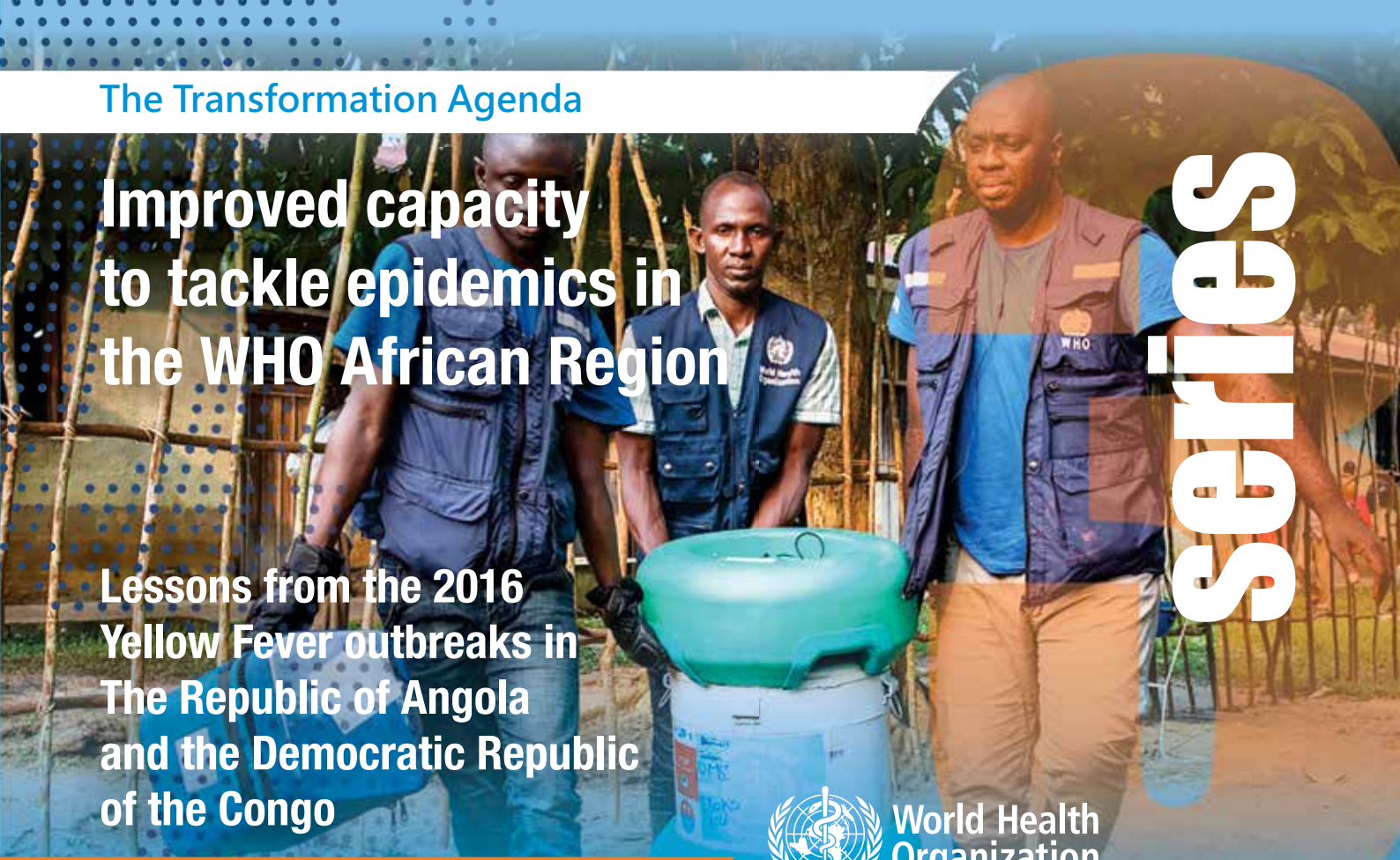
The Transformation Agenda

Improved capacity to tackle epidemics in the WHO African Region



Lessons from the 2016 Yellow Fever outbreaks in The Republic of Angola and the Democratic Republic of the Congo

series

May 2019

World Health Organization
REGIONAL OFFICE FOR Africa

The Transformation Agenda Series 3: Improved Capacity to Tackle Epidemics in the WHO African Region – Lessons from the 2016 Yellow Fever in the Republic of Angola and the Democratic Republic of the Congo

