1. Introduction

The aim of this bulletin is to provide information on public health events and emergencies to Member States, public health and health emergency professionals, health development partners and the wider audience on the status of outbreaks and health emergencies in the WHO African region. In this special issue, we are pleased to present a message from the Editor - the Regional Emergency Director (RED), on the highlights of the new WHO emergency programme.

This issue focuses on the protracted Yellow fever outbreak in Angola and the DR Congo, the Ebola Virus Disease (EVD) survivor monitoring, the protracted Cholera outbreaks in several countries, the Chikungunya outbreak in Kenya and an outbreak in South Sudan that is still under investigation.

The protracted urban Yellow Fever (YF) outbreak in Angola has spread to the neighboring DR Congo and cases have been exported to China and Kenya. Another outbreak of Yellow Fever in Uganda, not epidemiologically linked to the Angola or DR Congo outbreaks has been controlled by the Uganda Ministry of Health with the support of the WHO and partners.

Flare-ups of the EVD outbreaks in Guinea and Liberia were declared over. The Ministries of health in Guinea and Liberia and the WHO and partners are monitoring the EVD survivors.

Cholera outbreaks have been the most protracted public health events (PHEs) in the period under review, affecting 13 countries - Tanzania, DR Congo and Kenya being the most affected. The cholera outbreak in Zambia is on the decline. Several clusters of acute watery diarrhea (AWD) due to Cholera have been reported in the Ethiopian Capital Addis Ababa. Other major outbreaks that were reported include: Chikungunya in Kenya; the ongoing Dengue outbreak in the Seychelles; and an outbreak of yet unknown disease in South Sudan that is presently under investigation.

Finally, the ongoing humanitarian crises in the Central African Republic, South Sudan and Burundi continue to be associated with displacement of thousands of people with major health consequences. Moreover, the floods and drought related to El Nino are affecting millions of people in Eastern and Southern Africa, including: Ethiopia, Zimbabwe, Malawi, Lesotho, South Africa, and Zambia. Food insecurity and severe acute malnutrition has significantly increased in the affected countries.
2. Message from the Editor/Director Health Security and Emergencies: The new programme for outbreak and Health Emergencies

I am pleased to inform all our readers that the recent World Health Assembly (WHA) in resolution WHA A69/30 of May 05 2015 endorsed the new WHO Health Emergencies Programme which represents a fundamental development for the Organization, complementing WHO’s traditional technical and normative role with new operational capacities and capabilities for its work in outbreaks and humanitarian emergencies.

The new 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 new Programme is aligned with the principles of a single programme, with one clear line of authority, one workforce, one budget, one set of rules and processes, and one set of standard performance metrics.

All WHO’s work in emergencies will thus be brought into a single programme, with a common structure across headquarters and all regional offices in order to optimize intra-agency coordination, operations and information flow. Relevant functions of the Programme will be replicated at country level as appropriate.

The common structure reflects WHO’s major functions in health emergency risk management as follows:

**Infectious hazards management**: this includes high threat pathogens, expert networks and, at headquarters, the secretariat of the Pandemic Influenza Preparedness Framework;

**Country health emergency preparedness and the International Health Regulations (2005)**: this includes monitoring and evaluation of national preparedness capacities, planning and capacity building for critical capacities and, at headquarters, the secretariat of the International Health Regulations (2005);

**Health emergency information and risk assessments**: this includes event detection and verification, health emergency operations monitoring, and data management and analytics;

**Emergency operations**: this includes incident management functions, operational partnerships and readiness, and operations support and logistics;

Emergency operations management and administration and External relations.

A standing interdepartmental task force at headquarters and regional office levels will enable the programme to harness the broad range of expertise across WHO’s technical programmes and networks, particularly for research and development, policy, capacity building for preparedness, health systems strengthening, and protracted crises planning and programming. These linkages are operationalized through mechanisms such as the WHO blueprint for accelerating research and development in epidemics or health emergency situations.

In view of ongoing outbreaks in the region as indicated in this bulletin, I invite you to urgently access and internalize the WHA resolution which can be accessed at: [http://www.who.int/about/who_reform/emergency-capacities/en/](http://www.who.int/about/who_reform/emergency-capacities/en/) and to support and facilitate the operationalization of the New programme.

Dr Ibrahima Soce-Fall  
Regional Emergency Director (RED), WHO African Region
3. Overview of reported PHEs in WHO African Region

An overview of PHEs due to all hazards that occurred between January - May 2016 is provided in addition to a summary of ongoing PHEs. Close to 50 PHEs were reported to the WHO’s Event Management System (EMS*) of the Regional Office between January and May 2016, all of them due to infectious diseases. Twenty-eight percent (28%) of the PHEs were of zoonotic origin, Cholera was the most frequent, accounting for 27% (Figure1).

