



**Ebola Virus Disease (EVD)
in Nigeria:**

**Staying out of the woods, avoiding traps,
preparing for future Ebola or
other epidemics**

Workshop Report



THE NIGERIAN ACADEMY OF SCIENCE

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The Nigerian Academy of Science

The Nigerian Academy of Science (NAS) was founded in 1977. It is Nigeria's foremost independent and nonpartisan scientific organization, dedicated to the development and advancement of evidence-based science, technology, and innovation in the country. The Academy bridges the gap between the science and research communities and the policy formulation and implementation spheres. The NAS is an honorific and service-oriented organization, founded on the core values of merit, integrity, independence, objectivity, and the pursuit of excellence. The Academy consists of top scientists who have distinguished themselves in their various fields of science, including engineering and medicine among others, and leverages on the clout of its members to influence policies, with the view of ensuring that policymaking in the country is evidence-based.

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The review of this report was overseen by the NAS leadership, who was responsible for making certain that an independent examination of this report was carried out in accordance with institutional procedures, and that all reviewers' comments were carefully considered. Although the reviewers provided many useful comments, they were not asked to endorse the final draft of the report.

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Executive Summary

Nigeria is one of the few countries to successfully contain the Ebola Virus Disease (EVD) outbreak within a short period of time. The disease came into Nigeria in July of 2014, and by October of the same year, WHO declared the country Ebola free. Nigeria's population makes its success more significant, particularly also, as the outbreak occurred in Lagos, Africa's largest state (with an estimated population of 21 million)¹, and a regional hub for economic, industrial, and travel activities. The setting was potentially explosive for a communicable disease such as Ebola.

EVD in Nigeria: The index case in Nigeria was a traveller, who came into Lagos from Liberia, with symptoms suggestive of malaria. He was taken to the First Consultant Hospital for treatment, where it was later confirmed that he had the EVD, despite his denial of having any contact with the disease. As a result of their exposure to the index case, eight hospital staff contracted the disease; four lost their lives, whilst four recovered from it.

Nigeria's Response: An Ebola emergency was declared by the Federal Government, and the Federal Ministry of Health, along with the Lagos State Ministry of Health, set up an Ebola Emergency Operations Centre (EEOC), headed by an Incident Manager (IM), to rapidly respond to the outbreak. The Incident Management System (IMS) was implemented at the EEOC, which involved the use of all available public health assets as well as proven structures for the delivery of public health in the country. Six response teams were established 1) Epidemiology/Surveillance 2) Case Management/Infection Control 3) Social Mobilization 4) Laboratory Services 5) Point of Entry and 6) Management /Coordination². Each team had their own staff who developed priority activities and terms of reference to guide their work, and reported twice daily to a senior strategic team. Contact tracing, a very vital part of the response action, was spearheaded by the Epidemiology/ Surveillance and the Social Mobilization teams.

¹ World Population Review www.worldpopulationreview.com/world-cities/lagos-population/

² Ebola Virus Disease Oubreak-Nigeria www.cdc.gov/mmwr/preview/mmwrhtml/mm6339a5.htm

Critical Success Factors: Factors identified as responsible for the successful containment of the outbreak included:

- ✍ Nigeria's openness about the detection of EVD in the country
- ✍ Country ownership of the containment efforts
- ✍ Prompt establishment of the EEOC
- ✍ Prompt diagnosis of the disease by the Virology laboratory at the Lagos University Teaching Hospital (LUTH) (which ensured effective and efficient case management could commence within the shortest possible time)
- ✍ Aggressive contact tracing and monitoring, community mobilization and engagement
- ✍ Existing infrastructure and health and safety policies in Lagos State
- ✍ Political will from the government and policy makers

Challenges: Majorly highlighted were:

- ✍ Mobilizing the huge financial resources needed. Funding from the Lagos State government, international development partners, private sector companies and non-governmental organizations, apart from funds from the Federal Government, were crucial for the containment efforts
- ✍ The health workers strike that was also on-going at the time which threatened the prompt isolation and care of infected patients
- ✍ Uncooperative contacts which made tracing and monitoring more difficult
- ✍ Inadequate infrastructure for isolating infected patients when the outbreak occurred
- ✍ Deficiencies in the existing health system

Moving Forward: The WHO declared Nigeria Ebola free on the 20th of October 2014; following a total of 894 direct and indirect contacts who

were traced and monitored, 19 confirmed infected cases, and regrettably, 8 deaths³. The Adadevoh Resource Centre was set up in memory of late Dr. Ameyo Adadevoh; who contracted the disease whilst restraining the index case, and ultimately paid with her life.