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CONTENTS

FOREWORD

Dear Reader and Stakeholder,

"The Transformation Agenda of the World Health Organization Secretariat in the African Region, 2015–2020", hereinafter referred to as the Transformation Agenda, was initiated as a bold and ambitious agenda to engender a regional health organization that is foresighted, proactive, responsive, results-driven, transparent, accountable, appropriately resourced and equipped to deliver on its mandate. This means an organization that meets the needs and expectations of its stakeholders – "the WHO that the staff and stakeholders want" – including being responsive and effective in strengthening national health systems; coordinating disease prevention and control activities, as well as outbreak preparedness and response; and launching supranational actions in support of global health security.

The first year of implementation of the Transformation Agenda, 2015, coincided with the planning processes for the preparation of the WHO Programme Budget 2016–2017. It also saw the adoption of the 17 Sustainable Development Goals (SDGs) and 169 targets to guide global development over the next 15 years to 2030, with Goal 3 aiming to *"ensure healthy lives and promote well-being for all at all ages"*. These afforded the WHO Secretariat in the African Region the opportunity to institutionalize the Transformation Agenda by developing *The Africa Health Transformation Programme, 2015–2020: a Vision for Universal Health Coverage* which serves as the strategic framework for guiding WHO's contribution to the sustainable development platform in Africa. Its goal is to ensure universal access to a package of essential health services in all Member States of the Region and thus achieve universal health coverage (UHC) with minimal financial, geographic and social obstacles.

We are proud of the several achievements made in implementing the Transformation Agenda. In collaboration with our Member States, development partners and donors, progress has been achieved and change effected in three main areas. As regards health security, the increased regional and country capacity to promptly detect and effectively respond to public health threats has led to rapid control of most of the outbreaks that have occurred. The efforts made to ensure well-functioning health systems in which all people receive quality and equitable health services without financial and other barriers, are leading to improved access to cost-effective health interventions and improved health outcomes in Member States.

In addition, the efforts made to ensure that the Secretariat undergoes cultural, programmatic and organizational changes in order to deliver on its mandate have led to improved delivery and an emerging organizational culture change, including openly addressing harassment and creating a respectful work environment. We are already seeing fundamental shifts in our ways of working, thinking and engaging with others as well as increased accountability, effectiveness and transparency; and we tangible results in countries.

This publication series titled “The Transformation Agenda Series” seeks to share with you some of the key achievements recorded in specific areas in implementing the Transformation Agenda.

“The Transformation Agenda Series” comprises the following six booklets:

- **The Transformation Agenda Series 1:** Enhancing the Country Focus Approach for Greater Health Impact;
- **The Transformation Agenda Series 2:** Strengthening Partnerships towards Universal Health Coverage;

- **The Transformation Agenda Series 3**: Improved Capacity to Tackle Epidemics – Lessons from the 2016 Yellow Fever Outbreaks in the Republic of Angola and the Democratic Republic of the Congo;
- **The Transformation Agenda Series 4:** Sustained Progress towards Polio Eradication in the WHO African Region;
- **The Transformation Agenda Series 5:** Promoting Efficiency, Accountability and Value-for-money- the Story of the Managerial Key Performance Indicators; and
- **The Transformation Agenda Series 6:** Moving towards a Stronger Focus on Quality and Results – the Story of the Programmatic Key Performance Indicators.

As we celebrate the gains we have made so far, we express our gratitude to all our stakeholders – Member States, Development Partners, Donors, Foundations and others – for walking the talk with us. These gains need to be consolidated, sustained and indeed stepped up for the remainder of 2019 and beyond.

I strongly recommend these booklets to you all. Electronic copies of these booklets may be accessed on the website of the World Health Regional Office for Africa at www.afro.who.int.
It is our expectation that the achievements and successes highlighted in the Transformation Agenda Series will spur us all to continuously strive towards ensuring healthy lives and promoting well-being for all our people by achieving universal health coverage, addressing health emergencies, and promoting healthier populations.

