Eliminate Yellow Fever Epidemics (EYE) strategy regional kick-off meeting for Africa

Abuja, Nigeria
April 10-12, 2018
A WHO REPORT OF THE

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The EYE Secretariat and AFRO regional office would like to express its deepest appreciation for those who contributed to the preparation and completion of the meeting. A special gratitude to the Federal Ministry of Health of Nigeria, its national partnering agencies and the Nigeria WHO country office, whose hospitality, coordination and organization efforts were crucial to the success of this event.
# Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AEFI</td>
<td>Adverse Event Following Immunization</td>
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<tr>
<td>AFRO</td>
<td>WHO Regional Office for Africa</td>
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<td>BMGF</td>
<td>Bill &amp; Melinda Gates Foundation</td>
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<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention (United States)</td>
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<td>DRC</td>
<td>Democratic Republic of Congo</td>
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<tr>
<td>ELISA</td>
<td>Enzyme-Linked Immunosorbent Assay</td>
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<td>EMRO</td>
<td>WHO Regional Office for the Eastern Mediterranean</td>
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<td>EPI</td>
<td>Expanded Programme on Immunization</td>
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<td>FNV</td>
<td>French Neurotropic Vaccine</td>
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<td>EYE</td>
<td>Eliminate Yellow Fever Epidemics</td>
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<td>GAVI</td>
<td>Gavi, the Vaccine Alliance</td>
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<tr>
<td>HQ</td>
<td>WHO Headquarters</td>
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<tr>
<td>ICG</td>
<td>International Coordinating Group on vaccine provision</td>
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<td>IHR</td>
<td>International Health Regulations (2005)</td>
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<td>PAHO</td>
<td>Pan-American Health Organization</td>
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<tr>
<td>PCR</td>
<td>Polymerase Chain Reaction</td>
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<td>PMVC</td>
<td>Preventive Mass Vaccination Campaigns</td>
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<td>RI</td>
<td>Routine Immunization</td>
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<tr>
<td>SAGE</td>
<td>Strategic Advisory Group of Experts on Immunization</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<tr>
<td>VPD</td>
<td>Vaccine preventable disease</td>
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<tr>
<td>WAHO</td>
<td>West African Health Organization</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>WUENIC</td>
<td>WHO/UNICEF Estimates of National Immunization Coverage</td>
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<tr>
<td>YF</td>
<td>Yellow Fever</td>
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The Eliminate Yellow Fever Epidemics (EYE) regional kick-off meeting for Africa was held in Abuja, Nigeria, from 10 to 12 April 2018. It was a successful event from the political and technical standpoints. The launch meeting gathered technical representatives from eleven African countries at higher risk for yellow fever in Africa (Angola, Congo, Ethiopia, Gabon, Guinea Bissau, Niger, Nigeria, the Democratic Republic of the Congo (DRC), Senegal, South Sudan, and Uganda), high-level stakeholders from the government of Nigeria including Professor Isaac Folorunso Adewole from Nigeria’s Minister of Health, and Dr. Osagie E. Ehanire from Nigeria’s Minister of State of Health, from the WHO including Dr. Tedros Adhanom Ghebreyesus, WHO Director-General, and Dr. Matshidiso Moeti, WHO Regional Director for Africa, key representatives from the WHO Africa and Eastern and Mediterranean Regional offices (AFRO and EMRO) and headquarters, and from EYE partner agencies such as Bill & Melinda Gates Foundation (BMGF), Centers for Disease Control and Prevention (CDC), Gavi, the Vaccine Alliance and United Nations Children’s Fund (UNICEF).

Discussions and achievements were concentrated on the three main current priorities for the EYE Strategy: preventive mass vaccination campaigns (PMVC), routine immunization (RI), and laboratory and surveillance capacities. The main outcomes of the meeting are:

- **Strong political engagement from priority countries**
  Country representatives have expressed their engagement to implement PMVCs, RI programmes, and to build stronger surveillance and laboratory networks. A sustained commitment over the 10 years of the strategy will be essential for its success.

- **Full partners engagement**
  Gavi, UNICEF, CDC, BMGF, and national agencies demonstrated their commitment and strong engagement to the EYE Strategy. Representatives from each agency presented their role in the strategy and how they could support countries implementing EYE.

- **Commitment to complete nationwide preventive mass campaigns and introduce yellow fever vaccination in routine immunization schedule**
  Country representatives have committed to implement PMVC and RI based on epidemiological risks and priority per the EYE strategy, taking into account the global vaccine availability and competing priorities.

1 Chad, Equatorial Guinea, Ghana and Sudan and were invited to the meeting but could not participate. Dedicated follow-up was implemented.
• **Bottlenecks and potential solutions for EYE current priorities are identified**  
Main bottlenecks towards implementation were identified and practical solutions were proposed to assure quality implementation PMVC, RI, and strengthen laboratory and surveillance capacities.

• **11 high-risk countries drafted three-year national work plans for accelerated implementation of the EYE Strategy**  
The three-year workplans include plans and timelines for PMVC and RI introduction. They will help ensure ongoing momentum toward elimination of yellow fever epidemics and that activities are embedded in the larger public health agenda. With the many priorities and needs in the respective health systems of these countries, these workplans are crucial to reduce risks. The countries will integrate interventions proposed through the EYE Strategy to other health programmes to maximize efficiencies.

• **Planned immunization activities and other plans are on track with what was proposed by the EYE Strategy and endorsed by the Gavi Board in December 2016.**

**Figure 1: Main timelines for mass campaigns and Routine Immunization in Africa: 2018 – 2020**

<table>
<thead>
<tr>
<th>Mass campaigns</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
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<tbody>
<tr>
<td>Nigeria</td>
<td>21 Mds</td>
<td>26 Mds</td>
<td>26 Mds</td>
</tr>
<tr>
<td>Ghana</td>
<td>6.1 Mds</td>
<td>6.3 Mds</td>
<td>17 Mds</td>
</tr>
<tr>
<td>Sudan</td>
<td>10 Mds</td>
<td>12.2 Mds</td>
<td>20 Mds</td>
</tr>
<tr>
<td>DRÇ</td>
<td></td>
<td>15.4 Mds</td>
<td>5.4 Mds</td>
</tr>
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<table>
<thead>
<tr>
<th>Introduction into routine</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Kenya</td>
<td>2.6 Mds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sudan</td>
<td>2.2 Mds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethiopia</td>
<td>5.2 Mds</td>
<td></td>
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*Figures are expressed as millions of doses (Mds) and indicate estimated country demand for yellow fever vaccine, and may increase. For Routine requirements, doses indicated are total per year to reach all eligible children at full coverage (100%). Implementation is graduated; year 1 anticipated to be 50%, increasing to 80% in year 2, and 100% in year 3.
Yellow fever (YF) is an acute viral disease of humans and other primates\(^2\), transmitted by *Aedes* species and other mosquito species\(^3\), and endemic in tropical areas of Africa and Central and South America. The disease has a long history of causing devastating epidemics with international spread, causing many deaths, and to the detriment of health systems and economies. YF is preventable by vaccination and vector control. YF remains a threat to global health security and the disease epidemiology is changing for multiple factors including urbanization and changing environments, population density and vector prevalence. However, the risk of YF disease can be controlled through vaccination of all at-risk populations. A single dose of vaccine is effective in more than 95% of recipients with protective antibodies appearing 7-10 days after immunization.

