14th to 16th November 2023, Brazzaville, Congo.
- Workshop held in Ethiopia for dissemination of risk assessment results and high-level advocacy toward yellow fever vaccine introduction.
- Global Arbovirus Initiative annual meeting held in June in Ghana with yellow fever representation from AFRO and the EYE Secretariat.
- Three regional EYE co-ordination meetings held with WHO & two regional offices of UNICEF.
- Supported vaccine allocation decision-making process for 2024 – 2026.
- Supported Gavi applications for Chad, DRC, Guinea Bissau and Niger.
- Information on training, accreditation, and capacity building is in the [Laboratory Technical Working group section](#)

### Latin America and the Caribbean (LAC)

- Online survey to assess barriers, knowledge, aptitudes, and practice in yellow fever vaccination was disseminated successfully in Ecuador, Bolivia, Colombia, Peru and Suriname with more than 6,000 responses. Data are currently being analyzed for a report to disseminate results. Expected in Quarter 1 2024.
- A study on an Argentinian cohort of children to evaluate long-term immunity for yellow fever after co-administration of the yellow fever and measles-containing vaccines at 12 months of age, and 4 to 7 years after vaccination. Enrollment was completed in three cities (Posadas, Eldorado, and Oberá) in the province of Misiones, Argentina. Samples are being processed at the US Centers for Disease Control and prevention (CDC), in Colorado. Results are expected in Quarter 1 2024.
- Advocacy and raising profile to increase vaccination coverage - 1) Vaccination Week of the Americas (April) and 2) 8 Days of Action for Vaccination (October) - both multi-antigen regional catch-up campaigns. [See map on page 2](#) for number of doses and countries covered.
- Venezuela to continue with the second phase of its mass vaccination campaign, suspended during 2023, for which it is managing the acquisition of 5,370,000 doses.
- Country profiles for the 12 endemic high-risk countries were published in Paho-iris in English, Spanish, French, and Portuguese. [Click here](#).
- Ongoing support to the Ministries of Health in Colombia and Paraguay MOH to conduct immunity gap analyses. Yellow Fever vaccination plans will be updated accordingly with the results.
- Two training workshops were held in Brasilia and Rio Grande do Norte on micro-planning activities for 150 healthcare workers for immunization.

## Working group achievements

### Laboratory technical working group (LTWG)

#### Publications:

- ‘EYE-LABS website’ further updated to include the latest resources. [Click here](#).
- ‘Laboratory manual for yellow fever’ completed and published in English. [Click here](#). Versions in French, Portuguese, Spanish will be published end of Q1 2024.
- ‘Operational guidance on the use of yellow fever assays in the context of surveillance’ published in English. [Click here](#). French, Portuguese, Spanish editions completed and pending.
- Public report on commercial kit performance evaluations published:
  - Two kit performance evaluations for Immunoglobulin M (IgM) Serology assays:
    - [SD Biosensor’s STANDARD Q yellow fever IgM test](#)
    - [ATCC’s yellow fever MAC-HD 1.0 assay](#)

#### New kit performance evaluations:

- Applications received for second Expression of Interest for molecular reverse transcriptase real-time polymerase chain reaction (RT-qPCR) assays for yellow fever virus detection. Three products from three manufacturers were shortlisted in 2023 to undergo kit performance evaluation. Final reports expected in Quarter 3 2024.

#### Laboratory assessment:

- Accreditation visit for National laboratory in Gabon (fully accredited).
- WHO Serology External Quality Assessment (EQA) Programme Report (2021) published. Conducted by Robert Koch Institute in collaboration with WHO, US Centers for Disease Control (CDC), and LTWG. [Click here](#).
- Laboratory assessment checklists updated.

#### Biomex Vaccinee Project completed:

- Vaccination and specimen collection completed. 200 fractions collected from 10 subjects who were newly vaccinated for yellow fever (over 10 weeks).

#### Training:

- Supported the introduction and/or assay verification of serology testing for yellow fever in Chad, Equatorial Guinea and Niger.
- Supported the introduction and assay verification of molecular testing for yellow fever in national laboratories in Sierra Leone.
- Two e-training video modules developed on yellow fever testing algorithms (for testing at national level and Regional Reference Laboratory (RRL) confirmation).
- Laboratory algorithm and case classification presentation given at AFRO regional meningitis, measles rubella and yellow fever meeting in Brazzaville, Congo.
- OpenWHO course on yellow fever: Three training videos produced on laboratory-related materials.