Dr Matshidiso Moeti
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May 2019

1 WHO Regional Office for Africa (2018). The Work of WHO in the African Region - Report of the Regional Director: 2017-2018. Brazzaville. (https://apps.who.int/iris/bitstream/handle/10665/273743/AFR-RC68-2-eng.pdf, accessed 25 February 2019).

2 WHO Regional Office for Africa (2016). Mapping risks and the distribution of epidemics in the WHO African region, a technical report for the Regional Office for Africa. WHO: Brazzaville. (https://apps.who.int/iris/handle/10665/206560, accessed 20 February 2019).

3 Jones KE, Patel NG, Levy MA et al. (2008). Global trends in emerging infectious diseases. Nature, 451: 990–993. doi:10.1038/nature06536.

4 Talisuna TO, Yahaya AA, Rajatonirina SC et al. Joint External Evaluation of the International Health Regulations (2005) capacities: Current status and lessons learnt in Africa (accepted for publication in BMJ).

1. BACKGROUND

There is increasing recognition of the threat posed by epidemics to global health security and to people's livelihoods, beyond their impact on human health. Every one of the 47 countries within the World Health Organization's (WHO) African Region is at risk of health security threats.[1] Emerging and re-emerging threats with pandemic potential continue to challenge fragile health systems on the continent, exacting an enormous human and economic toll and resulting in unacceptably high morbidity, mortality, disability and socioeconomic losses.

Every year the Region records more public health emergencies than what is recorded in other WHO regions. A recent evaluation of temporal trends indicates that the risk of emerging infectious diseases has risen.[2 3] Indeed, an acute public health event is reported every four days, equating to more than 150 acute public health events annually.[4] More than 80% of the public health emergencies observed in the WHO African Region are due to infectious diseases, of which approximately 75% originate from the human-animal-environment interface.[5] This is largely attributed to the growth of cross-border and international travel, increasing human population density and the growth of informal settlements (Oppenheim et al., 2019). Other factors include climate change, changes in the way humans and wild animals interact and changes in trade and livestock farming.[6]

Despite the availability of existing frameworks and strategies such as: the International Health Regulations (IHR, 2005); the WHO African Region's integrated disease surveillance and response (IDSR) strategy and the disaster risk management (DRM) strategy, tackling outbreaks and other health emergencies continues to be challenging. The latter is largely due to fragmented implementation of interventions, limited intersectoral collaboration, inadequate resources, weak health systems, and inadequate IHR (2005) core capacities.

5 WHO (2018b). Investing global, investing local: supporting value for money towards the health SDGs. (July 2018). WHO Department of Health Systems Governance and Financing. Geneva. (https://www.who.int/docs/default-source/investment-case/value-for-money.pdf?sfvrsn=16e9889b_8, accessed 6 March 2019).

6 McMichael AJ (2004). Environmental and social influences on emerging infectious diseases: past, present and future. Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 359: 1049–1058. DOI 10.1098/rstb.2004.1480.

To better address the prevailing health priorities and to set a clear direction and course, one of the early actions the Regional Director took, within the first 100 days of assuming office, was to restructure the Regional Office, including establishing the Health Security and Emergencies (HSE) Cluster through merging the then existing Outbreak Response, International Health Regulations, and Disaster and Emergency Response programmes. In 2015, the Regional Director also initiated *"The Transformation Agenda of the WHO Secretariat in the African Region, 2015–2020".*

The Transformation Agenda was developed to bring to life the Regional Director's commitment to the positive change of transforming the Secretariat and to serve as a programme for accelerating implementation of the WHO reform in the WHO African Region. WHO had, since 2012, initiated a comprehensive series of reforms, in order to adjust and adapt its processes to evolving health and development challenges; shifts in national institutions and capacities; variations in the global health and development cooperation environment; and the changing expectations of WHO Member States and other partners to make the Organization fit for purpose and better equipped to address the increasingly complex health challenges of the 21st Century.

