Contingency Plan for El Nino Related Epidemic Diseases

Ministry of Health
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1. Background

El Niño (EN) refers to the periodic warming of the eastern and central equatorial Pacific Ocean. Over the years, the term "El Niño" has come to be reserved for these exceptionally strong warm intervals that not only disrupt the normal lives of the fishermen and bring heavy rains, but is a global scale phenomena that lead to occurrences of world-wide weather and climate extremes which may cause floods, droughts and other different hazards.

El Niño results from interaction between the surface layers of the ocean and the overlying atmosphere in tropical Pacific. It is the internal dynamics of the coupled ocean-atmosphere system that determine the onset and termination of El Niño events. The physical processes are complicated, but they involve unstable air-sea interaction and planetary scale atmospheric and oceanic waves (ICPAC, 2015)

El Niño events occur irregularly at intervals of 2-7 years, although the average is about once every 3-4 years. Climate change may impact on El Niño by increasing not only the severity and frequency, but also impacting on other time and space characteristics that may have far reaching impacts on a global scale. World Meteorological Organization (WMO) and other global climate centres report that a global climate phenomena known as El Niño has been evolving since late 2014 and is likely to persist to early 2016.

Following the phenomenon, regional and international Climate scientists involved in prediction of seasonal rainfall converged in KENYA, Nairobi at the IGAD Climate Prediction and Applications Center (ICPAC),from 17 -22 August to analyze and deliberate on the historical data of rainfall and temperature from across the ten countries (Burundi, Djibouti, Ethiopia, Kenya, Rwanda, Somalia, South Sudan, Sudan, Tanzania and Uganda). In fact, the regional consensus climate outlook for September to December 2015 rainfall season shows that the rains are likely to be enhanced or reduced over most parts of the Greater Horn of Africa region.

In Rwanda, analysis of historical data revealed that the rains have started in September 1997 and continued until May 1998. After there was no rain from September 1998 to May 1999 and this resulted food insecurity went through the year 2000. The main effects were as follows:

- Damage to housing (landslides, inundation and destruction) resulting to displacement
- Surface and ground water pollution resulting to increased risk of water borne disease
- Damage and losses to crops (no production for some areas and damages on seeds, fertilizers)
- Livestock deaths and disease

- Outbreaks of disease, especially cholera, malaria and Rift Valley Fever
- Damage to infrastructure (classrooms, health facilities, roads, bridges, electrical installations, hydropower plants,
- Water pollution resulting to increased risk of water borne disease
- Food insecurity and famine

1.1. Prediction of the current "EL NINO" effects on health in Rwanda

According to analysis from Rwanda historical rainfall and temperature data for up to 45 years from different stations across the country with sea surface temperatures from global oceans (Indian, Pacific and the Atlantic), the seasonal forecast the next four months is as follows:

- The Eastern Province (Ngoma, Gatsibo, Bugesera, Kirehe, Rwamagana, Kayonza and Nyagatare), Kigali City (Nyarugenge, Kicukiro and Gasabo) are expected to have a near normal rainfall season with tendency to above normal in many places,

- The Western Province (Rusizi, Nyamasheke, Karongi, Rubavu, Nyabihu and Ngororero), Southern Province (Kamonyi, Muhanga, Ruhango, Nyanza, Huye, Gisagara, Nyamagabe and Nyaruguru) and Northern Province (Rulindo, Musanze, Burera, Gicumbi and Gakenke) are expected to have normal to above normal rainfall.

We have to note here that 2.8 millions of Rwandan population is prone to windstorms (heavy rains, wind, and lightning), 3.6 million are located in the areas prone to landslides and 1.6 million are prone to flush floods.

The risk of outbreaks that may be caused by floods especially in northern and western province areas with volcanic soil

In these regions the big floods contribute to merge leaping water and household waste and this can easily cause diseases like cholera. The floods also have important impact on water sources and water quality, and a population without potable water will be exposed to a number of health issues.