The Eliminate Yellow Fever Epidemics (EYE) Strategy targets the countries and regions that are considered most vulnerable to YF outbreaks. The aim of the strategy is to build a coalition of countries and partners to tackle the increased risk of YF epidemics. The strategy is based on three main objectives:

**The strategy is based on three main objectives:**

1. **To protect** at risk populations;
2. **To prevent** the international spread of Yellow Fever; and
3. **To control** outbreaks rapidly

\(^2\) For a comprehensive list of African and South American vertebrate host species of YF virus (YFV) see Vainio J, Cutts F. Yellow fever. WHO. 1998

\(^3\) In South America, *Haemagogus* mosquitoes are the main vector in the sylvatic cycle.
The EYE strategy was scientifically validated by the Strategic Advisory Group of Experts on Immunization (SAGE) in October 2016 and approved by the Gavi Board in December 2016.

An in-depth analysis, supported by the EYE Strategy, has provided a revised classification of countries’ risk that accounts for criteria associated with the changing epidemiology of the disease. A total of 40 countries (27 countries in Africa and 13 countries in the Americas) are considered to be at highest risk for YF. In these countries, large scale access to YF vaccines is critical to establish and maintain high levels of immunity among adult and childhood populations at national level. In Africa, 5 countries still need to introduce the vaccine into their routine immunization (RI) schedules and 13 countries should complete national preventive mass vaccination campaigns (PMVCs) to rapidly boost population immunity, while continuing to strengthen RI. All countries at risk for YF in the Americas have introduced the vaccine into routine vaccination programmes, but 11 are also recommended to plan catch-up campaigns targeting unprotected pockets of their populations.

Rapid containment of outbreaks is essential to ensure they do not amplify into devastating epidemics. Rapid control is facilitated by building strong surveillance systems to rapidly detect any outbreaks of disease. Reactive vaccination programmes should be part of the outbreak response as well as surveillance strengthening to enhance early detection of cases, and community mobilization. There is need to build laboratory capacity and surveillance networks, and particularly extend currently limited laboratory diagnostic in-country options in high-risk countries. Vector control is a further aspect of outbreak control, and is recommended to be implemented across-sectors, including ministries of health, sanitation, environment, education will support long-term disease control and risk of amplification in urban centres.

The EYE Strategy is working to help assure reliable uninterrupted YF vaccine supply. To respond to outbreaks, a revolving mechanism is in place to give countries facing emergency needs for YF vaccine access to the internationally managed stockpile managed by the International Coordination Group on vaccine provision (ICG) and funded by GAVI. However, most YF vaccine used globally is to support RI and PMVCs. Over the coming decade, vaccine manufacturers are expected to be able to meet the global demand of 1.38 billion doses needed to eliminate the risk of YF epidemics. This will require maximizing their production, particularly in the first 5 years.

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The strategy will succeed by engaging countries and multidisciplinary partners, and by coordinating efforts well. No country or institution can tackle the global issue of YF epidemics alone.

The success of the EYE Strategy will be highly dependent on the engagement of countries and global actors to ensure:

1. Availability of accessible, affordable vaccines procured in a sustained vaccine market, and mechanisms to cope with surges in YF vaccine demand;
2. Political commitment at regional and country levels fostered by strong advocacy;
3. Robust governance and strong monitoring of outputs and impact;
4. Synergies with other programmes and sectors; and
5. Research to support better tools, diagnostics, and informed practices.

Objectives and expected outcomes

The overall objective of this meeting is to strengthen and sustain countries’ engagement in eliminating YF epidemics and define specific implementation plans following the endorsement of the strategy by Member States at the last African Region (AFRO) regional committee meeting.

Specific objectives

(i) To provide context for increasing urgency around improving coverage of YF vaccine, including changing epidemiology, low herd immunity and increased population movements
(ii) To sensitize participants on the technical and operational aspects of EYE Strategy (including governance structure and implementation plans), including progress to date, challenges and lessons learned
(iii) To provide guidance and support to countries for defining a plan of action for deriving the implementation (and monitoring and evaluation) of the EYE Strategy.
(iv) To define a plan and timeline for conducting situational analysis towards a sustainable RI strategy, and maintaining high YF immunization coverage in each of the targeted countries
(v) To sensitize stakeholder involved in the implementation of the EYE Strategy in the at risk countries, including partner commitments for harmonized support.
**Expected outcomes**

- Participants have a better understanding and shared vision of the EYE Strategy, including improved understanding of the resources available (and processes for leveraging them).
- Practical guidance provided to countries for the development of a national EYE Strategy implementation plan tailored to country needs and context with focus on guiding vaccination campaigns, improving RI and identifying gaps in surveillance and laboratory capacities.
- The keys to success, issues, challenges, and potential solutions to implementation of EYE Strategy are identified and discussed.
- Commitment from the stakeholders involved in the implementation of the EYE Strategy in at-risk countries.
- The decisions and recommendations outlined in the Communiqué of EYE Strategy Kick off Meeting are endorsed by the countries.

**Participants**

Participants of disease prevention and control directors, expanded programme on immunization (EPI) and epidemiological officers from fourteen YF high risk countries in Africa, prioritized by their need for preventive vaccination drives were invited to attend the meeting: Angola, Congo, Ethiopia, Gabon, Guinea Bissau, Niger, Nigeria, the Democratic Republic of Congo (DRC), Senegal, South Sudan, Uganda, Ghana, Chad, and Equatorial Guinea. Additionally, delegates from Senegal joined the event to share their successful experience controlling YF outbreaks and introducing preventive vaccination activities. Additionally, the meeting was attended by WHO, Gavi, and UNICEF representatives and other partners including CDC, BMGF, and WAHO.

**Overview of the methodology**

The meeting included different session topics, divided in three days:

- **1st day:** High level meeting and introduction to the EYE Strategy
- **2nd day:** Technical meeting, EYE Strategy core activities, and country plans
- **3rd day:** Technical meeting and presentation of draft work plans

This report summarizes the key lessons learned, action points, and next steps.
A high-level ceremony with the presence of Dr. Tedros Adhanom Ghebreyesus, WHO Director-General, together with Dr. Matshidiso Moeti, WHO Regional Director for Africa, in conjunction with Professor Isaac Folorunso Adewole, Nigeria’s Minister of Health, and Dr. Osagie E. Ehanire, Nigeria’s Minister of State of Health, marked the official launch of the EYE Strategy in Africa. The launch ceremony was an opportunity for global, regional, and national leaders to emphasize that a sustained political commitment is essential to eliminate YF epidemics in Africa by 2026.
1.1 Epidemiology and trends in yellow fever incidence and epidemic risk

In the latter half of the 20th century, the most frequent YF virus transmission patterns were either (1) sylvatic – where the animal reservoir infects tree-dwelling mosquitoes which in turn bite humans who enter the forest; or (2) intermediate – where the mosquitoes moving between the forest and human settlements are implicated, with humans serving as the hosts in the transmission cycle.

More recently, however, the transmission sequence has been increasingly short-circuited from sylvatic directly to urban, in which the *Aedes aegypti* vector is responsible for inter-human transmission. Urban outbreaks can amplify numbers of cases quickly. They are particularly deadly, socially and economically disruptive, and are more likely to cause international spread. In Africa, virtually all intermediate type outbreaks have led to urban outbreaks, as seen in Angola and DRC, in 2016, when nearly 400 people died and 11 cases were exported to China.