The Transformation Agenda seeks to engender a regional health organization that is foresighted, proactive, responsive, results-driven, transparent, accountable, appropriately resourced and equipped to deliver on its mandate; an organization that meets the needs and expectations of its stakeholders. The Agenda is a vision and a strategy for change aimed at facilitating the emergence of *"the WHO that the staff and stakeholders want".* Its objective is to ensure that the WHO Secretariat in the African Region evolves into the primary leader in health development in Africa and the reliable and effective protector of Africa's health stock.

In 2015, WHO, learning from the 2014 West Africa Ebola virus disease epidemic and other major public health emergencies, undertook major reforms to better address global

health security by establishing the WHO Health Emergencies Programme (WHE). The WHE's major functions include addressing high threat pathogens and establishing expert networks; monitoring and evaluation of national preparedness capacities, planning and building critical capacities in line with the IHR; event detection and verification, health emergency operations monitoring and data management and analytics; incident management functions, operational partnerships and readiness and operations support and logistics, emergency operations management and administration and external relations and cross cutting human resources management as well as administrative and logistic support for technical programme areas.

With the establishment of a single platform across the three levels of the Organization (Headquarters, Regional Office, and Country Offices) the WHE Programme is designed to bring speed and predictability to WHO's emergency work, using an all-hazards approach, promoting collective action and encompassing preparedness, readiness, response and early recovery activities. The Programme has one clear line of authority, one workforce, one budget, one set of rules and processes and one set of standard performance metrics. It not only complements WHO's technical and normative role but also has new operational capacities and capabilities for its work in outbreaks and humanitarian emergencies.

It was expected that the above developments would result in a WHO that is fit for purpose in addressing global health threats and providing more effective support to countries' outbreak and emergency responses, with better coordination and faster deployment of experts to support outbreaks and emergencies. This was put to the test during the first quarter of 2016 when the Republic of Angola and the Democratic Republic of the Congo experienced outbreaks of yellow fever.

2. THE YELLOW FEVER OUTBREAKS IN ANGOLA AND THE DEMOCRATIC REPUBLIC OF THE CONGO

Background Information on Yellow fever

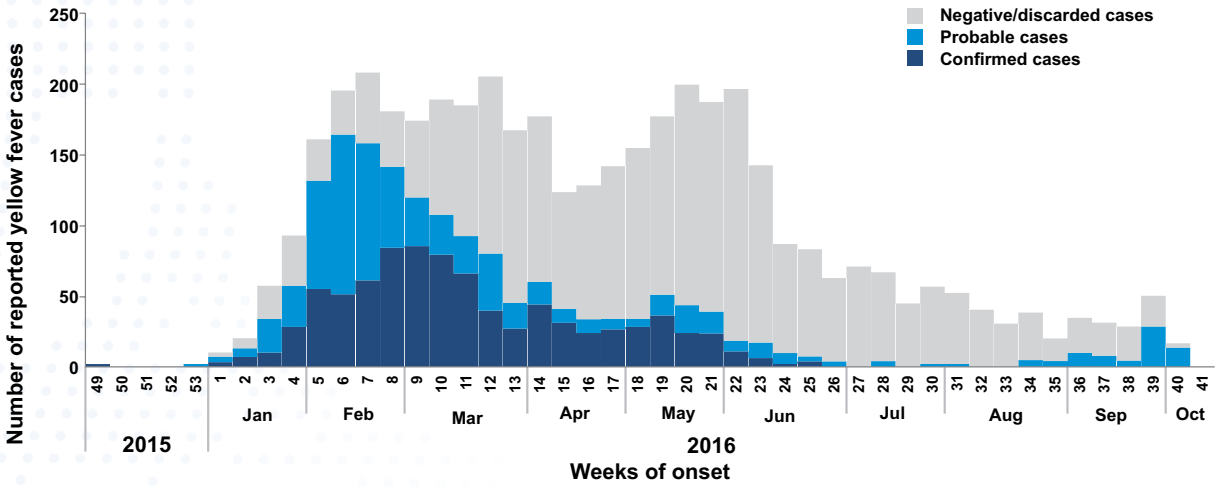
Yellow fever (YF) is caused by a virus *(Flavivirus)* which is transmitted to humans by the bites of infected *aedes* and *haemogogus* mosquitoes. The mosquitoes either breed around houses (domestic), in forests or jungles (wild), or in both habitats (semi-domestic). In the latter half of the 20th century the most frequent YF virus transmission patterns were either sylvatic, where the animal reservoir (non-human primates living in the forest or jungle) infects tree-dwelling mosquitoes such as Haemogogus (in the Americas) and Aedes spp. (in Africa), which in turn bite humans who enter the forest to hunt or work, or intermediate, where various Aedes mosquito species moving between the forest and human settlements are implicated with humans serving as the hosts in the transmission cycle. This cycle can occur in rural villages and small towns, in what is called the "emergence zone" in Africa, but large outbreaks have occurred when infected people from these rural settlements travelled to urban centres. There is also urban transmission caused by the *Aedes aegypti* mosquito, involving human-to-human transmission without needing to go back to the wildlife reservoir. Urban outbreaks are particularly deadly and disruptive and are more likely to cause international spread.