#### Procurement support:

- UNICEF Supply Division (SD) procurement of “reagent bundles” to perform 16,400 tests were delivered to 13 countries.
- Assays to perform 6,624 [PCR tests](#) and related supplies ([reaction kit](#), consumable kits ([bundle 1](#) and [bundle 2](#) and [reusable kit](#))) were shipped to 6 countries.
- UNICEF SD created access to a new generation of products MacHD Elisa IgM kit, lateral flow assays, as well as related consumables for the detection of yellow fever virus. Products are available through UNICEF SD for procurement for eligible countries. UNICEF SD will start deliveries in Q1 2024 with Gavi’s funding support.
- Gavi board approved the Gavi yellow fever molecular and new serology diagnostics support for 2024–2025.

#### RRL Support:

- Multi-year letters of agreement (LoA) signed with RRLs.
- 2 multi-year RFPs published (and vendors selected) for technical support for:
  - Yellow fever laboratory quality-related activities and products.
  - Performance of laboratory accreditations of surveillance laboratories part of the global yellow fever laboratory network (GYFLaN).

## Laboratory technical working group (LTWG) cont.

- Improvement in the quality of testing by national laboratories, improvement evidenced by retesting data provided by RRLs.
- More countries are testing for yellow fever, and more are referring specimens for confirmation to RRLs:
  - 72 shipments were completed.
  - Average turnaround times for shipments was 4.7 days.
  - Average turnaround time for emergency shipments was 4.76 days.
  - Preliminary total number of samples transported was 952 (including 465 emergency sample shipments).

### Capacity building

- Countries that performed the assay validation for the Altona yellow fever RT-qPCR assay.

## Laboratory accreditations

### Equatorial Guinea



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- ✓ **Gabon** – Yellow fever national laboratory (YFNL) was fully accredited for serology.
- ✓ **Equatorial Guinea** – YFNL was trained in serology testing with the support of staff from Centre Pasteur de Cameroun (CPC) RRL.
- ✓ **Chad** – YFNL was trained in serology testing together with data management training by Intercountry Support Team (IST) Central Africa data manager.

✓ **Niger** – YFNL was trained in serology testing.

✓ **Sierra Leone** – YFNL was trained in yellow fever molecular testing, with the support of staff from IP Dakar RRL (funded by WHO Sierra Leone).



### Sierra Leone



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## Risk analysis working group (RAWG)

- Updated risk assessment for all high-risk countries conducted to inform the annual vaccine allocation process. The top-ranking countries for risk are as follows: Nigeria, Cameroon, the Democratic Republic of the Congo (DRC), Ghana, and Uganda. These are followed by Guinea, Côte D'Ivoire, Ethiopia, Central Africa Republic, Burkina Faso, Kenya, and South Sudan.
- Sub-national risk analysis results presented in Ethiopia during the Yellow Fever Risk Result Dissemination and Advocacy Meeting in October to support the national decision-making process on future PMVCs. [Read more here.](#)
- Risk analysis technical documents drafted and to be validated by the RAWG during the first quarter of 2024.

## Demand and supply working group

- Under the leadership of UNICEF Supply Division and Gavi, the yellow fever vaccine supply has more than doubled since EYE's inception.
- 97.2 million doses of yellow fever vaccine procured through UNICEF.
- ~1.2 million doses shipped to outbreaks in 2023.
- Supported decision-making for vaccine allocations for 2024 – 2025.

## Vaccine delivery working group

- 5-dose vial demand assessment report completed, and info note to be disseminated in 2024.
- Publication / mixed methods research report on key mechanisms leading to high yellow fever and measles coverage in urban and rural routine systems for children younger than 5 years old in progress.
- Yellow fever vaccine coverage report for 2022 completed.
- Input provided into root cause and immunization gap analysis tools.