The outbreak was controlled by rapidly raising population immunity through PMVCs. PMVCs have been proven to be successful in West Africa, following the efforts of the Yellow Fever Initiative. Since 2010, a total of 11 million people have been vaccinated resulting in a high reduction of the risk of YF in Africa and no reports of outbreaks since 2015.

The Yellow Fever Initiative was launched in 2005 to respond to the increased number of outbreaks in West Africa, with clusters of cases reported in urban settings. This three-pronged strategy, which began in 2005, included the introduction of the YF vaccine into routine child immunization programmes in endemic countries, PMVCs in at-risk areas, and the setting up of a global vaccine stockpile to permit rapid emergency mass campaigns in response to outbreaks. This led to vaccination of 114 million people and has prevented epidemics in West Africa since 2010.
YF virus continues to circulate in Africa. Recent outbreaks in the continent occurred in the East-central zone of the continent, mainly due to changes in outbreak drivers and low population immunity. These changes are: urbanization, increased population movement, increased mobile workers, climate change, deforestation, and the global resurgence of *Aedes aegypti* mosquitoes.

To guide preventive strategies and to avoid further spread of the disease in the continent, a three-step methodology – independent from supply constraint – was developed to set priorities and guide activities. The steps consist in:

a) Estimate crude risk based on intensity of YF virus transmission

b) Base risk on population immunity/non-immunity estimates

c) Prioritize countries based on their perceived level of risk – history of arbovirus outbreaks and experts' opinion.

With this methodology, countries were classified under three categories of risk: high, moderate, and potential for transmission\(^5\), and priority for PMVC was set among high-risk countries based on criteria including population immunity levels, history of arbovirus outbreaks, and expert opinion based on experience and practical.

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\(^5\) *A Global Strategy to Eliminate Yellow Fever Epidemics 2017 – 2026*. Pg. 16, WHO, 2017
Figure 3: Recommended immunization activities for yellow fever high-risk countries, Africa 2017 – 2026
1.2 Learning from previous experiences: Challenges and successes in Nigeria, Angola, and Senegal

The following four presentations by countries and regions illustrate that the risk of YF epidemics is changing and that YF epidemics are a global issue and must be tackled as such. Yellow fever is neither a regular vaccine-preventable disease (VPD) nor a regular vector-borne disease, and has resurged as a threat to global health security.

Nigeria: Delegates from Nigeria highlighted the importance of country ownership and engagement to coordinate efforts among different agencies and branches of the government. They highlighted the importance of having a reliable and timely laboratory confirmation linked with proper routine surveillance and investigation capacity. Additionally, they mentioned the challenges around sustainability, including financial difficulties to implement the EYE Strategy. Country representatives emphasized the need to develop a work plan at the levels where the resources are available (i.e., at a state level).

In 2008, the country conducted a risk assessment and adopted a subnational phased-approach for PMVCS, which could not be completed due to the global vaccine shortage. In 2017, the country witnessed a resurgence of YF virus circulation. Among the main challenges related to the completion of PMVCS and reactive vaccination campaigns (RVCs) are: limited resources of disease notification officers; limited number of laboratories and stock-outs of reagents; delayed laboratory results; delayed period between confirmation of case and campaign implementation; reaching older groups; competing campaign priorities; funding (in view of Gavi transitional phase); coordination between surveillance and immunization teams; absence of standard protocol for outbreak investigation.

From previous campaigns and the current outbreak, Nigeria described the following lessons learned: that the 6 weeks interval between case detection and reactive campaign implementation was too long and hindered optimal rapid response to interrupt YF transmission; that there is need to consider innovative strategies for mobilizing the older target population nor routinely covered; that leveraging on existing polio structures to implement YF campaigns was valuable to supporting implementation; review of the risk assessment led to reprioritization for conduct campaigns based on epidemiology; preventive and reactive campaigns prevent larger outbreaks. Based on these observations and lessons, Nigeria has developed a 10-year strategic plan to eliminate YF epidemics in the country by 2026, which integrates their current efforts to contain the YF infections, strengthen RI, and laboratory capacity.

Angola: In 2015-2016, Angola had a wide epidemic with spread of transmission in 16 provinces. The experience of Angola’s 2016 vaccination response highlighted the importance of rapidly raising population immunity levels to control the risk of epidemic. Country representatives described RI as a sustainable tool, but which is not sufficient alone to control a heightened epidemic risk.

The main challenges at the time included: limited experience implementing massive vaccination for many new provincial health directors; lack of qualified personnel to apply vaccines; logistical challenges of high volume of vaccines; panic of population; reluctance of men in high economic group to receive the vaccine; difficult to implement campaigns in hard-to-reach areas; challenges to implement mop-up vaccination activities in outreach areas; and ensuring sustained funding for operational costs.
From the outbreak experience, Angola shared the following lessons: robust response was facilitated by high-level emergency coordination with engagement to all levels; timely intervention was supported by alignment of response mechanisms; strong political commitment ensured a long term control and elimination approach was promoted; vaccine availability is crucial to stop YF transmission and eliminate epidemics; close inter-country cooperation is fundamental to prevent the outbreak amplification and rapidly control epidemics.

Angola has since completed nationwide mass campaigns (2017), and is currently working to improve RI coverage.

**Senegal:** Delegates from Senegal provided an illustration of a sustainable approach to YF control that relies on nation-wide PMVCs, well performing RI, and strong and integrated surveillance and laboratory systems for YF and other arboviruses, including vector surveillance. The country highlighted the importance of high-level commitment to make YF control a priority. Additionally, representatives emphasized that having preparedness and response plans for YF outbreaks is crucial in case they occur.

From 1965 to 2002, five YF outbreaks occurred in the country. During this period, the main challenges to implement of vaccination campaigns were: low availability of vaccines; lack of timely resource mobilization for vaccine procurement; weaknesses in the surveillance system at community level; sustainability of high vaccination coverage; planning and coordination challenges. Despite the challenges, the following lessons learned were shared: vaccination coverage above 80% considerably decreases the resurgence of YF cases; mass campaigns help to avoid large outbreaks; a strong surveillance network can detect YF cases in early stages; availability of laboratories facilitates case detection; a multidisciplinary team allows a systematic investigation of cases.

1.3 Yellow Fever in the Americas – Evaluation of yellow fever vaccination programmes and ongoing outbreak control strategies.

The video presentation provided by PAHO presented the YF situation in the Americas, including an overview of the YF epidemic in Brazil. It highlighted the changes in the risk of YF due to factors such as changing environment and ecosystems, intensification of urbanization, and the vulnerability of susceptible populations particularly within these dense urban areas. The risk of international spread of YF was highlighted by the reports of YF cases in unvaccinated international travelers exported from Brazil to other countries. To contain the outbreak and to avoid amplification in large urban areas, the government of Brazil put in place massive control efforts. Control initiatives included the protection of hard-to-reach populations, and effective mechanisms to coordinate information and data management. To adapt to the challenging and evolving epidemiological situation the country went through policy and strategic changes, including the adoption of nation-wide expanded programme on immunization (EPI), plans for nation-wide mass campaigns to rapidly boost immunity, and accepted WHO-approved YF vaccines provide lifelong protection (single-dose policy).
2.1 Overview and components of the EYE Strategy

EYE is a comprehensive, multicomponent, global strategy developed to respond to the increased risk of large urban outbreak with international spread. Its mission is to coordinate international action and to support at-risk countries to prevent YF outbreaks and to prepare for those which might still occur, minimizing suffering, damage and spread by early and reliable detection as well as a rapid and appropriate response.