*EMS is a WHO web-based application that supports the process of epidemic intelligence detection, verification, risk assessment and monitoring.
4. Yellow Fever in the African Region

4.1 Angola

Yellow fever is a vector-borne viral disease endemic to Africa and Americas and has been a major challenge for public health in Africa despite the availability of a vaccine since the early 1930s. Mass immunisation campaigns have greatly reduced its incidence and until the Angola outbreak, yellow fever was mainly reported in small outbreaks in tropical Africa and the Americas where it is maintained through a sylvatic cycle involving monkeys as a natural reservoir.

The Yellow Fever outbreak in Angola is the largest in recent history and has become protracted. The geographic expansion continues, as well as pockets of continuous transmission in Luanda, despite reactive vaccination campaigns. The outbreak was first reported on the 5th of December 2015. As of June 2016, a total of 3,294 suspected cases had been reported of which 861 were laboratory confirmed cases, including a total of 347 deaths (CFR =10.5%) among all suspected cases and 115 deaths (CFR =13.4%) among the confirmed cases. Laboratory confirmed cases have been reported in all the 18 provinces and in 79 out of 123 districts. Luanda province has the majority of the confirmed cases 489 (56.8%), followed by Huambo 127 (17.7%) and Benguela 111 (12.9%)

Local transmission has been documented in 43 districts in 11 provinces. The majority of the confirmed cases are males aged 15-19 and 20-24 years.

In the week ending 17th June 2016, a total of 156 cases were reported of which 1 case was confirmed as yellow fever by the laboratory, including 2 deaths among the confirmed cases. Cases were reported from 39 districts in 14 provinces. 2 districts reported suspect cases for the first time, namely Camulemba and Bibala. Importantly no new local transmission was documented in the week.

The ICG has agreed to support the provision of the YF vaccine based on the risk of spread of the outbreak, in addition to the presence of local transmission. The ICG has approved 2.3 million additional doses of the YF vaccine for Angola, the vaccine was expected in Angola before the 24 June. The IMS, WHO, UNICEF, UN Resident Coordinator and other partners have agreed on a plan to increase international partners presence at the province level. The MoH is compiling a list of Angolan experts to join the multi-agency province teams. Province deployments will start immediately (before end of June 2016) under MoH and Incident Management System (IMS) coordination.

Figure 2. Geographic distribution of Yellow Fever cases by district
4.2 The DR Congo

As of June 19, 2016, a total of 68 confirmed cases of yellow fever had been notified, with seven (7) indigenous cases. On June 20th 2016, the Minister of health made an official statement declaring the yellow fever outbreak a health emergency in the country. Five new cases of yellow fever were laboratory confirmed between 16 and 20 June 2016. These cases were reported from Kisenso and Masina II health zones in Kinshasa, and Matadi (1 case each) and Muanda (2 case) in Kongo Central province. The investigation of these cases is ongoing. There is continuing daily notification of suspected cases of yellow fever partly due to improved YF surveillance. Between 16-18 June 2016, 43 suspected cases of yellow fever were reported.

The ICG approved an additional 1,083,005 doses of the YF vaccine for the immunization response to Kisenso in the province of Kinshasa and the Kahemba health zones, and Kajii Kisandji in Kwango. It is important to note that to date over 15 million doses of the YF vaccine have been provided to Angola and the DRC and over 60 experts have been deployed in various disciplines to support the response in Angola and DRC. More than double the current staff deployments will be required for the scale up plan.

National, regional and global response strategy and operational plan

A ten days Process Review of the yellow fever response will commence in the DR Congo and Angola on the 4th July 2016. In addition, the WHO and partners formulated a Strategic Response Framework to guide the international response to the yellow fever outbreak in Angola and the Democratic Republic of the Congo. Further, the WHO and partners have developed a joint operational plan whose cost of implementation is estimated to be USD 72,352,864. The operational plan has the following key components:

1. Ending the outbreak in the currently affected countries through pre-emptive vaccination in a 75-100 Km belt spanning the border between Angola and the DR Congo using the full dose strategy to vaccinate between 6-7 Million people.
2. Using a dose sparing strategy with the Bio-Manguinhos vaccine to vaccinate approximately 10 million people in Kinshasa.

It is estimated that the operational costs for implementing the above will be approximately USD 60,000,000.