Lessons learned from the experience, especially in preparing the country for future disease outbreaks include:

- ✍ Continuous development of the health system to achieve a stronger and more efficient system
- ✍ Re-structuring the present health financing mechanism to include funding for field and laboratory research
- ✍ Increased investments in developing specialist human resources for health such as epidemiologists, infection control specialists etc.
- ✍ Refining the present preparedness structure for disease outbreaks and control.
- ✍ Proper recognition of the volunteers who worked to control the EVD epidemic in Nigeria. This will encourage them to do so again and inspire others.

³ 2014 Ebola Outbreak in West Africa-Case Counts www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/case-counts.html

Introduction

The Nigerian Academy of Science convened this round-table meeting to chronicle the events leading up to the successful containment of the EVD outbreak in Nigeria. The objectives of the meeting were to

- ✎ Discuss critical factors responsible for, and lessons learnt from Nigeria's successful control of EVD
- ✎ Propose/recommend improvements in Nigeria's health system, especially disease surveillance and response, required to enhance national capability for prevention of, and or response to future potential outbreaks of EVD or other infectious diseases

The Ebola Virus Disease (EVD), formerly known as the Ebola hemorrhagic fever is an acute severe illness, occurring in humans. The virus is transmitted to humans through contact with blood, secretions and bodily fluids of infected animals such as chimpanzees, and fruit bats found in the rainforest. Human to human transmission is via direct contact with blood, secretions, and bodily fluids of infected people. The Incubation period (time interval from infection with virus to onset of symptoms) is 2-21 days, and humans are not infectious until they develop symptoms. Early symptoms include fever, muscle pain, headache, and sore throat. These are usually closely followed by vomiting, diarrhea, rash, symptoms suggestive of liver and kidney malfunction, and in some cases, internal and external bleeding (hence the name hemorrhagic fever). There is currently no licensed treatment proven to neutralize the virus in humans, but a range of potential products such as blood products as well as immune and drug therapies are under evaluation. Two potential vaccines are currently undergoing human safety testing. Improved survival rates have been attributed to supportive care which includes oral and intravenous rehydration, and the treatment of specific symptoms⁴.

Health workers are most at risk of contracting EVD, through close contact whilst treating suspected or confirmed patients; and/or where

⁴ Ebola Virus Disease www.who.int/mediacenter/factsheets/fs103/en/

strict infection control measures are not adhered to. An EVD outbreak is best controlled by a combination of interventions to include case management, surveillance and contact tracing, quality laboratory services for prompt diagnosis, as well as community engagement and awareness.

There have been 24 reported outbreaks of EVD in Africa, since its first recorded occurrence in 1976. It is reported to have first occurred simultaneously in Sudan and in an area near the Ebola River in the Democratic Republic of Congo, from where the name of the disease was derived. The current EVD outbreak is by far the largest and most complex; having recorded the highest number of cases and deaths than previous outbreaks combined, affecting many countries in West Africa - Guinea, Liberia, Sierra Leone, Nigeria, Mali and Senegal, as well as reported cases in Spain, United Kingdom, and the USA.

As at the 18th of January, 2015, there had been 21,724 reported cases, inclusive of 13,610 laboratory confirmed cases, and 8,641 deaths⁵. Guinea, Liberia, and Sierra Leone are the worst hit of the affected countries, and this has been attributed to their weak health systems and a lack of adequate human and infrastructural resources; a result of many years of conflict and instability.

The first known case of Ebola in Nigeria was announced on the 23rd of July 2014. The index case flew in to Nigeria from Liberia on the 20th of July, with acute symptoms (fever, vomiting and diarrhea) and was immediately transported to a private hospital-the First Consultant Hospital Lagos. He was initially managed as a case of malaria, having denied any contact with persons infected with Ebola, but when his symptoms worsened despite malaria medication, the private hospital suspected this to be Ebola, and immediately alerted the State Ministry of Health. The diagnosis of Ebola was confirmed at the Lagos University

⁵ 2014 West Africa Outbreak <http://www.cdc.gov/vhf/ebola/outbreaks/2014-west-africa/previous-updates.html>

Teaching Hospital within two days, and the patient died on the 25th of July 2014.

The diagnosis of the Ebola Virus Disease in Nigeria set off a series of events, including the setting up of an Ebola Emergency Operations Centre (EEOC), the establishment of a treatment center, and tracing and monitoring of about 900 primary, secondary and tertiary contacts of the index case. The prompt coordination of activities by the EEOC led to the detection of 20 confirmed cases and 8 deaths. On the 20th of October, 2014, Nigeria was declared Ebola-free by the WHO.

