Epidemics and the Health of African Nations

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CONTAINING EBOLA IN NIGERIA:

An African Success Story

NATHANIEL UMUKORO

INTRODUCTION

EBOLA VIRUS DISEASE (EVD) is recognised as one of the deadliest viral diseases in the world. The disease was called Ebola because the first outbreak occurred in a village close to the Ebola River in the Democratic Republic of Congo. Since 1976 most cases of EVD have occurred in Africa (Baseler et. al., 2017). The outbreak of the disease in Africa and other parts of the world from 2014–2016 recorded more casualties than in any prior outbreak (see Table 1). In Sierra Leone, out of the 14,124 cases and deaths in this outbreak than in all others combined. The virus family Filoviridae includes three genera: Cuevavirus, Marburg virus, and Ebola virus. Within the genus Ebola virus, five species have been identified: Zaire, Bundibugyo, Sudan, Reston, and Tai Forest. The first three, the Bundibugyo, Zaire and Sudan viruses, have been associated with the large outbreaks in Africa. The virus causing the 2014–2016 West African outbreak belongs to the Zaire Ebola virus species.
cases recorded there were 3,956 deaths (28 per cent); 10,675 cases were recorded in Liberia, with 4,809 deaths (45 per cent); and Guinea recorded 3,811 cases, with 2,543 deaths (67 per cent) (WHO, 2018).

Nigeria was one of the African countries affected by the EVD epidemic of 2014, \(^{ii}\) but because the outbreak was effectively contained there, Nigeria was able to paint a different picture to that of the other West African countries at that time. The outbreak caused anxiety in Nigerians and foreigners alike, most especially because of the huge size of the population in its capital city, Lagos – approximately 21 million – but also because of the challenges associated with health care services delivery. As United States consul general in Nigeria Jeffery Hawkins said: “The last thing anyone in the world wants to hear is the two words, “Ebola” and “Lagos” in the same sentence.” That ‘single juxtaposition’, he noted, conjured up images of an ‘apocalyptic urban outbreak’ (Abubakar et al., 2014; Bureau of Public Services Reforms, 2015). Due to an early, accurate diagnosis, and appropriate action by medical practitioners, however, that image did not come to pass in Nigeria.

Nigeria’s effective containment of the Ebola outbreak is a success story for two reasons. Firstly it prevented the transfer of the outbreak of the disease to other parts of Nigeria. Secondly it showed that the federal government could successfully, and effectively, manage health problems affecting the country’s citizens if political leaders demonstrated the political will to do so.

Given the poor state of health services delivery in Nigeria, what lessons can be learned from the successful containment of the disease? This chapter investigates this question and extracts some lessons other

\(^{ii}\) WHO (2018) provides details: Fruit bats of the Pteropodidae family are natural Ebola virus hosts. Ebola is introduced into the human population through close contact with the blood, secretions, organs, or other bodily fluids of infected animals such as chimpanzees, gorillas, fruit bats, monkeys, forest antelope and porcupines found ill or dead or in the rainforest. Ebola then spreads through human-to-human transmission via direct contact (through broken skin or mucous membranes) with the blood, secretions, organs or other bodily fluids of infected people, and with surfaces and materials (e.g. bedding, clothing) contaminated with these fluids. Health care workers have frequently been infected while treating patients with suspected or confirmed EVD. This has occurred through close contact with patients when infection control precautions are not strictly practised. Burial ceremonies that involve direct contact with the body of the deceased can also contribute in the transmission of Ebola. People remain infectious as long as their blood contains the virus.
countries in Africa might learn from the Nigerian experience. To do this the chapter is divided into five interrelated sections: a brief overview of Nigeria’s health care system, a review of the introduction of EVD to Nigeria, analysis of the response of the federal government to the EVD epidemic, consideration of other factors that contributed to the successful containment of EVD in Nigeria, and lessons from the successful containment of EVD in Nigeria. The chapter draws on retrospective documentary analysis, the author’s primary interview research conducted in 2016 in the aftermath of Nigeria’s containment of EVD, and contemporary interpretations of data.