The world has largely forgotten the threat posed by YF, but a little more than a century ago it was a source of terror, decimating the populations of cities, destroying economies and driving political choices. Despite the availability of a vaccine that confers life-long immunity, the majority of countries in the World Health Organization, African Region, are at risk of yellow fever (YF). This is because the national immunization coverage for YF is not yet optimal. To respond to frequent YF outbreaks in West Africa, the YF initiative (YFI) has, since 2005, supported efforts to reduce the burden of this disease. Although surveillance and response capacities have been progressively improved, over 440 million people remain at risk of YF in the African Region. While YF cannot be eradicated, epidemics can be eliminated if population immunity levels are effectively raised through mass vaccination and sustained by routine childhood immunization. The 2016 Yellow Fever outbreak in Angola and the DRC clearly demonstrated that this disease is still a serious health risk within and outside the Region.

Evolution of the 2016 Yellow Fever Outbreaks

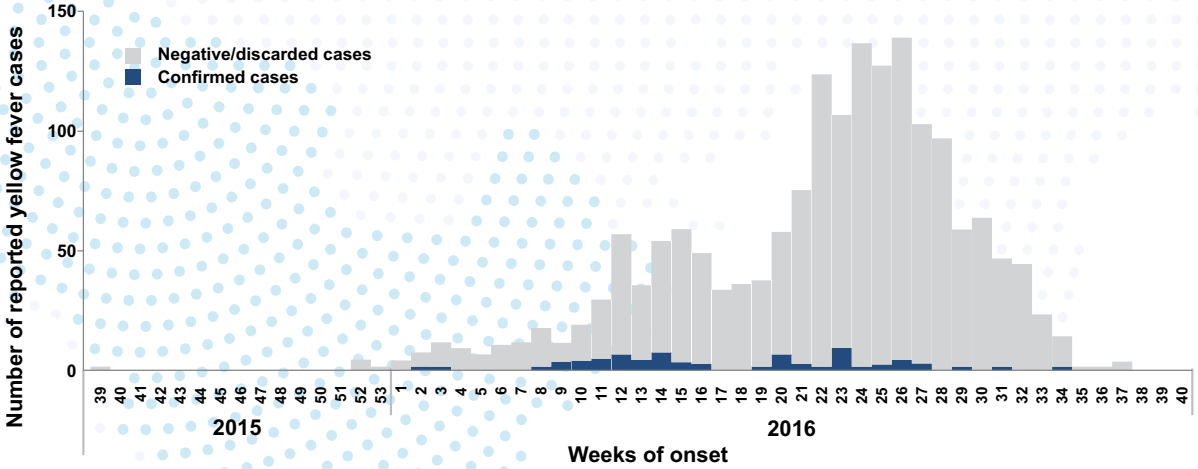
Angola: In January 2016, YF cases were reported in Angola first among the Eritrean community and later in the local population. From the initial hotspot (Viana), the outbreak spread to the entire country and to neighbouring countries including DR Congo where local transmission was established in March 2016. The disease started on 5 December 2015 in Viana. From 5 December 2015 to 13 October 2016, a total of 4306 suspected cases with 376 deaths were reported, with a case fatality rate (CFR) of 8.8% (Figure 1). These numbers included 884 laboratory-confirmed cases with 121 deaths (CFR: 13.7%). By the time the outbreak was declared over, suspected cases had been reported from all 18 provinces; while confirmed cases had been reported from 80 districts in 16 provinces and autochthonous transmission had been reported from 45 districts in 12 provinces. By the end of June 2016, the number of reported cases had decreased considerably.