Though Nigeria is currently Ebola-free, the country remains vulnerable to EVD and other infectious diseases that can result in outbreaks. Given the current state of the health system in the country, and its inherent challenges such as the on and off strike action by the health workers, would it be safe to say that Nigeria was lucky to have successfully contained the spread of the disease, and preventing what could have been a national disaster, or that we have a good health system that we can depend on to overcome such a national threat?

To ensure that the events of the EVD outbreak in Nigeria are properly documented and, importantly, to deduce the factors responsible for the successful containment is the reason a workshop on the issue was convened by NAS. The workshop held on the 27th of January 2015 and this is a report of the proceedings of the workshop.

Welcome Remarks

Professor Temitayo Shokunbi FAS,
Academic Secretary, NAS

The Nigerian Academy of Science is the foremost scientific organization in the country, established in 1977, providing evidence based advice for national development. The roles of the Academy include advocacy and the provision of evidence-based information for policy making. The Academy elects scientists who have distinguished themselves in their various fields of science as Fellows; and most of them go on to hold notable positions in the government which they use to influence evidence-based policy making in Nigeria.

The Academy is a non-governmental, non-partisan organization; and its independent status gives it credence to be in a position to provide objective and sound evidence-based advice on issues of national interests; one of which is the recent outbreak of the Ebola Virus Disease (EVD) in the country. The Academy carries out its roles by convening workshops, training programs, and conducting studies on issues of national interest, with the aim of getting a holistic view on the issue, and coming up with recommendations.

The purpose of this round-table meeting is to discuss the unfortunate outbreak of the EVD in the country in a bid to look at how things were handled leading to the successful containment of the infection, what we could have done better, and how, as a country we can avoid future similar occurrences. The selected speakers were in one way or another directly involved with the containment exercise, and today, we hope to be able to speak candidly on how they were able to make this happen.

Opening Remarks

Professor Oyewale Tomori FAS,
President, NAS

The Academy is honored to have prominent people who were directly involved in the EVD outbreak present at the meeting to speak to us on how they were able to successfully contain further spread of the disease in the country, and how together as a country, we can be better prepared for similar outbreaks in the future. Nigeria was fortunate to have been able to contain the outbreak in a relatively short time, to the surprise of the international community and even ourselves. It is therefore important that as a country we thoroughly examine exactly what happened; what we did right, what we could have done better, things we may have missed, and use this experience to get ourselves better prepared as a nation, and ensure that no disease epidemic or outbreak catches us unawares or unprepared.

One of the objectives of the meeting is to be able to provide a platform where we can discuss frankly, and without bias, all that went on during the containment efforts, and be able to present to the government and our people the facts of the outbreak and its successful containment, that will hopefully be used to better prepare us as a nation.

The statement of purpose for this meeting is, therefore, to document the facts of such a notable occurrence in our country, what really happened; the good and the bad, as well as discuss the lessons learned from it. The Academy will take the evidence from this meeting and make recommendations that will hopefully be used to influence positive health policy making in the country.

SESSION ONE:

EMERGENCE OF THE EVD OUTBREAK IN NIGERIA

When Ebola came: The initial steps

(Benjamin Ohaeri, Chief Medical Director, First Consultant Hospital)

On the 20th of July 2014, a certain Mr. Sawyer was brought in to the hospital to be seen, and was admitted with symptoms similar to malaria. After two days of not responding to administered treatment, his case was brought before the hospital's clinical governance meeting to be reviewed which is the usual practice of the hospital for difficult cases. At this point, from the presenting symptoms and recent travel history provided by the patient, Dr. Adadevoh already had a high index of suspicion that it was very likely that they were dealing with a viral hemorrhagic fever, possibly Ebola. It was agreed at the meeting that appropriate clinical measures be instituted immediately, such as strict barrier nursing, and, as an additional precaution, health workers attending to the patient had to wear protective clothing. The Federal and Lagos state governments, as well as the WHO were also contacted. A blood sample was sent to the Lagos University Teaching Hospital (LUTH) for diagnosis, and the worst was confirmed when the diagnosis of the Zaire strain of the Ebola Virus Disease was confirmed 48 hours later.