OVERVIEW OF NIGERIA’S PUBLIC HEALTH CARE SYSTEM

The public health care system in Nigeria reflects the country’s federal structure of government. Nigeria has 36 states and 774 local government areas. This means that the federal, state, and local governments are all involved in the provision of public health care services (Umukoro, 2012). Additionally, private health care institutions exist to complement the role of the government. Health facilities in the private sector are not generally accessible to low-income earners, and private hospitals mainly provide services for higher income households. Poor health outcomes in public health care institutions can be attributed to the lack of appropriate targeting strategies for reaching the poor, the low levels of government funding of health institutions, and poor implementation of public health care policies (Osafo-Kwako & Apampa, 2009).

In Lagos, where the Nigerian outbreak of EVD started, there are 26 registered general hospitals, 256 public health care centres, 2,886 private hospitals or specialist clinics and laboratories or diagnostic centres, in addition to an estimated 160 tradomedical centres (see Musbau, 2017). In spite of the presence of these institutions, quality health care services remain a mirage in the city. Basically, this is because of inadequately qualified staff, overcrowded emergency wards, fake drugs, financial constraints, and, sometimes, lack of empathy from health workers. These were some of the things contributing to the high anxiety levels when news broke of the EVD outbreak in Lagos.
Table 1: Chronology of previous Ebola virus disease outbreaks

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Ebola virus species</th>
<th>Cases</th>
<th>Deaths</th>
<th>Case fatality %</th>
</tr>
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<tr>
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<tr>
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<tr>
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<tr>
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<td>8</td>
<td>6</td>
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<tr>
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<tr>
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<td>14,124*</td>
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<td>2014–2016</td>
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<td>10,675*</td>
<td>4,809*</td>
<td>45</td>
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<td>2014–2016</td>
<td>Guinea</td>
<td>Zaire</td>
<td>3,811*</td>
<td>2,543*</td>
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<td>57</td>
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<td>Sudan</td>
<td>7</td>
<td>4</td>
<td>57</td>
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<td>Uganda</td>
<td>Sudan</td>
<td>24</td>
<td>17</td>
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<td>Uganda</td>
<td>Sudan</td>
<td>1</td>
<td>1</td>
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<td>Zaire</td>
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<td>29</td>
<td>83</td>
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<tr>
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<td>59</td>
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<td>Gabon</td>
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<td>82</td>
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</table>
**Containing Ebola in Nigeria**

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Ebola virus species</th>
<th>Cases</th>
<th>Deaths</th>
<th>Case fatality %</th>
</tr>
</thead>
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<td>425</td>
<td>224</td>
<td>53</td>
</tr>
<tr>
<td>1996</td>
<td>South Africa (ex-Gabon)</td>
<td>Zaire</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>1996 (Jul–Dec)</td>
<td>Gabon</td>
<td>Zaire</td>
<td>60</td>
<td>45</td>
<td>75</td>
</tr>
<tr>
<td>1996 (Jan–Apr)</td>
<td>Gabon</td>
<td>Zaire</td>
<td>31</td>
<td>21</td>
<td>68</td>
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<tr>
<td>1995</td>
<td>Democratic Republic of Congo</td>
<td>Zaire</td>
<td>315</td>
<td>254</td>
<td>81</td>
</tr>
<tr>
<td>1994</td>
<td>Côte d’Ivoire</td>
<td>Táï Forest</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1994</td>
<td>Gabon</td>
<td>Zaire</td>
<td>52</td>
<td>31</td>
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<tr>
<td>1979</td>
<td>Sudan</td>
<td>Sudan</td>
<td>34</td>
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<td>65</td>
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<td>1977</td>
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<td>Zaire</td>
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<td>1</td>
<td>100</td>
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<tr>
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<td>Sudan</td>
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<td>151</td>
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<tr>
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<td>Democratic Republic of Congo</td>
<td>Zaire</td>
<td>318</td>
<td>280</td>
<td>88</td>
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</tbody>
</table>

*Source: WHO, 2018*  
*Note: Includes suspect, probable, and confirmed EVD cases.*

**Introduction of Ebola virus disease to Nigeria**

Although several outbreaks of epidemics had occurred in Nigeria over the years, no case of Ebola was documented there until 2014. On 20 July 2014, a traveller from Liberia who was infected with Ebola landed at the Lagos Murtala Muhammed International Airport. He passed the disease to everyone who assisted him, from the officer who escorted him to the hospital to nine of the doctors and nurses who treated him there (Umukoro, 2016).