The EYE Strategy has three strategic objectives:

1. Protect at-risk populations,
2. Prevent international spread, and
3. Contain outbreaks rapidly.
Currently, the Strategy is guided by three core priorities, which were the focus of the kick-off meeting:

- **Preventive Mass Campaigns** to rapidly raise population immunity levels and control epidemic threat.
- **Routine Immunization** (introduction into national immunization schedules and performance improvement) to sustain indefinitely the gains from the mass campaigns.
- **Surveillance and laboratory strengthening** at national and regional levels to identify areas at greater risk that should be prioritized for preventive interventions and to support rapid detection to enable quick response and containment of any outbreaks.

Through a robust monitoring and evaluation framework, progress and impact achieved through the EYE Strategy will be continuously tacked and recorded. WHO and partners will convey several activities to support countries reach EYE's objectives, based on defined targets. In Africa, the implementation of the Strategy will be guided by the regional implementation framework and country multi-year work plans.

**Figure 4: EYE timeframes for implementation**

- **Rapid action:** To contain & protect
  - Initiation of routine vaccination, phased mass vaccination, urban readiness plans, implementation of IHR, outbreak and emergency planning.

- **Intermediate action:** To build resilience & readiness
  - Ongoing routine vaccination, surveillance and diagnostic capacity.

- **Sustained long term action:** To eliminate risk
  - Building health systems capacity, urban resilience, ongoing surveillance, risk assessment, implementation research to refine and improve disease control practices.
2.2 Regional Framework for EYE Implementation in Africa

To facilitate the implementation of the EYE Strategy in Africa, a regional framework was adopted at the 67th Session of the World Health Organization (WHO) Regional Committee. Based on this framework, it is expected that around 440 million people will be vaccinated in Africa by 2026 through mass campaigns and RI. The implementation of the strategy will follow the timelines below.

| By end of 2017 | • EYE governance body is fully operational  
• The implementation plan including indicators and deliverable is ready  
• At-risk countries are engaged in the EYE strategy implementation |
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<tr>
<td>By end of 2018</td>
<td>• 3 African reference laboratories are fully functional with confirmation</td>
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</table>
| By end of 2020 | • All African high-risk countries have introduced the YF vaccine into routine immunization  
• Campaigns have been completed or are well underway in 3 EYE priority countries (including Nigeria)  
• 6 African sub regional reference laboratories are fully functional and an EQA/QC is fully functional for both serology and molecular diagnostic procedures |
| By end of 2022 | • At least 50% of the target population of high-risk countries of Africa has been protected through national preventive mass vaccination campaigns |
| By end of 2024 | • All African high-risk countries have diagnostic capacity to detect and confirm YF |
| By end of 2026 | • All high-risk countries have completed national preventive mass vaccination campaigns |

2.3 Country planning: Overview of EYE national work plans

Guided by presentations and with the support of technical experts, country delegates from the eleven countries attending the meeting (Angola, Congo, Ethiopia, Gabon, Guinea Bissau, Niger, Nigeria, DRC, Senegal, South Sudan, and Uganda) were introduced to the main priorities of the EYE Strategy: PMVCs, RI, and laboratory and surveillance capacities.

Taking these priorities into account country representatives were invited to start drafting a three-year work plan for the implementation of the strategy at national level. They were requested to identify bottlenecks and potential solutions to each of the EYE priorities.

Supporting documents for this exercise can be found in the annex of this report.
2.4 Partners Support for EYE Implementation

The EYE Strategy is steered by WHO, UNICEF, and Gavi, and involves more than 50 partners. The EYE kick-off meeting was an opportunity for some of these partners to present their roles in rolling out the strategy.

**UNICEF:** With the involvement of its Programme Division and Supply Division at global, regional, and national level, UNICEF collaborates with WHO in supporting countries in risk assessment, planning, organizing and implementing high quality immunization activities.

The Supply Division plays an important role in the access to safe, potent and affordable vaccine and supplies by:

- ensuring access to YF vaccine through tendering and appropriate contracting for routine, preventive and reactive immunization activities;
- managing supply and procurement of YF vaccine, including emergency stockpile; preventive campaigns in accordance with forecasts based on risk and scenario planning; and RI requirements as forecasted by country procuring through UNICEF, working in coordination and collaboration with PAHO Revolving Fund (where needed);
- Market shaping partners in collaboration with Gavi, and promoting a healthy YF vaccine supply market.

The Programme Division will also support community engagement and reinforce the right of communities to immunization services by:

- Increasing emphasis on building national capacity for social and behavioral change communication;
- Serving as a lead agency in supporting countries to build national capacity for social and behavioral change communication to improve YF vaccine coverage, including public demand for quality YF immunization.
- Leading the advocacy and communication drive at global and country levels for YF control in general and the EYE Strategy in particular.

**Gavi, the Vaccine Alliance:** Supports the EYE Strategy through a multi-pronged approach:

- Vaccine support: financial support for RI, PMVC and funds to ensure outbreak response stockpile is available
- Immunization system strengthening: Support for health system strengthening, provision of funds for targeted country assistance and providing support for outbreak response
- Market shaping and vaccine security: engaging with manufacturers and developing a YF vaccine road map
**US CDC:** Its collaboration to the EYE Strategy includes:

- Engagement with WHO/PAHO and other key partners in supporting countries implement the Strategy;
- Commitment to continuing to provide laboratory YF testing reagents and trainings to improve diagnostic capacity and recognition of YF;
- Providing technical expertise to countries to improve surveillance, laboratory testing, and vaccination coverage for YF.

**BMGF:** The current strategy of BMGF represents a significant shift to focus on increasing coverage and sustainability of programmes, including the EYE Strategy. The agency has committed significant investments for vaccine policy, country systems, markets and product development to make life-saving vaccines available to developing countries and improve its uptake. It works closely with EYE partners on disease control by focusing on efforts that improve campaigns, RI, and outbreak response.
The EYE Strategy supports efficient surveillance system and the control of international dissemination as essential pillars complementing population protection through vaccination. Strong surveillance enables early detection and response, thereby reducing the risks of large outbreaks and urban amplification. An integral component of the EYE Strategy in Africa is to strengthen surveillance and laboratory capacities at regional and national levels. It is expected that by 2026, three WHO regional reference laboratories and two WHO collaborating centers will be fully functional in the region.

Despite the gains of a strong surveillance and laboratory network, there are some challenges inherent to this process (See Table 1).
Table 1: Challenges in current surveillance and diagnostics for Yellow Fever disease.

| Clinical presentation | • Asymptomatic forms: 50%-85% of all cases of disease  
| | • Jaundice is an inconstant and late sign  
| | • Under-reporting is a major concern  
| | • True number of cases is estimated to be 10 to 25 times what is reported  
| Case definition for suspected cases | • Sensitive, but not very specific  
| | • <2% of suspected cases are positively confirmed by reference testing  
| | • Confirmation algorithm is costly and might discourage testing  
| Integrated disease surveillance and response | • Reporting of aggregated data should compute incidence of suspect YF in quasi real-time  
| | • Community-based surveillance is not promoted in most settings  
| | • Surveillance and testing capacities lack strong integration with other systems  
| | • Estimated burden of the disease and incidence trends at country level are missing or inaccurate  
| | • Late detection and response  
| First level of diagnostic (ELISA test to detect YF IgM in serum) | • Not specific (negative at the initial phase; possible cross-reactions with other flaviviruses; cannot differentiate IgM response induced by vaccination or remote history of wild-type virus infection)  
| | • No commercial kit, only in-house assays from US-CDC or Institut Pasteur Dakar  
| | • Complicated by frequent challenges with cold chain and long transportation time, and samples arriving to lab in poor condition  
| Lack of National Laboratory capacity for confirmation (PCR/PNRT) | • Specimens to be shipped to the Regional YF reference laboratory  
| | • Considerable delays on the final diagnostics decision  
| Current laboratory external quality control, quality assurance scheme | • Accreditation issues  
| | • Diagnostic tests require in-house protocols to be developed, standardization and validation difficult  
| Data management | • Errors or lost information when linking data sets (case detail, investigations, and laboratory results are compartmentalized)  
| | • Database not linked to each other between different lab networks  