Following the diagnosis, the hospital knew it faced a huge challenge; their staff had been exposed to the patient and were thus at risk of coming down with the disease themselves, and once the news broke out to the public, the hospital was likely to suffer from stigmatization; but they braved the consequences and took the fall for the sake of the nation. Post-diagnosis, the initial response received from the Federal, State and international organizations was very encouraging, and all the teams worked together with them in ensuring that all the contacts were traced and monitored, and the necessary de-contamination of the hospital was done. The collaborative effort of all parties contributed to the

success of the containment, and the hospital cooperated and followed all given protocol to the letter. Some of the specific challenges they endured included:

- ✍ Facing possible law-suits by the patient and the Liberian authorities for detaining the index case in the hospital against his will and for the disposal of his remains after his passing
- ✍ Loss of some of their staff to the disease, and the psychological effects on those who survived
- ✍ Closure of the hospital, and stigmatization by the public

Moving forward from this

The outbreak has highlighted the importance and need for private hospitals and practitioners to be equipped to handle infectious diseases and outbreaks, especially as it has been shown that over 70% of Nigerians make use of private health care facilities. The government needs to ensure that all registered private health care facilities know the necessary steps to take when faced with similar situations.

EVD: The unexpected and unwelcomed visitor

(Jide Idris, Commissioner of Health, Lagos State Ministry of Health)

“The 2014 EVD outbreak is unprecedented in the number of cases, deaths and geographical location”

The current EVD outbreak was brought to international notice in March, 2014, though the first case occurred in West Africa in December 2013⁶. It quickly spread to multiple countries within West Africa, Europe and the United States of America.

⁶ Origins of the 2014 Ebola epidemic
www.who.int/csr/disease/ebola/one-year-report/virus-origin/en/

CURRENT GLOBAL EVD OUTBREAK								
Country	Suspected, Probable & Confirmed cases		No of Deaths		Global Comparison of total cases		Global Comparison of deaths	
	Aug 6 2014	Jan 23 2015	Aug 6 2014	Jan 23 2015	Aug 6 2014	Jan 23 2015	Aug 6 2014	Jan 23 2015
Guinea	495	2873	367	1880	27.8%	13.2%	38.2%	21.6%
Liberia	554	8524	294	3636	31.1%	39.0%	30.6%	41.8%
S/Leone	717	10400	298	3159	40.3%	47.6%	31.0%	36.4%
Senegal	0	1	0	0	0.0%	0.0%	0.0%	0.0%
Mali	0	8	0	6	0.0%	0.04%	0.0%	0.07%
Spain	0	1	0	0	0.0%	0.0%	0.0%	0.0%
USA	0	4	0	1	0.0%	0.02%	0.0%	0.01%
UK	0	1	0	0	0.0%	0.0%	0.0%	0.0%
Nigeria	13	20	1	8	0.7%	0.09%	0.1%	0.09%
Total	1,779	21,832	960	8,690				

Global EVD outbreak August 2014- January 2015 (as at 23rd January 2015)

(Source: Ebola Virus Disease Outbreak- Nigeria. Shuaib F. et al)

The index case in Nigeria came into the country via the international airport in Ikeja-Lagos. His first contact was thus with multiple people, with the immediate risk of exponential spread through these contacts. With a population of over 21 million people in Lagos state, with ease of access to the sea and interstates, immediate action to curb the potential spread had to be instituted.

The immediate measures instituted included:

- ✍ The adoption of the Incidence Management approach, with the establishment of the Ebola Emergency Operations Centre (EEOC)
- ✍ Initiation of the WHO protocol governing the management of the disease
- ✍ Development of a strategic plan of action to include aggressive tracing of primary, secondary and tertiary contacts

- ✍ Speedy cremation of corpses as well as decontamination of affected hospitals/homes, and transportation of suspected/confirmed cases to the treatment center
- ✍ Training of relevant staff
- ✍ Establishing local laboratory confirmation of cases
- ✍ Securing our borders by instituting screening of persons entering Lagos via air, land and sea

The State was able to successfully put all the above measures in place in a timely fashion as a result of the existing policies and infrastructure, such as the Lagos State Emergency Management Agency (LASEMA), Lagos State Ambulance Service (LASAMBUS), Mainland Hospital Yaba (Infectious Disease Hospital - IDH), Lagos State crematorium, public health law etc., that had been put in place by the current administration to ensure the good health and safety of Lagosians.