Other components of the operational plan are:

1. Preventing morbidity and reducing mortality through early case detection and strengthened surveillance, which will require an estimated USD 5.1 million.
2. Preventing international spread through better coordination, reinforcing control and screening at major points of entry (PoEs)-LUANDA, KINSHASA, MATADI, and LUBUMBASHI as well as risk assessment and preparedness in other neighbouring countries which will require an estimated USD 6.9 Million.
3. Prioritizing research which will require USD 0.3 million.

The initial phase of the campaign will begin in the second week of July 2016 focussing on districts where there is high movement of people and intense trade activities, particularly the northern border districts of Angola and targeted border districts in neighbouring countries. In addition, the plan will also target health zones/communes at risk in Kinshasa city in the DR Congo. This is aimed at creating an immune buffer to prevent further international spread.

Challenges

Important gains in vaccination have been achieved with more than 15 million doses of vaccine delivered to Angola and DR Congo. However, there is urgent need to accelerate the conduct of the vaccination campaigns. Secondly, lack of sufficient funds for field operational activities remains a challenge in Angola and DR Congo. Moreover, there are limited stocks of the yellow fever vaccine available. Vaccine manufacturers have pledged to increase vaccine production to replenish the limited emergency stockpile to about 10 million doses by the end of July, 2016. However, it is vital to interrupt transmission now, especially in cross-border areas so as to rapidly bring this outbreak under control and halt further international spread. Consequently, there is a need to adopt a dose sparing strategy that does not offer life long immunity but is likely to protect the population for a year until this outbreak is fully controlled; vaccine stocks are replenished and routine YF immunization scaled up in the countries at risk.
While the mass vaccination activities have reached more than 10 million people in Angola, for example, new cases continue to be reported, indicating that there are pockets of non-vaccinated people. Therefore, robust surveillance and vaccination activities need to be implemented at provincial and district levels to achieve the required vaccination coverage of over 80% needed to create the required herd immunity. Another challenge specific for Angola has been the limited number of experts who are proficient in Portuguese.

Despite these challenges, the WHO is working with partners and the affected country governments to scale up the required human, financial and other logistics resources so that response teams are present in every province or district where cases have been reported or there is high risk. WHO and partners will also continue the resource mobilization efforts as more resources are needed to address these operational challenges.

4.3 Uganda

The outbreak in Uganda was notified on 9 April 2016. As of 8 Jun 2016, a total of 91 cases including 3 deaths had been reported with 7 confirmed cases in Masaka (5), Rukungiri (1) and Kalangala (1)) districts. Sequencing showed a high similarity with the yellow fever outbreak in 2010 in Northern Uganda. Of those tested negative for Yellow fever, 10 turned out to be positive for O’nyong’nyong virus disease.

As part of the response to this outbreak, Uganda quickly intensified its surveillance and a reactive mass vaccination was conducted in the three districts where at least a case of Yellow Fever had been confirmed with a vaccination coverage ranging from 90.6% for Masaka to 96.8% fin Rukungiri district. Remarkably even in the Island district of Kalangala, a vaccination coverage of 93.5% was achieved. Uganda has continued to intensify its surveillance system and no cases have been reported in June 2016. Importantly, preparations are underway to introduce yellow fever vaccine into the routine immunization program.

Challenges: The major challenges that Uganda has faced include: inadequate human resources, limited access especially in Kalangala district which consisted of more than 80 Islands with inadequate means of transportation.

Factors contributing to the early detection and control of the YF outbreak in Uganda: Since 2014, the WHO and partners has been supporting the Uganda MoH to scale up IDSR training to all health facilities in more than 95% of the 112 health districts in the country. This has been facilitated by the introduction of the e-surveillance using mobile phones. The output of this training has been very positive because weekly IDSR reporting increased from 49% in Epi. week 1, in 2015 to 78% in Epi. Week 20, in 2016. The trained health workers were further supported through quarterly support supervision. When the outbreak was first detected, there was rapid deployment of the national rapid response team to support districts immediately after the confirmation of the outbreak. Moreover, there is a functional laboratory hub network system which provides logistical support to transport samples from the health facilities to a central reference laboratory.

News Flash

- 2 suspected cases of Yellow Fever in Sao Tome Principe were ruled out by a WHO investigation team.
- WHO is supporting investigation of suspected cases of Yellow Fever in the republic of Congo.
- Ghana has reported four suspected cases of YF from two regions: three in Brong-Ahafo region and one from Volta region. Investigations are ongoing to determine the vaccination status of the cases and to rule out a link with Angola or DRC outbreak. These are most likely sylvatic cases as these areas are known to be endemo-epidemic for yellow fever.
- In Ethiopia, investigation is ongoing on 22 suspected yellow fever cases, including five deaths reported in two districts of South Omo zone. So far one of the 19 samples was positive for yellow fever at the national laboratory (IgM positive).
- Chad has reported a sylvatic case of yellow fever that had symptom onset back on the 15 January 2016.
5. Ebola virus disease survivors monitoring in West Africa

The Ebola epidemic was first declared over on 29 December 2015 for Guinea, 14 January 2016 for Liberia, 17 March for Sierra Leone. On 29 March 2016, the WHO Director General lifted the Public Health Emergency of International Concern (PHEIC) related to Ebola in West Africa.