The challenges identified above can, however, be mitigated with an efficient surveillance strategy. A sentinel surveillance approach is the most practical and efficient choice, limiting pressure on resources while achieving adequate capacity. Through this strategy, a systematical data collection should be in place across countries performing laboratory analysis. Some performance indicators for an adequate surveillance system are:

• Completeness and timeless of reporting  
• Percentage of case investigated within 48 hours of notification  
• Percentage of all suspected cases for which specimens were collected  
• Percentage of samples sent to the laboratory within 3 days of investigation  
• For IgM test: laboratory results reported less than 7 days after receipt of blood specimens  
• For virus detection: laboratory results reported less than 21 days after the receipt of acute blood specimen
PMVCs should target at-risk populations from 9 months to 60 years old. Specific efforts are needed to reach vulnerable populations, such as migrants, displaced people, children, homeless people. A strong political commitment is needed at all levels as PMVCs require intense use of resource, and coordination among partners. Operational costs for the campaigns average 0.65 USD per dose delivered.

**Figure 6:** Combined YF vaccination strategies provide optimal, sustained population immunity when properly implemented
In countries with large target populations, national PMVCs will be mounted in multiple phases of subnational increments, over several years. For this reason, countries will have to prioritize their interventions.

Following the prioritization exercise, countries are required to plan the implementation of the PMVCs. The planning phase before the campaigns should be as follows:

1. **Macroplanning:** developed 15 to 9 months before the start of the campaign.
   It should consider lessons learned and include: situation analysis, target population, estimated budget, and national subcommittees. High political endorsement is required.

2. **Microplanning:** developed 9 to 6 months before the campaign.
   It includes: equipment; resources; vaccination teams; waste management; community and social mobilization; and technical requirements (e.g. cold chain capacity, personnel and logistics, and trainings).

3. **Pre-Implementation:** developed 1 to 6 months before the campaign.
   It should include: Adverse Events Following Immunization (AEFI) monitoring; completion of waste management plans and social mobilization campaign (awareness and training).

4. **Campaign implementation**
   At this phase, efficient operation and communication is essential. Vaccination posts should be operating with supervision and monitoring. A strong monitoring and evaluation mechanism is required to:
   - Implement post-campaign independent monitoring,
   - Evaluate immunization coverage and monitor quality,
   - Develop reports and disseminate results.

---

*A Global Strategy to Eliminate Yellow Fever Epidemics 2017 – 2026. Pg. 16, WHO, 2017*
As detailed above, an important component of the immunization plan is waste management. The steps below can be followed to develop a waste immunization plan that avoids negative health impacts on health workers and the general community:

Table 2: Steps to develop a waste immunization plan avoiding negative health impacts on health workers and the general community

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Assess current situation and estimate the needs</th>
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<tbody>
<tr>
<td></td>
<td>Estimate quantities of waste to be generated</td>
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<tr>
<td></td>
<td>Assess current practices, review current status and location of existing systems</td>
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<tr>
<td></td>
<td>Evaluate additional material, financial and human resource needs</td>
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<table>
<thead>
<tr>
<th>Step 2</th>
<th>Define strategy for waste management</th>
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<tr>
<td></td>
<td>Determine treatment disposal and transportation options, check national regulation</td>
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<tr>
<td></td>
<td>Outline strategy submission to local/national authorities</td>
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<thead>
<tr>
<th>Step 3</th>
<th>Allocate resources and provide material</th>
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<tr>
<td></td>
<td>Allocate financial and human resources according to the strategy</td>
</tr>
<tr>
<td></td>
<td>Supply safety boxes, leak-proof containers, personal equipment for waste handling/ treatment</td>
</tr>
<tr>
<td></td>
<td>Build/rehabilitate infrastructures and supply equipment for waste treatment and disposal</td>
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<thead>
<tr>
<th>Step 4</th>
<th>Raise awareness and assign responsibilities</th>
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<tbody>
<tr>
<td></td>
<td>Establish key contact with health authority representatives</td>
</tr>
<tr>
<td></td>
<td>Briefing to local authorities, give instruction of mobile team leaders</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 5</th>
<th>Set-up a monitoring system</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Track sharps along the waste stream until final disposal,</td>
</tr>
<tr>
<td></td>
<td>Follow-up of stock position for vaccines, syringes and safety boxes and disposal</td>
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</tbody>
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<thead>
<tr>
<th>Step 6 (during the campaign)</th>
<th>Ensure supervision during the campaign</th>
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<tbody>
<tr>
<td></td>
<td>Routine monitoring: campaign performance, waste management, registering procedures</td>
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<table>
<thead>
<tr>
<th>Step 7 (after the campaign)</th>
<th>Carry out final evaluation</th>
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<tr>
<td></td>
<td>Evaluate sustainability of the strategy used, write evaluation report</td>
</tr>
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</table>
Routine Immunization (RI) is a sustainable prevention tool and should be integral to YF control strategies in all high risk countries. Low vaccine coverage in RI represent a potential threat of epidemics.

The vaccine can be co-administrated on the same day with the measles vaccine in two different injection sites. For RI as well, special attention must be given to vulnerable groups and marginalized populations to ensure they are vaccinated.

**Challenges to sustain high quality RI programmes include:**
- Vaccine supply;
- Regional and country buy-in;
- Implementation issues;
  - Vaccine management
  - Overly rigid vaccination practices (e.g. not giving the vaccine after 11 months, unwillingness to open a 10 or 20 dose vial for one child only, etc.)
- Global emergency stockpile.

**To tackle these challenges, potential approaches are recommended:**
- Ensure reliable vaccine stock and supplied health facilities (stock management);
- Ensure political support (policy to vaccinate every child);
- Improve awareness of health workers (importance of childhood YF vaccination, linkage prevention of measles and YF);
- Community efforts, social mobilization;
- Define clear targets and indicators, to monitor vaccination coverage at district level (coverage below 80% should trigger intervention).
To monitor YF RI performance is recommended to:

a) use electronic tools for district data monitoring;

b) use home-based vaccination records by:
   - tracking and documenting immunization services (and additional health interventions received by individuals)
   - reinforcing public health monitoring and reporting
   - improving caregivers awareness and adherence
   - strengthening communication between health workers and care givers.

c) develop performance indicators, including:
   - number of children vaccinated
   - proportion of districts with coverage level greater than 80%
   - number of vaccine stock out
   - difference between YF vaccination, DPT3, and measles vaccination coverage (WUENIC)

In case pockets of under-vaccinated people are identified, **catch up campaigns** should be implemented, targeting age-specific vaccination gaps or geographical areas where there is low routine vaccination coverage, and where there is potential dilution of the effect of PMVCs due to population movements. Importantly, catch-up campaigns are not substitutes to a well-functioning RI system. They require intensive use of resources, surveys to determine target areas, and same coordination efforts and fixed costs as large-scale PMVCs.
Session 6: Country planning & solutions to overcome implementation bottlenecks

Based on epidemiological risks, vaccine availability and country readiness, a timeline for PMVCs and RI was established. It is important to highlight that vaccination activities are on target compared to what was planned when the strategy was developed and endorsed by the Gavi Board.