The Ebola outbreak created panic in Nigeria for a number of reasons: the known deadly impact it had had on some African
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countries, the poor state of public health care in the country, and the possibility of the disease spreading from Lagos to other areas. The estimated population of Lagos at the time was 21 million, which is almost the combined populations of Guinea, Sierra Leone, and Liberia (Bureau of Public Services Reforms, 2015). Following the confirmation of this first case, contact tracing in the densely populated urban environment became the government’s primary concern.

Response of the government of Nigeria to the regional Ebola epidemic

The first action taken by the government was to announce that the EVD outbreak was a public health emergency and that a swift response was essential (Umukoro, 2016). Calling the outbreak a public health emergency ensured that the government and health workers would give priority attention to the management of the EVD problem. Financial resources were promptly made available to prevent the spread of the disease (Bureau of Public Services Reforms, 2015). The government also approved a special national intervention plan and released the sum of 1.9 billion (USD 11.5 million) to support the implementation of the plan at both national and sub-national levels (News Agency of Nigeria, 2014). The implementation of the intervention plan resulted in the deployment of additional health workers for contact tracing, screening at borders, establishment of additional isolation centres, and procurement of more health care facilities and safety equipment. In order to strengthen the efforts of the Lagos state government in curbing the spread of EVD, the federal government provided financial resources to the state government.

This approach to combating the Ebola crisis was based on a modification of the existing polio programme infrastructure. The government also used some of the experts in the polio programme for the management of the Ebola crisis (Fatiregun & Isere, 2017). For example, the Ebola Emergency Operations Centre (EEOC), which coordinated the response to the EVD outbreak in Nigeria, was led by the deputy incident manager of the National Polio Emergency Operations Centre. Generally, the support from the polio programme infrastructure, in particular the coordination mechanism adopted, the availability of skilled personnel from the polio programme, and lessons that had
already been learned from managing the polio eradication programme, added significantly to the quick prevention of the spread of Ebola in Nigeria in 2014 (Vaz et al., 2016).

In personal research conducted in 2016, in order to obtain insights into the government’s Ebola outbreak response, the author interviewed multiple actors (see Umukoro, 2016). One key informant (Joseph), who was a health worker in the Federal Ministry of Health (FMH), stated that ‘the first priority of the government was to locate all who likely had contacts with anyone infested by Ebola’. This confirmed contact tracing as a key strategy in reacting to the Ebola crisis. It involved looking for people who had interacted with an Ebola patient and then keeping them under careful observation. It helped to ensure early detection of new cases and the prompt quarantining of those who were believed to be infected. During the period of EVD crisis, cases were identified rapidly and put under inspection for 21 days (the maximum incubation period of Ebola virus) from the last day of contact (WHO, 2014).

Another key informant (Femi), a member of the Nigerian Medical Association, gave the opinion that the response to the Ebola crisis of health workers in various health care institutions in Nigeria was nothing short of remarkable. Health workers played key roles in the disease’s containment. When the first case of EVD was confirmed (in July 2014), some health workers in public health institutions were on strike. In order that all health workers could be available to participate fully in the fight against EVD, on 25 August the strike was suspended. In truth many health workers risked their lives to prevent the spread of the disease. Key health worker informants (Kemi, Johnson, Ihenacho and Bolanle) in the Ministry of Health in Lagos confirmed that during the Ebola outbreak community health workers played several important roles. Critically, in the process of contact tracing they engaged with community leaders and elicited their support as they went from house to house. While doing so they were able to provide useful information about the disease to communities at the same time as looking out for new cases. They also used local religious leaders to help them expand their outreach strategies (see Umukoro, 2016).

Many community-based agents, including community health workers working with NGOs, were deployed for contact tracing,
community sensitisation, promotion of epidemiologically and culturally appropriate protective practices, and data collection. A group of more than 150 contact tracers was mobilised to find people who had potentially been exposed to EVD. They conducted over 18,500 face-to-face visits to check for a range of symptoms, such as fever, in each of these contacts. During the contact tracing period, anyone manifesting symptoms was immediately taken to an isolation ward for proper investigation. If an EVD case was confirmed, the patient was transferred to a designated EVD treatment centre (Shuaib et al., 2014; Umukoro, 2016).