Fig. 1: National weekly number of confirmed, probable and negative yellow fever cases in Angola, 5 December 2015 to 13 October 2016



Democratic Republic of the Congo: In the Democratic Republic of the Congo, local transmission of yellow fever was documented from March 2016 in Kongo Central and in Kinshasa. This local transmission was established after cross-border spread of the outbreak from Angola. From 1 January to 26 October 2016, a total of 2987 suspected cases were reported from all 26 provinces. Of these, 78 cases were laboratory-confirmed by the national reference laboratory, INRB. Sixteen deaths were reported among the confirmed cases leading to a CFR of 21%. Of the 78 confirmed cases reported from eight provinces, 57 were acquired infections in Angola, 13 were autochthonous, and eight were cases of sylvatic transmission (not related to the outbreak). By the end of June 2016, the number of reported cases had decreased considerably (Figure 2).

Fig. 2: National weekly numbers of confirmed and negative yellow fever cases in the Democratic Republic of the Congo, 21 September 2015 to 26 October 2016*



The Response to the 2016 Yellow Fever Outbreaks and Outcome

To support the quick control of this outbreak, WHO and partners quickly provided managerial, technical, logistical and financial support to the two countries. In line with the emergency response framework (ERF) requirements, the two events were classified as grade 2 and an incident management system (IMS) was put in place within 48 hours of the grading call. These IMS teams coordinated the overall response to the outbreaks in the two countries which led to a sharp decrease of the number of confirmed cases by July 2016.

The main control strategies adopted were enhanced coordination; epidemiological surveillance; laboratory confirmation; vector control interventions; risk communication, social mobilization and community engagement; and case management and preventive/ reactive vaccination campaigns. These strategies were facilitated by the setting up of strong partnerships and effective resource mobilization.

Government ownership and leadership: Both the Governments of Angola and the DRC are commended for promptly declaring the outbreaks as required by the IHR. The government-led response efforts were supported by WHO and partners.

Coordination: The incident management teams were put in place to coordinate support to the government-led response. This coordination included functional links with the government-led Ministry of Health coordination mechanism. Strategic health operation centres, also called emergency operations centres, were established in each of the two countries to coordinate the response efforts. Regular coordination meetings were held as well as regular teleconferences with the regional and global levels.

Surveillance: The YF case definitions and surveillance guidelines were revised in the affected countries and daily notification mechanisms put in place. The capacity of health workers and community volunteers were reinforced for case detection and notification as well as for sample collection and transportation to the reference laboratories. Case classification committees were established for final classification of cases. Technical support was provided through the deployment of skilled international and national epidemiologists in the affected health districts. Situation reports, investigation reports, bulletins and other information products were regularly developed and disseminated.

Laboratory confirmation: Laboratory confirmation plays a big role in the management of outbreaks. The capacity of the national reference laboratories in the two countries was reinforced through deployment of mobile laboratories. In addition, laboratory experts were

deployed to provide support to the national reference laboratory. The stock of reagents was regularly replenished to avoid stock-outs and laboratory results were disseminated daily to allow for quick decision-making.

Vector control interventions: Based on the entomologic indices in the two countries, vector control strategies and actions plans were developed and implemented. The main actions included: insecticide spraying, destruction of mosquito breeding sites and environmental management and sanitation.

Risk communication, social mobilization and community engagement: Communication action plans were developed and implemented in the two countries. Risk communication experts were deployed in the affected countries to manage media communication and to implement interpersonal approaches.

Case management: Guidelines for case management were updated and disseminated. Select hospitals were identified and designated to conduct case management. Mechanisms for transporting patients to the designated hospitals were established. Medicines and other logistics for case management were made available.