The flare-ups occurred in Guinea and Liberia were declared over on 31 May 2016 and 09 June 2016 respectively after 42-days elapsed without any new cases since the last case confirmed to have Ebola virus disease tested negative for the second time. The two countries have now entered a 90 days period of heightened surveillance to ensure that any new cases are detected rapidly before transmission to others.

WHO and partners continue to support Guinea, Liberia and Sierra Leone to follow-up survivors in having access to medical and psychosocial care and screening for persistent virus, as well as counselling and education to help them reintegrate into family and community life, reduce stigma and minimize the risk of Ebola virus transmission.
6. Cholera outbreaks

Between January - May 2016, a total of 29 112 cholera cases including 458 deaths (CFR: 1.6%) were reported from 13 out of 47 Member States. Three countries account for 85% of the cases: DR Congo (37%, with CFR: 2.1%), Tanzania (28%, with CFR: 0.8%), and Kenya (20% with CFR: 1.3%).

Overall, cholera outbreaks increased, probably due to the heavy rains and the effect of El Niño in East and Southern Africa. The distribution of cholera cases and deaths is shown in Figures 3 and 4.

In response to the cholera outbreaks, WHO and partners continue to provide support to the respective Ministries of Health in the areas of coordination, surveillance, laboratory, case management, WASH, and social mobilization. Reactive OCV campaigns have been conducted in South Sudan, Cameroon, Malawi and Tanzania.
7. Other ongoing outbreaks

7.1 Chikungunya in Kenya

On 28 May 2016, the Ministry of Health in Kenya reported to WHO an outbreak of Chikungunya virus disease that started in the 1st week of May 2016. As of 14 June 2016, a total of 1,394 cases with 0 deaths had been reported from the Mandera County. Of the 82 samples collected, 25 were turned out to be positive for Chikungunya virus by KEMRI Arboviral laboratory in Nairobi.

WHO and partners are supporting the country in the areas of coordination, surveillance, case management, Laboratory capacity and vector control.
7.2 Unknown disease in South Sudan

On 3 March 2016, the State Ministry of Health in Aweil received a notification of a suspected outbreak of haemorrhagic fever in Aweil North County. On 4 March 2016, the State rapid response team was dispatched to verify the initial reports. A joint MoH-WHO investigation mission took place from 11-17 March 2016 in the affected area. As part of the overall response to the event, surveillance and laboratory investigation activities have been ongoing. As of 15 June 2016, a total of 52 suspected cases including 10 deaths (mortality rate of 19.2%) were reported from Aweil North and Aweil West Counties in Lol State. Cases have been reported from two payams, Aweil North and Aweil West with the majority 45 (87%) clustered Aweil North (Figure 2). The outbreak probably started on 24 December 2015 and no new death has been reported since 28 February 2016.

The most frequent symptoms included unexplained bleeding (largely epistaxis, and vomiting coffee ground substance), fever, fatigue, headache, and vomiting. The symptoms are not so severe and rapidly resolve with supportive treatment. There is no evidence of person-to-person transmission of the disease, as well as no reported cases among healthcare workers. Over 50% (28/52) of the suspect cases are below 18 years of age with most cases reported in the 5-9-year and 10-19-year age-groups (Figure 7).

A total of 38 blood samples have been obtained from suspect cases and shipped for testing. Test results (PCR, PRNT, ELISA) from WHO CC laboratories in Uganda (UVRI), South Africa (NICD) and Senegal (IPD) were negative for Ebola, Marburg, CCHF, Rift Valley Fever, Yellow Fever, Zika, West Nile, and Arenaviruses; 5 samples tested positive for Onyong-nyong virus by PRNT; 3 samples were IgM positive for Chikungunya; and 1 IgM positive for Dengue at NICD. Microscopy for borrelia was negative. Further field and laboratory testing is ongoing that may confirm the causative agent. A mixed outbreak with Onyong-nyong, Chikungunya, and Dengue as possible agents cannot be excluded; other causes under investigation include bacterial diseases like leptospirosis, relapsing fever, and borreliosis.
With support from WHO, infection prevention and control, supportive case management, surveillance procedures and designation of a separate treatment ward and samples collection and transportation continue to be implemented in the affected health facilities. In order to sensitize communities on haemorrhagic fever, a community meeting was conducted on 14 March 2016. Laboratory supplies have been mobilized by WHO AFRO to support ongoing investigations.