Generally, the response to the Ebola crisis by different stakeholders was properly coordinated. Various tiers of government and agencies cooperated with one another and engaged on massive public awareness campaigns to familiarise everyone with the dangers associated with EVD. This included the effective use of social media. The cooperation of institutions at the different levels of government (federal, state, and local) was encouraged by the then-president of Nigeria, Goodluck Jonathan, as a strategy for tackling the Ebola crisis. For example, he directed the Federal Ministry of Health to work in partnership with the state ministries of health, the National Centre for Disease Control (NCDC), the National Emergency Management Agency (NEMA), and other related agencies to ensure that all relevant steps were taken to contain the spread of the disease (Bureau of Public Services Reforms, 2015).

Additional government actions that contributed to the timeous containment of EVD

Other factors that contributed to the successful containment of Ebola can be classified into two categories, namely: what the government did before EVD was detected in Nigeria, and steps the government took after the first case of EVD was confirmed. On 24 March 2014, after EVD was detected in Guinea (see Figure 1), the federal government, through the FMH and NCDC, put the necessary machinery in place to manage any case of EVD in the event of an outbreak. The following were some of the steps taken by the federal government before the outbreak of Ebola: the 36 states of the federation and Abuja were notified of the outbreak in Guinea. The need to strengthen disease surveillance for haemorrhagic fevers was recommended and they were requested to report suspected
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cases promptly. Training on EVD surveillance and medical procedures was also provided to some health workers. This training was carried out in different parts of Nigeria on a zonal basis, that is, north-east, north-west, north-central, south-west, south-east and south-south. Port health officers were asked to ensure strict disease surveillance.

Figure 1: West Africa situation map – Ebola virus epidemic, December 2013–June 2016

Source: https://en.wikipedia.org/wiki/Nigeria

Specific factors that contributed to the successful containment of the disease

*Early detection*

The first two contributors to the success in handling the Ebola problem were the early detection of the disease and the prompt introduction of control measures to prevent its spread (Duric & Ilic, 2012). When the Liberian diplomat, Patrick Sawyer, who brought the EVD to Nigeria, collapsed at the airport in Lagos he was immediately taken to First Consultants Medical Centre (FCMC), where he was diagnosed with malaria. When another doctor, Dr Ameyo Stella Adadevoh, saw him during her ward round the following day, she suspected EVD. In order to confirm her diagnosis she reached out to the Lagos state and federal
ministries of health and ensured that he was tested immediately for EVD. Before the test result was received by the hospital, the patient and other officials of the government of Liberia tried to insist that Dr Adadevoh discharge him so that he could attend the Economic Community of West African States (ECOWAS) conference. In spite of the pressure, Dr Adadevoh refused, even when they threatened to charge her with kidnapping and sue her for violation of the rights of the patient. Her steadfast and swift actions enabled a much more strategic prevention of the spread of the virus across the country and made it possible for the Nigerian government to trace all possible contacts from the index patient.

The outcome was that Nigeria recorded only 20 Ebola cases and eight deaths (see Table 1); 11 of these cases were health care workers. Of those health care workers, six survived and five died, including Dr Adadevoh. The early detection of the disease and the courage of Dr Adadevoh prevented a national catastrophe in a country of more than 180 million people. The situation would have been very different if Mr Sawyer's malaria diagnosis had remained and he had been allowed to travel to other parts of Nigeria.

**Public enlightenment programmes**

After the outbreak of the disease was announced in Nigeria, enlightenment programmes were carried out to create awareness about EVD and how it could be prevented (see Otu et al., 2018). In order to reach as many people as possible these campaigns were conducted in various Nigerian languages through radio, television, and posters. All hospitals in the country were alerted and directed to create awareness of the deadly nature of the disease and how the spread of the disease could be prevented.

**Contributions of the private sector**

Substantial financial resources were contributed by private sector organisations towards the containment of EVD. For example, on 14 August 2014, Alhaji Aliko Dangote contributed in the region of USD 927,007 (152,956,250) from the Dangote Foundation for the establishment of a national Ebola Emergency Operation Centre (EEOC) at Yaba, Lagos. Several private sector organisations in Nigeria supported the government’s efforts through, for example, the encouragement of hand-
washing and general sanitation and by providing taps in public places for people to wash their hands (Bureau of Public Services Reforms, 2015).