Preventive/reactive immunization campaigns: Reactive vaccination – immunization campaigns conducted when an outbreak has been declared in an area – and preventive mass immunization activities (in areas without declared outbreaks) were a key component of the YF outbreak control efforts. Over 20 million and 9.4 million vaccine doses respectively were delivered to Angola and to the DRC. In Angola, reactive/preventive vaccination campaigns with full doses were conducted in 73 districts, with a cumulative number of 16 002 820 people vaccinated, representing 95% of the target population. In the DRC, reactive campaigns with full doses were conducted in 31 health zones while preventive campaigns with fractional doses (a fifth of the usual dose) were conducted in 32 health zones in Kinshasa.

The main outcome of the above measures was a sharp decrease in the trends of the outbreaks, with the outbreak ultimately declared as controlled.

Lessons Learned

The 2016 Angola and DRC outbreak was the largest YF outbreak in recent history. The outbreak was protracted, with wide geographic spread from the initial epicentre in Luanda. The outbreak spread to 123 districts in 18 provinces with 884 laboratory confirmed cases including 121 deaths (13.7% case fatality ratio).[7] The Angola outbreak further spread to the DRC, Kenya and China, demonstrating that YF is a global problem with a serious health security risk that requires new strategic actions.

The YF outbreaks in Angola and DRC raised the urgent need for strengthened surveillance systems with a strong component of rumour monitoring, event-based surveillance, community-based surveillance and early warning mechanism. The outbreaks also highlighted the need for the reinforcement of the IHR in the WHO African Region as well as the need for a strategy to eliminate yellow fever epidemics. The following were the key lessons learned:

The low vaccination coverage needs to be addressed to improve population immunity: The limitation of routine vaccination to children under 11 months of age and the unwillingness of health providers to open a 10 or 20 dose vial for one child remain major challenges. In addition, priority for vaccines supply is always given to outbreak response rather than outbreak prevention. As a result, childhood immunization coverage is too low to maintain sufficient herd immunity. Due to competing vaccine introduction priorities and limited political will, no new country has introduced the YF vaccine into national routine immunization programmes since 2008. Every effort must be made to increase childhood immunization coverage for yellow fever in order to maintain sufficient immunity.

7 WHO, Yellow Fever Outbreak Situation Report, Angola, World Health Organization, December 2016

The limited vaccine supply and the global emergency stockpile will need to be addressed: Between 2013 and 2015, fifteen countries among the 23 that introduced the YF vaccine into their routine immunization programmes reported YF vaccine stock-outs at national level. Consequently, vaccine coverage has stagnated. Prior to the epidemic in Angola and the Democratic Republic of the Congo, only 6 million doses were reserved annually as emergency stockpile to respond to any YF outbreaks. In 2016, the YF emergency stockpile was replenished twice and exceeded 18 million doses to enable the control of the YF outbreaks in Angola, the DRC and Uganda. To achieve effective YF control, demand and supply must match to allow for a timely and effective risk reduction strategy. This will require the sustained engagement of the various stakeholders as well as robust mechanisms for need forecasting and market shaping.

Stronger global governance and coordination through more effective implementation of IHR is required: Yellow fever vaccination requirements are clearly stated in the IHR (2005) but are not being fully implemented.[8] Past efforts to control YF have not been sufficiently aligned and have failed to bring partners together under a common vision and a single coordinated and effective mechanism. Crucial functions such as surveillance, laboratory capacity and case management have often lacked an integrated approach. Despite the existence of national laboratory networks using standardized methods and tools for early detection and confirmation of YF, inadequate laboratory capacity continues to be a challenge. Strong participative governance will be key to the success of the strategy for eliminating YF epidemics as well as appropriate human resources and sustainable financial commitment at all levels.

Special attention needs to be paid to managing YF outbreaks in urban settings: Rapid and unplanned urbanization, high population growth, low population herd immunity, coupled with frequent population movements to and from affected areas create conditions which increase the transmissibility of YF. Responding to outbreaks in large urban settings is challenging and costly due to their rapid amplification and risk of international spread, resulting in high negative public health, economic, social and political impact.

8 WHO, Implementation of International Health Regulations (2005) in the WHO African Region, Luanda, World Health Organization, 2012 (AFR/RC62/12)

Strong political commitment at global, regional and country levels is required: In countries with greatest risk of YF epidemics, it is essential that leadership be committed to preventing and responding to outbreaks. Campaigns and strategies can only work if country ownership is genuine. Where public health strategies, including vaccination, are successful, it is primarily because local people have worked hard to improve the health of their communities and are committed to improving the nation's health.