Though the IDH Yaba had been selected as the treatment center for EVD cases before the outbreak in Nigeria, it became apparent when cases were admitted there that the facility was inadequate for their proper management. Upgrading of the facility and conversion of the MDR-TB (Multiple Drug Resistant Tuberculosis) Ward to an Ebola treatment unit became apparent when cases were admitted. This upgrade ensured infection control at the treatment centre. Waste management and the management of the health workers and other support staff on-site were critical factors that also had to be addressed, for which standard operating procedures (SOPs) had to be instituted in order to establish a standard protocol.

Challenges

- ✍ The on-going strike of medical doctors at the time made it difficult to get doctors to attend to the crisis at the initial and very critical stage. The government had to rely on international volunteers from the WHO within the first few days, and then put out a call for volunteers with an accompanying incentive package.

- ✍ It was sometimes difficult dealing with some contacts of the index case. The stigmatization of the disease and the fear of being ostracized caused some contacts to flee or deny their involvement with the index case
- ✍ Controlling the rumors and inaccurate information that were spreading like wild fire

Critical success factors

- ✍ Robust collaboration(inter-governmental and inter-agency) leading to good and effective leadership and team work
- ✍ Positive political will and private sector participation
- ✍ In-country laboratory diagnosis and confirmation of the disease which allowed immediate institution of disease management protocol
- ✍ Aggressive contact tracing and monitoring, and linking these activities with case management
- ✍ Active public enlightenment campaigns
- ✍ Easy availability of SOPs, and case management protocols from international health agencies, which were quickly adapted for local use
- ✍ Constant training of staff which resulted in Nigeria being one of the few countries with no record of disease transmission to the health workers who knowingly had contact with confirmed cases

What could have been done better?

- ✍ Screening at the points of entry (POE), should have been instituted much earlier, especially when the disease had been seen to be spreading within West Africa
- ✍ The primary contacts identified following the confirmation of the index case could have been immediately quarantined, thus reducing the risk of spread to other states
- ✍ When IDH was selected as the official treatment center in the event of a possible EVD case in Nigeria, the relevant authorities should

have ensured at the time that it was fit for use. Doing this would have eliminated the issues faced when the outbreak occurred in - country.

- ✍ Prior training of staff and building their capacity in infectious diseases and disease outbreak situations would have better prepared health workers

Moving on to a better prepared nation

1. Public Health

- ✍ Further development of public health infrastructure, particularly the Infectious Disease Hospital to be able to handle future disease outbreaks appropriately, as well as to include standard laboratory services and the safe transport of blood samples
- ✍ Upgrading the existing surveillance/protocol system within the public health service
- ✍ Scaling up existing emergency preparedness and response activities
- ✍ Build up existing research capabilities

2. External vigilance

- ✍ POEs need to be alert and secure at all times

3. Capacity building in

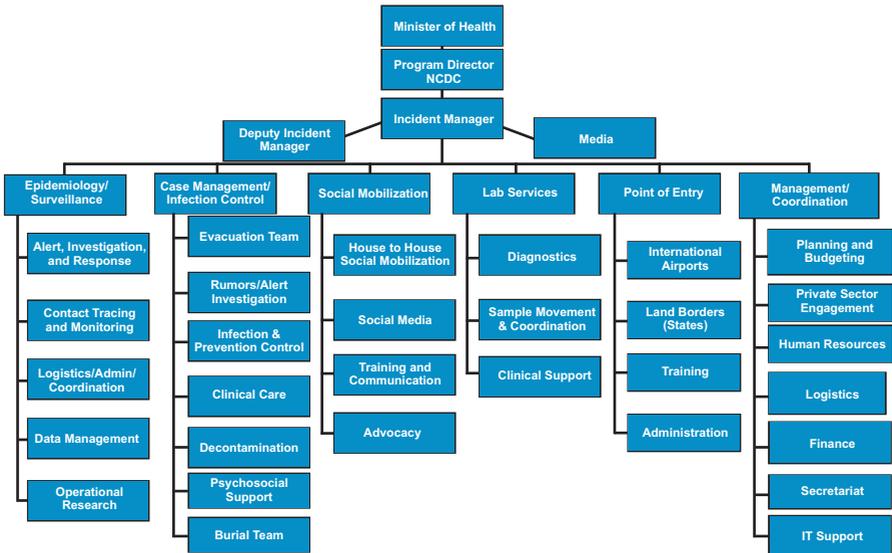
- ✍ Public health surveillance
- ✍ Research and data management
- ✍ Disaster and emergency response
- ✍ Administration and management in health
- ✍ Governance-policy development, operational frameworks, regulatory capabilities
- ✍ Health law and ethics

Nigeria's immediate response to the EVD outbreak

(Abdulsallami Nasidi, Director, Nigeria Centre for Disease Control)