The extreme weather conditions especially the low temperatures added to the stressing environment of long rains and lightning will affect the population life especially the vulnerable groups (children under 5, old people, people with reduced mobility and other disabilities). Based on that, it is expected to have

increase of climate change related illness like malaria, lift valley fever and influenza like illness. Additional, outbreaks of water borne diseases in the areas with insufficient water supply like cholera, shigellosis, typhoid fever and non-bloody diarrhea could raised

2. National Health System

The health sector in Rwanda is led by the Ministry of Health (MOH), which supports, coordinates, and regulates all interventions whose primary objective is to improve the health of the population. There are fifteen (15) other government ministries that implement activities that either directly or indirectly impact on health. The health sector is also supported by development partners, faith-based organizations, non-governmental organizations, professional organizations, and a host of regulatory bodies.

At the village level, community health workers (CHWs) are supervised administratively by those in charge of social services and technically by the in-charges of heath centres. CHWs receive a compensation for their work from the Performance Based Financing (PBF) through formally established local cooperatives. There are health posts (HP) at cell level, and health centres (HC) at sector level, which are governed by HP or HC committees, providing oversight on the work of various units within the health centre, its outreach and supervision services and general financial control.

At the district level, there district hospital (DH), pharmacies and community based health insurance and HIV/AIDS committees. All these entities are technically supervised by the director of the district hospital while they administratively report to the deputy mayor in charge of social affairs. The country has five (5) National Referral Hospitals, a network of ambulance services (SAMU), as well as private health facilities.

2.1. Progress on implementation of Integrated Disease Surveillance and Response system

In Rwanda, communicable diseases constitute 90% of all reported medical consultations in health facilities (reference as footnote). Malaria, respiratory tract infections, diarrheal diseases, parasitic infections, and zoonoses are predominant, and hence are considered a public health concern. Non Communicable Diseases are also currently on the rise, though there is little epidemiological data on them available. The country has often faced epidemics, including emerging and re-emerging infectious diseases such as influenza A (H1N1), cholera, epidemic typhus, and meningitis. Other public health

events or disasters with impact on health such as floods and storms, drought and subsequent famine or food scarcity and volcanic events have also occurred.

It is important to note that Rwanda is strategically located in the great lakes region. One of the outcomes is that the country handles heavy traffic through its boarders and the international airport, which serves as a connection between southern Africa, western Africa, East Africa, as well as travelers connecting to other continents, which make trans-birder disease transmission a real threat.

Integrated Disease Surveillance and Response (IDSR) was introduced in 1998 as the method of conducting human surveillance in the WHO AFRO region, which has since been implemented., Additionally, there was adoption of the International Health Regulations (IHR 2005) in 2005. Despite the two strategies, it has been noted that government systems have continued to detect and respond to public health emergencies late due to multiple infrastructural, human resource and technological challenges (Rapid risk assessment of acute public health events, Geneva, WHO, 2012).

In 2006 the Rwanda Biomedical Center was restructured and the Epidemic Surveillance and Response Division (ESR), which is also the National Focal Point for IHR in the country, was created with a particular mandate to spearhead activities aimed at infectious disease prevention and control in the country through routine surveillance. This Division was principally created to improve efficiency in prevention and control of infectious diseases through surveillance and response.

Rwanda embraced IDSR as an early warning system for disease/event detection and reporting in the year 2000. Community based surveillance through community health workers is a strong pillar for event detection at the community level. Lately, an electronic phone based system has been adopted to further improve reporting. Current timeliness and completeness of reporting from peripheral health facilities to the national level are impressive. Since the roll out of eIDSR through the use of phone/internet based TRACnet in 2011, there has been great improvement in reporting rates. IDSR performance indicators are excellent and an electronic system called e-IDSR is operational at all levels in public sector.

National average timeliness of reporting from public health facilities is about 90% while average completeness is about 95%. Approximately 70% of private health facilities also submit weekly surveillance reports. IDSR Technical Guidelines and Standard Case Definitions (SCDs) have been

developed and printed. They are available in hospitals and health facilities. Health Workers have been trained on their use as well.