Figure 7: Main timelines for mass campaigns and Routine Immunization in Africa: 2018 – 2020

<table>
<thead>
<tr>
<th>Country</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
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<tbody>
<tr>
<td>Mass campaigns</td>
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<tr>
<td>Nigeria</td>
<td>21 Mds</td>
<td>26 Mds</td>
<td>26 Mds</td>
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<td>Ghana</td>
<td>6.1 Mds</td>
<td>6.3 Mds</td>
<td>13.1 Mds</td>
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<td>Sudan</td>
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<td>12.2 Mds</td>
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<td>17 Mds</td>
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<td>DR Congo</td>
<td>15.4 Mds</td>
<td>20 Mds</td>
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<td>Uganda</td>
<td>17 Mds</td>
<td>20 Mds</td>
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<td>South Sudan</td>
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* Doses are expressed as millions of doses (Mds) and indicate estimated country demand for yellow fever vaccine, and may increase. For Routine requirements, doses indicated are total per year to reach all eligible children at full coverage (100%). Implementation is graduated; year 1 anticipated to be 50%, increasing to 80% in year 2, and 100% in year 3.

To make sure immunization plans based on the timeline can be effectively carried out, country representative identified bottlenecks and potential solutions to the implementation of the EYE Strategy:
### Laboratory and Surveillance

**Main bottlenecks**
- Delay between detection and confirmation
- Samples collection, storage and transportation to the reference laboratories
- Financial sustainability
- Reagents supply
- Staff capacity and capability
- Accreditation and external quality evaluation
- Disconnect between epi and lab data

**Potential solutions**
- Network of laboratories at national and regional levels
- Updated SOPs for flow of samples and information
- Reagents and equipment are readily available
  - Training
  - Supervision of lab. staff
  - Role of regional reference laboratories
- Unique ID number to link epi and lab data

### Preventive mass campaigns

**Main bottlenecks**
- Planning and micro-planning ahead
- Suboptimal availability of YF vaccines
- Community awareness and engagement
- Poor campaigns supervision
  - AEFI monitoring
  - Waste management plans
- Logistics for vaccine distribution
  - Storage (airports, national cold store)
  - Cold chain management, specifically at peripheral level
  - Reaching hard-to-reach areas and communities
    + Access
    + Security
    + Displaced populations
    + Marginalized sections of society
- Hard-to-reach populations
- Difficulties to keep records
- Co-financing
- Competing priorities and other vaccine introduction plans

**Potential solutions**
- Define tentative calendar and communicate about it to the EYE Secretariat
- Coordination at national and regional levels
  - Government agencies, partners
- Request technical support as needed
  - Awareness of networks of partners and mechanisms
  - Awareness of timelines (e.g., Gavi support)
- Training and independent supervision
- Integrate and coordinate with existing efforts
  - Polio
  - Measles
Next steps

- **Countries and partners engagement**
  - Individual teleconferences with countries to maintain meeting's recommendations.
  - In June 2018, organize a face to face meeting with priority countries who did not participate to the kick-off in Abuja, Nigeria (Sudan, Ghana, Chad, Equ. Guinea). In case in-person meetings are not possible, teleconferences will be scheduled.
  - Next two-day multi-country meeting for Africa yet to be scheduled. This meeting will be an opportunity for countries to report their progress and challenges. Additionally, the work plans will be tailored, as needed.
  - Next EYE partners meeting to be held from 11-13 September 2018 (tentative).

- **Work plans**
  - Bilateral and group consultations to support countries to finalize their work plans by 01 May 2018.
  - Consolidation of country work plans by AFRO by 31 May 2018.
  - Development of AFRO regional work plan by 01 July 2018. This plan will be incorporated to the EYE global work plan for partners' information and coordination.
Annexes
# Annex I:
List of participants

<table>
<thead>
<tr>
<th>Country &amp; WHO CO participants</th>
<th>Jean Tenaguem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baldina de Sousa Teixeira Ventura Felix</td>
<td>Consultant IVE</td>
</tr>
<tr>
<td>Angola / MoH</td>
<td>Gabon / WHO</td>
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<tr>
<td>Lambert Kitembo</td>
<td>Agostinho M’barco N’Dumba</td>
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<tr>
<td>Epidemiology and Disease control Director general</td>
<td>Public Health Director</td>
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<tr>
<td>Congo / MoH</td>
<td>Guinea Bissau / MoH</td>
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<tr>
<td>Alexis Mourou Mouyoka</td>
<td>Mario Gomes Tamy</td>
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<tr>
<td>EPI Director</td>
<td>EPI Manager</td>
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<td>Congo / MoH</td>
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<td>Prosper Motikabeka</td>
<td>Sidu Biai</td>
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<tr>
<td>Surveillance Officer</td>
<td>Guinea Bissau / WHO</td>
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<td>Edouard Ndinga</td>
<td>Mariama Abdou</td>
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<td>EPI Advisor</td>
<td>Health Promotion</td>
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<td>Niger / MoH</td>
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<td>Feyesa Regasa Geleta</td>
<td>Souley Rabi Maitournam</td>
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<tr>
<td>Director from Ethiopia Public Health Institute, representing the MCH Director and EPI Manager</td>
<td>EPI Manager</td>
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<td>Ethiopia / MoH</td>
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<td>Zewdu Assefa Edea</td>
<td>Aichatou Mahaman</td>
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<td>Abay Hagos Gebrekidan</td>
<td>Chikwe Ihekweazu</td>
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<tr>
<td>WHO Routine Immunization Officer</td>
<td>CEO</td>
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<td>Ethiopia / WHO</td>
<td>Nigeria / NCDC</td>
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<tr>
<td>Margarite Sandra Akendengue</td>
<td>Olumbunmi Ojo</td>
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<tr>
<td>Epidemiologist</td>
<td>Surveillance and Epidemiology department Director</td>
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<td>Gabon / MoH</td>
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<td>Paulin Mbombe Mbagou</td>
<td>Mwachukwu William</td>
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<td>Obi Emelife</td>
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<td>Chief Medical Officer/Head Non Polio SIAs</td>
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<td>Nigeria / NPHCDA</td>
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</tbody>
</table>
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Viviane Bianco  
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Consultant  
WHO/HQ

Olivier Ronveaux  
Meningitis Technical officer  
WHO/HQ

Tran Minh Nhu Nguyen  
WHE Technical Officer  
WHO/EMRO
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US Centers for Disease Control (US CDC)

Yodit Sahlemariam
UNICEF PD

Tina Lorenson
Bill & Melinda Gates Foundation (BMGF)

Mercy Ahun
Bill & Melinda Gates Foundation (BMGF)

Sédjro Muriel Onesime Catraye
WAHO
# Annex II: Meeting agenda

## DAY 1 – Tuesday, 10 April: Regional launch of the EYE strategy

### Introduction

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Player(s)</th>
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<tbody>
<tr>
<td>8:15 – 8:45</td>
<td>Registration of participants – Reiz Continental</td>
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<tr>
<td>8:45 – 9:00</td>
<td>Meeting objectives, expected results &amp; work methodology</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
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### Session I: Yellow fever in Africa