At the national level, the Epidemic Preparedness and Response Committee is providing support and technical backstopping to State and county response teams to facilitate adequate verification, investigation, and management of all newly reported suspect cases. The main challenge is the confirmation of the causative agent to allow reorientation of ongoing control measures. A follow up joint multidisciplinary interagency investigation mission will take place to conduct further investigations of this abnormal clustering of cases and deaths.

Fig 7: Epi-curve of suspected VHF cases by week
8. Discussion

In the discussion for this issue of the outbreak bulletin, we focus on the Yellow Fever outbreak which is threatening regional and global health security. Yellow Fever is endemic in tropical areas of Africa and Central and South America. Thirty four (34) countries in Africa and thirteen (13) in Central and South America are either endemic for, or have regions that are endemic for yellow fever.

On 21 January 2016, WHO received official notification through the International Health Regulations (2005) of a yellow fever outbreak in Angola. The first suspected cases were reported in late December 2015 from Luanda – the country’s capital city and main trade and travel hub, with a population of over 6 million people. The disease, which is transmitted in urban settings by the Aedes aegypti mosquito, spread rapidly in Luanda. From there, cases were exported to the rest of the country. By early May, all 18 of Angola’s provinces had reported suspected cases of yellow fever; 6 provinces had confirmed local mosquito-borne transmission. Cases of yellow fever have also been exported from Angola to China and Kenya and the DR Congo where an outbreak in the Capital city Kinshasa is concerning.

It is critical for all the affected countries to implement all the recommended intervention as stipulated in the Global yellow fever strategy namely: 1) End outbreaks in currently affected countries through vaccination and other public health measures; 2) Prevent morbidity and reduce mortality through early case detection and strengthened case management; 3) Prevent international spread; and 4) Prioritize research to improve access to yellow fever vaccine, and to improve the effectiveness of other prevention and control interventions.

Mass vaccination campaigns are a critical intervention. Since the inception of the outbreak, approximately 18 million doses of the vaccine have been provided to Angola, the DR Congo and Uganda. The challenge is that coverage did not reach 80% in certain districts in Angola, yet high coverage is important to create community immunity. The earlier a mass vaccination campaign begins, the more cases of disease will be prevented. Vaccination has been initiated in the affected countries with varying coverage ranging from 30% to 96% in Angola and Uganda respectively. However, many at risk districts and provinces require urgent vaccination to create a sufficient cordon sanitaire around areas reporting locally transmitted cases.

Due to emerging concerns about the spread northwards through Angola to DRC, and the potential impact this may have on large urban centres, a pre-emptive vaccination campaign will be carried out during July 2016 in two areas that are presently the epicentre of the epidemic namely:
1. A 75-100km belt spanning the border between Angola and DRC using the full dose strategy; and
2. Targeted health zones/communes at risk in Kinshasa city that are neighbouring areas with new clusters of locally transmitted cases, using the fractionating dose strategy.

According to vaccine supply and availability, emerging priorities, it will also be assessed further whether there are communities outside the proposed 100km belt that should be factored into the pre-emptive campaign in order to prevent further spread of the disease. As areas are vaccinated, the coordinated recording of coverage will be documented accurately and shared appropriately to inform ongoing planning.

The unit cost of implementing such a campaign is approximately two US dollars per vaccine administered, which is inclusive of all costs, broken down into approximately one dollar for the vaccine itself and one dollar for the operational costs of vaccine delivery.
9. Conclusion

Achieving a rapid control of any outbreak whether it is Yellow Fever, Cholera or Chikungunya requires coordinated implementation of a broad range of interventions. For yellow fever, these interventions are: surveillance and risk assessment; vaccination; case management; social mobilization and risk communication; and vector control. Coordination of all key partners is very essential to enable the implementation of all the response activities.

The WHO will continue to monitor the trends of yellow fever, and other PHE in the region and urges Member States and Partners to scale up the existing strategies and frameworks such as: the Integrated Disease Surveillance and response (IDSR) strategy; support the establishment and the sustaining of the IHR (2005) core capacities through Joint External Evaluations (JEEs), followed by formulation of all Hazards preparedness plans, and scaling up the implementation of the Disaster Risk Management Strategy. The WHO will continue to support the implementation of preparedness activities in priority and at-risk countries.
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