**Cultural measures**
The federal government took a series of actions pertaining to certain cultural practices in order to prevent the spread of the EVD. One such action, which was taken during the peak period of the Ebola crisis, was the banning of the transportation of corpses. The reason behind this action was because burial ceremonies bring family members and friends together and this could create the necessary conditions for transmitting the Ebola virus, particularly as some funeral traditions involve close contact with the dead (see, for example, Maxmen, 2015). This applied to the transportation of corpses not only in Nigeria, but internationally and interstate too. Bereaved families who planned to bury their loved ones during the crisis period were obliged first to get clearance from the federal Ministry of Health before they could do so. This measure assisted in curbing interstate movement of corpses, and also significantly reduced the number of burial ceremonies that took place during the crisis period.

**Delay in the reopening of schools**
In order to prevent the spread of EVD in primary and secondary schools the federal government directed that all schools, public and private, should remain closed until effective strategies had been put in place to prevent the spread of the disease. All tertiary institutions were also advised to suspend, until further notice at the time, the exchange of staff and student programmes, visits, and any major international seminars and workshops that had been scheduled (Bureau of Public Services Reforms, 2015).

**Maintenance of public hygiene**
The Federal Ministry of Health urged all Nigerians to improve their personal hygiene by washing their hands frequently with soap and running water. The use of a bucket with a tap for regular hand-washing was initiated as a strategy in places where there was no running water. The use of buckets made it possible for running water to be available in public places, even when there was no regular source of water supply such as a borehole (Ugwuanyi, 2014).
**Proper health surveillance at Nigeria’s entry and exit points**

Another factor that contributed to the successful containment of Nigeria’s 2014 EVD outbreak was health surveillance at the country’s entry and exit points. This became necessary because Nigeria did not close its borders in spite of repeated calls to do so. The decision not to close the borders was because of widespread evidence that travel bans do not work; they have habitually failed to prevent the spread of disease in the past (Poletto, 2014; Khalid, 2014). To prevent importation/exportation of Ebola, therefore, it was necessary to check the health status of travellers at various points of entry. A team of health workers ensured screening of all arrivals/departures in and out of Nigeria by land, air, and sea. Screening included travellers’ temperature monitoring and analysis of the entrants’ contact with cases of Ebola (Otsuki & Nishiura, 2016). They also ensured that capacity was available at all border points to properly manage passengers with symptoms of Ebola, including the ability to isolate them. According to a key informant (Okeke) at the Murtala Muhammed International Airport in Lagos, ‘the screening of passengers was to prevent a passenger infested with Ebola from travelling and infesting other passengers and people in the host country with the disease’. Nigeria took this measure particularly seriously because of how Ebola had first entered the country.

**Suspension of the operation of certain airlines**

In order to further protect Nigerians from EVD, the Nigerian Civil Aviation Authority (NCAA) suspended certain airlines from transporting passengers to Nigeria. One of these was ASKY Airlines, an Ethiopian Airlines feeder airline with a hub in Lomé, Togo. ASKY Airlines was an important player in the West, East and Central Africa region, operating 80 flights into Lagos and Abuja weekly. The airline was informed that the suspension would be lifted only when it could prove that it was capable of adequately screening passengers at all its points of operation, including the profiling of every passenger. NCAA took this action because the airline representatives could not conclusively demonstrate their capacity to prevent a recurrence of importing Ebola carriers to Nigeria. The airline’s inability to give the necessary assurance was contrary to the provision of Article 14 of the Chicago Convention, 1944, which states...
that ‘(e)ach contracting State agrees to take effective measures to prevent the spread by means of air navigation of cholera, typhus (epidemic), smallpox, yellow fever, plague, and such other communicable diseases as the contracting States shall from time to time decide to designate …’ Similarly, during the Ebola crisis period Arik Air also suspended its flights to Monrovia, Liberia, and Freetown, Sierra Leone. The NCAA advised that airline to maintain the cessation of flights to the two countries until it was cleared by the authority to resume.