2.2. Priority diseases for reporting under Integrated Disease Surveillance and Response system

In the IDSR guidelines, there is a list of twenty three (23) diseases or conditions that have been identified as priority diseases in Rwanda. These are reported immediately or weekly from lower health facilities. Additionally, the ministerial instructions on notifiable conditions and diseases mention of conditions that are required for reporting under the International Heath Regulations.

Table 1: List of Priority Diseases

Diseases which are of epidemic potential	**Diseases or conditions targeted for Eradication or Elimination**
1. Cholera 2. Bloody diarrhoea 3. Epidemic typhus 4. Meningitis 5. Plague 6. Typhoid fever 7. Rabies 8. Viral hemorrhagic fever 9. Yellow fever 10. Non- bloody diarrhoea 11. Influenza-like illness 12. Pertussis 13. Diphteria 14. Food poisoning 15. Mumps 16. Viral Conjuctivitis 17. Chicken Pox	18. Acute Flaccid Paralysis (AFP/Polio) 19. Measles 20. Neo-natal tetanus
Diseases or conditions of Public Health Importance	**Diseases or conditions of International Concern (Required for reporting under IHR)**
21. Diarrhoea in Children under 5 22. Severe Pneumonia in Children below 5 years. 23. Malaria	24. Diseases and conditions specified by IHR (2005) for immediate notification Note: *These are contained in Articles 3 and 4 of the Ministerial Instructions about risk communication and management of epidemics (PHEs) in health facilities.*

3. Emergency Preparedness and Response Strategies for El Nino related epidemics

The development of this contingency plan for El Nino related epidemics is based on the scenarios highlighted above and their major health consequences, the national preparedness and response plan for the 2015 el Nino effects in Rwanda, the integrated health emergency contingency plan, the national epidemic preparedness and response plan, documents and guidelines.

3.1. Goal

The goal of this contingency plan for El Nino related epidemics is to contribute to the reduction in mortality and morbidity associated with El Nino epidemic threats by ensuring that appropriate systems to support health emergency preparedness, timely response and post disaster recovery and mitigation are in place at the national, district, health facility and community levels in Rwanda.

3.2. Objectives

1. To ensure timely detection of El Nino associated epidemic threats through strengthening of early warning systems at community and health facility levels
2. To improve the timely access to good quality emergency health services including preventive and curative health care
3. To strengthen institutional capacity for health emergency preparedness, response, at the national, district and health facility levels
4. To ensure effective coordination, supervision, monitoring and evaluation of emergency preparedness and response efforts at national and sub-national levels

3.3. Key expected results by objective

Strategic Objective 1: *To ensure timely detection of El Nino associated epidemic threats through strengthening of early warning systems at community and health facility levels*

Key Results

i. Surveillance of El Nino related diseases is strengthened

ii. Community-based disease surveillance and early warning systems is functional in all disaster high risk districts
iii. El Nino related diseases data (including laboratory data) are available for informed decision making at all levels

Strategic Objective 2: *To improve the timely access to good quality emergency health services including preventive and curative health care*

Key Results

i. Timely and good quality services for case management and medical emergencies are provided within 24 hours
ii. Public is sensitized about the causes, prevention and mitigation of El Nino related health conditions
iii. Water, sanitation and hygiene as well as other preventive measures are ensured in affected populations

Strategic Objective 3: *To strengthen institutional capacity for health emergency preparedness, response, recovery and mitigation at the national, district and health facility levels*

Key Results

i. All cadres of health care managers and workers trained on health emergency preparedness, response and recovery
ii. Develop and update treatment protocol and standard operating procedures for El Nino related epidemic diseases
iii. Procure necessary equipment and supplies needed for preparedness and response

Strategic Objective 4: *To ensure effective coordination, supervision, monitoring and evaluation of emergency preparedness and response efforts at national and sub-national levels*

Key Results

i. Coordination structure for health emergencies reactivated
ii. Systems and mechanisms for supervision, monitoring and evaluation of emergency preparedness and response activities strengthened