3. FUTURE PERSPECTIVES

In 2016, Angola was hit by an unprecedented urban yellow fever outbreak which spread to neighbouring countries and generated local transmission, including in Kinshasa, capital of the Democratic Republic of the Congo. The epidemic created an urgent need for more than 28 million doses of yellow fever vaccine in total, which exhausted the existing global vaccine supply. It also diverted the focus of public health authorities from tackling other public health issues – with an impact on health systems. The two linked urban yellow fever (YF) outbreaks – in Luanda (Angola) and Kinshasa (Democratic Republic of the Congo; DRC), with wider international exportation from Angola to other countries, including China – showed that YF poses a serious global threat requiring new strategic thinking.

In response to these outbreaks, a comprehensive global strategy to Eliminate Yellow fever Epidemics (EYE) was developed by WHO and a coalition of partners, including UNCEF and Gavi in 2016. This updated strategy takes into consideration the changing epidemiology of yellow fever, the resurgence of mosquitoes, and the increased risk of urban outbreaks and international spread. This global, comprehensive long-term strategy (2017–2026) targets the most vulnerable countries, while addressing global risk, by building resilience in urban centres, and preparedness in areas with potential for outbreaks and ensuring reliable vaccine supply. Its strategic objectives are: protecting at-risk populations; preventing international spread; and containing outbreaks rapidly.

Key to achieving the EYE goals is strong, country-centred diagnostic capacity to rapidly detect all cases of yellow fever. Africa is a priority for the EYE strategy, with 27 high-risk countries for yellow fever outbreaks. Yellow fever diagnostics are complex and require highly specialized staff and protocols. The disease can be diagnosed using molecular

and serologic methods, but each method has different strengths and weaknesses. Cross-reactivity between yellow fever and other related viruses complicates serologic testing whereas for molecular testing, the results are only reliable in the first 10 days of illness and so do not replace serologic methods.

Currently, there is a limited number of laboratories in Africa that are able to conclusively diagnose yellow fever. However multiple positive developments have occurred in recent years: the number of countries with national laboratories to complete initial serological testing for yellow fever is increasing and there are ongoing efforts to improve reagent availability and sample transport; the network of regional reference laboratories has expanded, and international sample transport has been augmented, and there is extensive work underway to improve availability of yellow fever diagnostic tests for both serology and molecular testing.

WHO reiterates its commitment to strengthening partnerships for building country capacity to diagnose yellow fever in a timely fashion to enable rapid comprehensive risk characterization and outbreak response where necessary. There is need for strong information systems, efficient sample transport, and coordinated laboratory networks to ensure that outbreak signals can be rapidly evaluated as a key supportive function with cross-cutting benefits to other epidemic-prone infectious diseases.

All stakeholders need to rally together and intensify actions to ensure that Member States build diagnostic capacity – for yellow fever and to rule out other illnesses in order to ensure that yellow fever can be detected quickly and that outbreaks can be eliminated.

The WHO Regional Committee for Africa has adopted a Regional Framework to support implementation of the global EYE strategy. With the vision of “A Region free of YF epidemics”, the goal is “To eliminate YF epidemics in the African Region by 2026”. Its objectives are to protect populations in all 35 countries at risk, through preventive

and routine vaccination; to avert the international spread of YF through vaccination of travellers and robust screening and onsite vaccination for people not vaccinated at major points of entry; and to rapidly detect, confirm and contain outbreaks.

Guided by the Framework, the WHO Secretariat in the African Region is supporting Member States to undertake risk assessments and catch-up campaigns; apply the IHR (2005); vaccinate everyone in areas or countries at high risk of YF; improve routine immunization and vaccinate every child; protect high-risk workers; build resilient urban centres and establish readiness plans; sustain vector surveillance and control programmes in cities; strengthen surveillance and diagnosis for early detection; establish regional and subregional networks; and foster rapid outbreak response.

The Secretariat will intensify its work with all countries at risk to ensure that the above interventions are implemented. It is the only way to make the WHO African Region free of future YF epidemics.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