**Government response to social media**

The role that social media played after the outbreak of EVD in Nigeria could be seen as a double-edged sword. On the positive side, it made it possible for awareness about the disease to be created and ways of preventing its spread to be explained. One the negative side, social media could also be abused, with some people using its platforms to spread false information about the nature and treatment of the disease. An example was the rumour that drinking salt and warm water was a cure for Ebola. Two people died and at least 20 people were hospitalised as a result (Vanguard Newspaper, 2014). Since social media could easily be used to spread misleading information about the nature and treatment of Ebola, the government worked hard to respond in a timely manner to correct any false information. In order to curtail the dangerous effects of deceptive information through social media platforms, the federal and state governments engaged in different forms of public enlightenment campaigns. These initiatives helped to reduce the harmful influence of social media (see also Otu et al., 2018).

**Health workers and the successful containment of EVD**

Health workers in both private and public health institutions played key roles in the containment of Ebola in Nigeria. When Patrick Sawyer brought Ebola to Nigeria, health workers in public health institutions were on strike. The strike began on 1 July 2014 and dragged on even when Ebola broke out in the country later that month. It became apparent that the striking doctors were beginning to lose public sympathy when they failed to call off their strike in the face of the Ebola outbreak, but the decision was made to suspend the strike on 25 August 2014 so that all
health workers could participate fully in the fight against EVD. As has been mentioned earlier in this chapter, and as confirmed by the author’s aftermath research interviews, community health workers played several important roles – some health workers even risked their lives – to prevent the spread of the disease. Two key informants at the Lagos Ministry of Health (Sola and Moses) confirmed how these health workers had worked closely with community and local religious leaders. The latter were especially important in efforts to prevent or reduce transmission during funerals and burials.

Lessons from the successful containment of EVD in Nigeria

Several lessons can be learned by the Nigerian government and the governments of other African countries from the effective way in which the outbreak of EVD was contained in Nigeria. At its core, this success can be attributed not only to the early and accurate response of the different health institutions to the outbreak but also that the response was holistic and in accordance with international public health standards (Adewole, 2017). The following are specific lessons that can be learned from the successful containment of EVD in Nigeria.

The first key lesson from Nigeria’s success story in combating EVD is the need to maintain strict ethical standards in medical practice. When the first EVD patient came to Nigeria and manifested symptoms of the disease, he was taken to First Consultants Medical Centre in Lagos. At the hospital, the patient claimed that he had malaria. Since malaria is not transmitted from person to person, staff at the centre did not take protective precautions at first. This contributed to health care workers becoming infected. This makes it necessary that health care workers take necessary precautions at all times whenever there is a suspected epidemic outbreak.

The second lesson is the importance of the capacity of the state in protecting its citizens through a diversity of options. In spite of the participation of the private sector in the delivery of health care services, effective participation of the government in the sector can protect citizens against public emergencies. This is because the private sector could never have done what various levels of government did during the EVD outbreak. In addition to the provision of financial resources,
the government ensured that health workers were adequately trained to combat EVD and that there were enough of them, as well as sufficient and appropriate facilities to isolate those showing Ebola symptoms in treatment centres that were well equipped.

The third lesson is on the importance of financing the health sector adequately. The availability of adequate financial resources contributed to the successful containment of EVD in Nigeria. As soon as it was made aware of a potential outbreak of Ebola the federal government immediately released funds to relevant health care institutions for the establishment of EVD management facilities and other expenses. It is critically important that governments, especially of African countries, ensure adequate budgetary allocations for the health sector. Financial constraints have prevented many African countries from contributing 15 per cent of their national budgets to the health sector, as agreed in the Abuja Declaration of 2001.

The fourth lesson is that compliance with government policies and directives play a crucial role in the control of the spread of infectious diseases. The willingness of Nigerians to comply with government directives on EVD prevention contributed to the successful containment of the disease in Nigeria. The general lesson from this is that citizens should be conscious of the fact that the prevention of the outbreak or spread of infectious diseases is not the responsibility of the government alone, but rather that of the entire citizenry.

The fifth lesson concerns the need to have adequate and well-trained manpower in the health sector at all times. One of the challenges the Nigerian government had to struggle to overcome during the outbreak of EVD was the shortage of trained manpower for an appropriate response.