## EYE Secretariat

- EYE Strategy mid-term evaluation report published:
  - [Click here for news release.](#)
  - [Click here for evaluation report.](#)
  - [Click here for management response action plan.](#)
- Country tool developed in collaboration with TDR for 1) root cause analysis of yellow fever resurgence, 2) evaluation of delays in outbreak response. Analysis conducted in Guinea and Cameroon.
- Immunity gap analysis country tool developed. Beta version used in Guinea, Cameroon, and Gabon. Results of analyses to inform catch-up vaccination strategies.
- Led vaccine allocation decision-making for 2024-2026.
- Yellow fever outbreak toolbox (resources and information for outbreak response) updated. [Click here to access.](#)
- Developed Monitoring and Evaluation (M&E) Country Dashboard in Power BI for all African high-risk countries in English and French, providing up-to-date yellow fever country indicator data and data visualizations.
- Developed a confirmed yellow fever cases tracker and provided regular epidemiological updates and map products on the yellow fever situation in Africa.
- Completed an analysis on the availability, limitations, and completeness of disaggregated data (sex and age) in available completed Post Campaign Coverage Surveys (PCCS). Built a comprehensive dataset on PMVCs and RVCs that have a completed PCCS. Updated guideline for future PCCS produced.
- Online training delivered on EYE M&E standard operating procedures, data collection, Geographic Information Systems tools, and dashboards, as well as available WHO data sources.
- Provided input regarding EYE M&E data in a working session on the General Programme of Work 13 "Prevent Indicator" with WHO's Emergencies Department and Division of Data, Analytics and Delivery for Impact.
- Audit of the current District Health Information Software 2 module prototype to ascertain its fitness for purpose for the EYE Strategy. Action plan produced updates required to meet EYE partners' needs.
- Supported and produced EYE data visualization products for Immunization Agenda 2030 Partnerships Council, International Co-ordination Group (ICG) on Vaccines Provision oversight meeting, and vaccine manufacturers.
- Publication of guidance: "Estimating and monitoring yellow fever reactive campaign vaccination coverage: overview of survey and monitoring methods." This guide is to support countries with planning and implementing vaccine coverage assessments following a reactive vaccination campaign.
- Weekly epidemiological record - global yellow fever update 2022 published. [Click here to read.](#)
- Request for proposals published to select a firm to provide streamlined international transportation of yellow fever clinical specimens and related materials to support rapid outbreak confirmation.
- A Programme Management Group retreat was held in June in Geneva, Switzerland for strategic planning following the mid-term evaluation report.
- Secretariat representation at the Technical Advisory Group on Arbovirus meeting in June in Accra, Ghana.
- Secretariat representation at the ICG meeting in Geneva, Switzerland.



## EYE Secretariat cont.

- An EYE Strategy communication workshop was held in June in Geneva, Switzerland.
- EYE.ops information video on the EYE Strategy samples transportation process and best practice instructions on how to transport samples now available in French. [Click here to view](#)
- Bonus episode of EYE on Yellow Fever published: Ghana: A Yellow Fever Success Story. [Click here to listen](#). To view our 'Podcast best bits' [click here](#).



Reactive vaccination campaign in Mbaiki, Central African Republic, October 2023. © EYE Strategy

## Response to acute events

- 1 Four requests were approved for yellow fever vaccine from the International Coordinating Group on Vaccine Provision (ICG): CAR (two requests for a total of eight districts), Guinea (one district), and Niger (one district).
- 2 Investigation and planning for response started in December 2023 for outbreaks in Cameroon and South Sudan.

## Ongoing risks

- 1 In 2023, there were eighteen outbreaks in three countries: thirteen outbreaks were in Cameroon, four outbreaks in Central African Republic (CAR), and one in South Sudan. Cameroon and CAR have a history of preventive vaccination campaigns.
- 2 Immunity gaps exist in high-risk countries, including an estimated 7.2 million unvaccinated children.
- 4 In the EYE Strategy risk rankings for the 27 high-risk countries, six have increased their risk of yellow fever compared to June 2022: Benin, Cameroon, Ethiopia, Liberia, South Sudan and Togo.
- 3 The risk of yellow fever epidemics with potential for international spread persists. It is exemplified by the ongoing yellow fever outbreak in South Sudan near the border of the Democratic Republic of the Congo, confirmed yellow fever cases in Douala, Cameroon, those in Senegal and Guinea, and potential risk in Lagos state, Nigeria.



The full EYE Strategy 2017 to 2026 can be found [here](#).  
Further information on yellow fever can be found [here](#).

World Health  
Organization

unicef  
for every child



A big thank you to all our partners and implementing countries for enabling our 2023 milestones.