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<tr>
<td>9:00 – 9:15</td>
<td>Epidemiology and trends in YF incidence and epidemic risk</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
</tr>
<tr>
<td>9:15 – 9:45</td>
<td>YF in Nigeria – Addressing ongoing epidemics while setting sights for long term prevention and control</td>
<td>Dr Obi Kizito Emelife</td>
</tr>
<tr>
<td>9:45 – 10:15</td>
<td>YF in Angola – What did the 2016 epidemic change</td>
<td>Dr Balbina de Sousa Teixeira Ventura Felix</td>
</tr>
<tr>
<td>10:15 – 10:45</td>
<td>YF in Senegal – From preventive mass campaigns to increased surveillance and routine immunization</td>
<td>Dr Moustapha Barro</td>
</tr>
<tr>
<td>10:45 – 11:00</td>
<td>YF in the Americas (video) – Evolution of YF vaccination programmes and ongoing outbreak control strategies</td>
<td>Dr. Sylvain Aldighieri, Dr John Fitzsimmons &amp; Dr Alba Maria Ropero</td>
</tr>
</tbody>
</table>

### Coffee break

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:00 – 11:30</td>
<td>Coffee break</td>
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### Session II: Implementing the EYE Strategy in Africa

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>11:30 – 12:00</td>
<td>Overview and components of EYE Strategy</td>
<td>Dr. Laurence Cibrelus &amp; Dr. Kaushik Banerjee, EYE Secretariat</td>
</tr>
<tr>
<td>12:00 – 12:30</td>
<td>Regional framework for EYE implementation in Africa: objectives, plans based on regional priorities, timelines etc.</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
</tr>
<tr>
<td>12:30 – 13:00</td>
<td>Special remarks: 1. Director General, WHO 2. Regional Director, WHO 3. Federal Minister of Health Group photo.</td>
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<th>Time</th>
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<tbody>
<tr>
<td>13:00 – 13:30</td>
<td>Press conference: FMoH, RD, and DG</td>
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### Lunch break

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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>13:00 – 14:00</td>
<td>Lunch break</td>
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</tr>
<tr>
<td>14:00 – 14:30</td>
<td>Country planning: Overview of EYE country work plans and instructions for homework</td>
<td>Dr. Diboh Bedikou &amp; Dr. Blaise, Bathandoli AFRO</td>
</tr>
<tr>
<td>14:30 – 15:00</td>
<td>Partners support to EYE implementation: Gavi</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
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### Coffee break

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<tr>
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<tbody>
<tr>
<td>15:00 – 15:30</td>
<td>Coffee break</td>
<td></td>
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<tr>
<td>15:30 – 17:00</td>
<td>Partners support to EYE implementation: UNICEF, CDC, BMGF</td>
<td></td>
</tr>
<tr>
<td>17:00 – 17:15</td>
<td>Summary of Day 1</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
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</tbody>
</table>
### DAY 2 – Wednesday, 11 April: Technical meeting

**Introduction**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Facilitator(s)</th>
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<tbody>
<tr>
<td>9:00 – 9:15</td>
<td>Introduction to group work</td>
<td>Dr. Laurence Cibrelus, WHO</td>
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</table>

**Session III: Surveillance and laboratory**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Facilitator(s)</th>
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<tbody>
<tr>
<td>9:15 – 9:45</td>
<td>EYE objectives and processes to reach them</td>
<td>Diboh Bedikou, AFRO &amp; Blaise Bathandoli on behalf of Mick Mulders</td>
</tr>
<tr>
<td>9:45 – 10:15</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>10:15 – 11:15</td>
<td>Breakout session</td>
<td>AFRO/EYE Secretariat</td>
</tr>
<tr>
<td>11:15 – 11:30</td>
<td>Debriefing to plenary</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
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</table>

**Session IV: Preventive Mass Vaccination Campaigns**

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:30 – 12:00</td>
<td>EYE objectives and processes to reach them</td>
<td>Dr Ado Bwaka, AFRO</td>
</tr>
<tr>
<td>12:00 – 12:45</td>
<td>Breakout session</td>
<td>AFRO/EYE Secretariat</td>
</tr>
<tr>
<td>12:45 – 13:00</td>
<td>Debriefing to plenary</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
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**Session V: Routine Immunization**

<table>
<thead>
<tr>
<th>Time</th>
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<th>Facilitator(s)</th>
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<tbody>
<tr>
<td>14:00 – 14:15</td>
<td>EYE objectives and processes to reach them</td>
<td>Dr Ado Bwaka, AFRO</td>
</tr>
<tr>
<td>14:15 – 14:30</td>
<td>Gavi, the Vaccine Alliance, Yellow Fever programme</td>
<td>Dr. Kaushik Banerjee on behalf GAVI</td>
</tr>
<tr>
<td>14:30 – 15:30</td>
<td>Breakout session</td>
<td>Facilitators: AFRO/EYE Secretariat</td>
</tr>
<tr>
<td>15:30 – 16:00</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>16:00 – 16:15</td>
<td>Debriefing to plenary</td>
<td>Dr Ado Bwaka, AFRO</td>
</tr>
<tr>
<td>16:15 – 16:45</td>
<td>Technical discussion</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
</tr>
<tr>
<td>16:45 – 17:00</td>
<td>Summary of Day 2</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
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</tbody>
</table>

**Session VI: Country planning**

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<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Facilitator(s)</th>
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<tbody>
<tr>
<td>9:00 – 14:15</td>
<td>Country planning (including coffee &amp; lunch breaks)</td>
<td>AFRO/EYE Secretariat</td>
</tr>
<tr>
<td>14:15 – 14:30</td>
<td>Coffee break</td>
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</tr>
<tr>
<td>14:30 – 15:30</td>
<td>Countries plan presentation</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
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**Session VII: Summary and next steps**

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<tr>
<th>Time</th>
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<th>Facilitator(s)</th>
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<tbody>
<tr>
<td>15:30 – 16:00</td>
<td>Summary of key messages and propositions</td>
<td>Dr Ado Bwaka, AFRO</td>
</tr>
<tr>
<td>16:00 – 16:15</td>
<td>Next steps for EYE Strategy accelerated implementation</td>
<td>Dr. Djingarey Mamadou, AFRO</td>
</tr>
<tr>
<td>16:15 – 16:30</td>
<td>Closing remarks. Summary report &amp; recommendations</td>
<td>Mrs Nwando NCDC on behalf of FMoH</td>
</tr>
<tr>
<td>16:30</td>
<td>Meeting adjourned</td>
<td></td>
</tr>
</tbody>
</table>
Annex III: Concept notes

Background

Yellow fever (YF) is an acute viral disease of humans and other primates, transmitted by *Aedes* species and other mosquito species, and endemic in tropical areas of Africa and Central and South America. YF is preventable by vaccination and vector control. A single dose of vaccine is effective in more than 95% of recipients with protective antibodies appearing 7-10 days after immunization.

After early successes in outbreak prevention and control in the mid-20th century attributable mainly to mass vaccination campaigns, waning population immunity led to a reemergence of outbreaks in West Africa in the early 2000s and to the launch of the Yellow Fever Initiative in 2006. This collaborative initiative between WHO and UNICEF, supported by the Gavi, the Vaccine Alliance and other partners, targeted 47 endemic countries in Africa and 13 in Central and South America. YF vaccine was introduced into routine child immunization programmes in endemic countries, and preventive mass vaccination campaigns (PMVCs) were conducted in at-risk areas. A global YF vaccine stockpile was set up for emergency response, administered by the International Coordinating Group (ICG) on Vaccine Provision. A coordinated action resulted in a steady reduction in the number of YF outbreaks; in 2015 no outbreaks were reported in the African Region.