The sixth lesson is on the need to ensure the cooperation of religious leaders when there is an outbreak of an epidemic. Since religious beliefs and activities affect how people respond to government policies and directives, the involvement of religious leaders in giving such directives to their members can help ensure greater compliance on the part of their followers.

The seventh lesson concerns the effective use of social media in the event of an outbreak of disease, and potential epidemics. In Nigeria,
the government ensured that information about EVD and how the spread could be prevented was properly disseminated through multiple platforms, including, importantly, social media. During an outbreak a country’s government should be able to influence the use of the social media. This is important because both positive and negative information will be disseminated through social media. If any information that can negatively affect the control of epidemics is disseminated the government should be able to strategise ways of correcting the wrong information promptly.

CONCLUSION

Nigeria was able to manage the outbreak of Ebola in the country effectively because of adequate funding, astute medical practitioners who could diagnose accurately, collaboration between health and other authorities at the national and sub-national levels, concerted training efforts, and commitment to public education. This kind of coordinated, well-managed commitment is required to strengthen public health care in Nigeria and other African countries in order for them to be able to deal with other epidemics and work toward increasing the health status for the majority of their citizens.

In spite of Nigeria’s achievement in containing EVD in 2014, much can still be done to improve the overall public health care system there. After the successful containment of the disease (using some of the infrastructure that was already in place to counter outbreaks of polio), most practical steps taken to prevent the spread of the Ebola disease disappeared. This is worrisome because there are many other diseases that afflict Nigerians, and the strategies used in containing EVD could be used in managing other diseases as well. This is important because in spite of the success the country recorded in the fight against Ebola, the health care system continues to be bedevilled by many challenges. The specific aspects of the health care sector in Nigeria that require urgent attention include medical equipment and the number of medical personnel in public hospitals. In 2009 the Nigerian national health conference identified as major challenges in the health sector a lack of synchronisation of efforts, fragmentation of services, inadequate
resources (including medicine and supplies), insufficient and deteriorating infrastructure, inequity in the distribution of resources, and access to care (Menizibeya, 2011).

Health workers have regularly protested and gone on strike because of these problems. Since protests aggravate the problem of health care delivery in Nigeria, and elsewhere, lessons learned from the handling of the Ebola disease epidemic should be used to transform the health sector in Nigeria. During the outbreak of epidemics, efforts should be intensified to ensure the protection of health workers from hazards. This also applies to other African countries.

The following strategies can help improve the performance of the public health care system. First, government expenditure on health care services delivery should be increased. This will make it possible for medical facilities to be improved in public hospitals, and health workers to be adequately remunerated. The current public expenditure on health care services delivery in Nigeria is grossly below international standards. Based on the report of the World Health Organization (2014) the proportion of total GDP spent on health care in Nigeria is low in comparison with countries that have highly effective systems. Second, a social welfare system should be introduced to assist poor families who cannot pay medical bills in public hospitals. This is important because the out-of-pocket financing of health care expenses leads to problems such as reduction of expenditure on food, debt burden, preventing a sick person from seeking medical care in public hospitals, and encouraging the use of traditional medicine over, on occasion, clinically proven pharmaceutical alternatives. Third, definitive efforts need to be made to fight corruption in the health sector. Corruption contributes to problems such as a reduction in resources required for improving the performance of the health sector, lowering the overall quality of health care services (Umukoro, 2012).

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The thread that runs through this section is how health systems deal with chronic conditions like non-communicable diseases (NCDs) and HIV/AIDS, and it highlights the centrality of the network of health care workers involved in delivering care. NCDs, which have previously been thought to affect high-income countries predominantly, have become more prominent in sub-Saharan Africa. Pamela Juma, Gerald Yonga, and Kenneth Juma write on the burden of NCDs in sub-Saharan Africa, citing cardiovascular diseases, diabetes, cancer, and chronic respiratory illnesses as being responsible for the greatest of burdens. The increase in unhealthy diets, higher rates of physical inactivity, increased consumption of alcohol, and addiction to tobacco all contribute to the NCD epidemic. Again, the concept of syndemics helps with understanding how socio-economic issues such as poverty and inequality, as well as environmental factors, have contributed to