However, on 21 January 2016 WHO received official notification through the International Health Regulations (IHR 2005) of a YF outbreak in Angola. Angola was hit by an unprecedented YF urban outbreak which spread to neighbouring countries and generated local transmission, including in the Democratic Republic of the Congo's capital Kinshasa. The epidemic created an urgent need for more than 28 million doses of YF vaccines total, which exhausted the existing global vaccine supply. It also diverted public health authorities from tackling other public health issues with an impact on health systems. The EYE Strategy aims at building a global coalition of countries and partners to tackle the increased risk of YF epidemics in a coordinated manner and is an opportunity to demonstrate new ways of managing the complex world of re-emerging infectious diseases.

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7 For a comprehensive list of African and South American vertebrate host species of YF virus (YFV) see Vainio J, Cutts F. Yellow fever. WHO. 1998
8 In South America, Haemagogus mosquitoes are the main vector in the sylvatic cycle.
10 Endemicity here refers to sustained YF virus circulation in a geographic area, demonstrated e.g. by occasional local transmission, not necessarily to constant presence in the human population, which might be protected by a high vaccine coverage.
12 International Coordinating Group (ICG) on vaccine provision for yellow fever (http://www.who.int/csr/disease/icg/yellow-fever/en/)
The EYE Strategy targets the countries and regions that are considered most vulnerable to YF outbreaks. The classification of countries’ risk was revised to account for criteria associated with the changing epidemiology of the disease such as environmental factors, population density and vector prevalence. A total of 40 countries (27 countries in Africa and 13 countries in the Americas)¹³ are considered to be at highest risk for YF. In these countries, large scale access to YF vaccines is critical to establish and maintain high levels of immunity among adult and childhood populations. In Africa, 5 countries still need to introduce the vaccine into their routine immunization schedules and 13 countries should complete national preventive mass vaccination campaigns. All countries at risk for YF in the Americas have introduced the vaccine into routine vaccination programmes, but 11 of them should plan catch-up campaigns targeting unprotected pockets of their populations.

Rapid containment of outbreaks is essential to ensure they do not amplify into devastating epidemics. Reactive vaccination programmes should be part of the outbreak response as well as surveillance strengthening to enhance early detection of cases, vector control and community mobilization. That will require ensuring current laboratory capacity is sufficient and building on existing surveillance networks and extending the currently limited laboratory diagnostic in-country options where necessary.

Vector control across-sectors, including ministries of health, sanitation, environment, education will be critical for ensuring long-term disease control. A revolving mechanism is in place to give countries facing emergency needs for YF vaccine access to the internationally managed stockpile. Over the coming decade, vaccine manufacturers are expected to be able to meet the global demand of 1.38 billion doses needed to eliminate the risk of YF epidemics. This will require maximizing their production, particularly in the first 5 years.

The success of the EYE Strategy will be highly dependent on the engagement of countries and global actors to ensure:

1. availability of accessible, affordable vaccines procured in a sustained vaccine market, and mechanisms to cope with surges in yellow fever vaccine demand;
2. political commitment at regional and country levels fostered by strong advocacy;
3. robust governance and strong monitoring;
4. synergies with other programmes and sectors; and
5. research to support better tools and informed practices.

The EYE Strategy was scientifically validated by the Strategic Advisory Group of Experts on Immunization (SAGE) in October 2016 and approved by the Gavi Board in December 2016. The strategy will succeed by engaging countries and multidisciplinary partners, and by coordinating efforts well. No country or institution can tackle the global issue of YF epidemics alone.

The process of implementing EYE Strategy is driven by a high-level technical meeting.

The EYE Kick-off meeting will be held in Abuja from 10–12 April, 2018, under the theme: “No more Yellow fever Epidemics in Africa region by 2026”.

The meeting will involve the participation of disease prevention and control directors, EPI and epidemiological surveillance officers from 14 YF high risk countries in Africa, prioritized by their need for preventive vaccination drives throughout the EYE Strategy.

**Objectives**

**General objective**
The overall objective of this meeting is to strengthen and sustain countries’ engagement in eliminating YF epidemics and define specific implementation plans following the endorsement of the strategy by Member States at the last AFRO RC meeting.

**Specific objectives**

(i) To provide context for increasing urgency around improving coverage of YF vaccine, including changing epidemiology, low herd immunity and increased population movements

(ii) To sensitize participants on the technical and operational aspects of EYE Strategy (including governance structure and implementation plans), including progress to date, challenges and lessons learned

(iii) To provide guidance and support to countries for defining a plan of action for deriving the implementation (and monitoring and evaluation) of the EYE Strategy.

(iv) To define a plan and timeline for conducting situational analysis towards a sustainable routine immunization strategy, and maintaining high YF immunization coverage in each of the targeted countries

(v) To sensitize stakeholder involved in the implementation of the EYE Strategy in the at risk countries, including partner commitments for harmonized support.

**Expected outcomes**

- Participants have a better understanding and shared vision of the EYE Strategy, including improved understanding of the resources available (and processes for leveraging them.
- Countries have received guidance for the development of a national plan for the implementation of EYE Strategy, to guide vaccination campaigns, improving RI and identifying gaps in surveillance and laboratory capacities.
- Commitment from the stakeholders involved in the implementation of the EYE Strategy in at-risk countries.
- The decisions and recommendations outlined in the Communiqué of EYE Strategy Kick off Meeting are endorsed by the countries.
Method of work

The meeting will entail plenary sessions, round tables, and group work sessions which will focus on the following themes:

- Introduction of the EYE Strategy, situational analysis of YF (with a focus on the African region) and discussion of the strategy’s implementation
- Presentations and dissemination of information/technical resources;
- Plenary sessions;
- Group discussions
- Workshop
- Daily media communication presentations to the community

Facilitators

- WHO- AFRO/headquarters

Languages

- French, English (with simultaneous translation)

Participants

The meeting will involve:

- EYE high risk countries, with planned preventive vaccination campaigns (14), directors of disease prevention and control, EPI and epidemiological surveillance officers.
- Regional advisors (AFRO + EMRO), EPI, WHE, FRH, ISTs, CDS
- Other partners, Africa CDC, WAHO, Health organization of central Africa
- Donors : GAVI, DFID*, BMGF
- Media: RFI, BBC, AFRICA N°1, CNN

* excused

Administrative arrangements

The following administrative arrangements will be undertaken:

- Approval for the activity by AFRO Regional Director;
- Invitation of FRH/IVD
- Information to WRs from host country;
- Information to MoH from host country;
- Invitation of MoH of at high risk countries;
- Invitation of stakeholders;
- Invitation of other participants
- Prepare a checklist and conduction of TC as preparations for the meeting.
**Budget**

The total cost estimated at US$ 140,000 (as in the plan)

**Reference documents**

- *A global strategy to Eliminate Yellow fever Epidemics (EYE), (2017–2026)*
- *International Health Regulations (2005) (IHR)*
For further information
www.who.int/csr/disease/yellowfev/eye-strategy/en/

World Health Organization
20 Avenue Appia
1211 Geneva 27 - Switzerland