July 20th 2014 marked a dramatic change in Nigeria, when the index case got into the country via Lagos. Subsequently, the disease spread to Port Harcourt through a direct contact with the index case. The Federal Government, through the Nigeria Centre for Disease Control (NCDC), acted swiftly to prevent further spread of the virus into the communities of the already affected states having a combined population of over 21 million people. The Federal government set up a national Ebola Emergency Operations Centre (EEOC), and released necessary funding for the containment exercise. The EEOC was established with the NCDC at the helm of affairs with a clear command structure to manage the six operative teams:

- ✍ Case management/ Infection control and Psychosocial support
- ✍ Epidemiology/ Surveillance
- ✍ Laboratory diagnosis and support
- ✍ Social mobilization
- ✍ Management and coordination
- ✍ Point of entry



The organizational structure at the EEOC July- September, 2014 (Source CDC, 2014)

The teams worked daily and gave twice daily reports, shared current information and provided feedback from the field. The activities in each group were fully coordinated with inter-group cooperation. The laboratory diagnosis and support was an integral part of the whole exercise, with two laboratories activated; one private and one public, to ensure the rapid diagnosis and confirmation of suspected cases, without having to take samples abroad which would have caused further delays.

Success factors

- ✍ Country ownership of the problem: Nigeria immediately took charge of the situation, called out for needed help, and did what was necessary to contain the outbreak
- ✍ Nigeria's ability to diagnose the virus in-country within 48 hours of receiving the sample. This eliminated delays from waiting on results from overseas; which was an issue other African countries faced

- ✍ Support from international organizations such as the WHO, UNICEF, MSF, who provided technical support and much needed manpower
- ✍ Use of mobile phone technology for contact tracing and monitoring. Some telecommunication companies offered tremendous support in this regard
- ✍ Support from the private sector who provided infrastructure and vehicles

Challenges

- ✍ On-going doctors' strike at the time created a gap in much needed workforce to treat confirmed patients and man the health facilities. A call for volunteers had to be made, and an incentive package attached to the call
- ✍ Evasive and sometimes hostile contacts which made monitoring difficult
- ✍ Inadequate personnel with limited capacity at the POE
- ✍ Sustaining the payment package for the volunteers

Post-containment plans

- ✍ Ensuring that the outbreak is contained around the world, especially in West Africa. To this end, Nigeria has now sent volunteers to Sierra Leone and Liberia to join in the current efforts to contain the outbreak there, as well as help restore routine health services, which have completely broken down
- ✍ Research for a possible cure using gene material developed from polyclonal antibodies, which can be effective in checkmating the Ebola virus on contact
- ✍ Ensuring increased local diagnostic capabilities to hasten diagnosis for early commencement of supportive therapy
- ✍ Strengthen preparedness in all states of the federation, and ensure compliance with SOPs, and a uniform response to threats through a self-assessment tool
- ✍ Continuously build capacity of health workers on response to disease outbreaks and infectious diseases

Through the valley of the shadow of death: My story

(Ada Igonoh, Medical Officer, First Consultant Hospital)

"United we stand, divided we fall"

She summarized her ordeal as follows:

On the 20th of July, she was called in to see a patient who had been admitted over the weekend as a case of malaria. He complained of having frequent bowel motions, and was weak from the ordeal. He was on an intravenous infusion at the time, She called her supervising consultant, Dr. Adadevoh, for her opinion, and they prescribed additional drugs to deal with the symptoms. By the following day, it became apparent that they were dealing with something more sinister than malaria, as the patient's clinical condition got worse, and his blood works came out abnormal.

Adding his recent travel history to Liberia, to his clinical condition and investigative results, EVD became a probable diagnosis, and as such, the hospital management instructed that the patient now be treated as a suspected case of EVD, and instituted strict barrier nursing, and protective clothing for any healthcare worker who would attend to him.

They also contacted the Federal and State ministries of health. They were also able to send a sample to the Lagos University Teaching Hospital (LUTH), for a possible confirmation of the diagnosis; and this was done 48 hours later.

Confirmation of EVD in the patient set off an alarm in her head. This was further heightened when she was called in a day after to certify the patient dead. Panic mode set in, as she had hoped that the patient would survive, despite the grim diagnosis and give her confidence that even if she had been infected through her earlier contacts with him, there was hope that she would survive it. The Federal and State health

authorities arrived, and were setting plans in motion for removal of the patient's remains and decontamination of the hospital. They also called in all staff and gave them the necessary education, and placed those of them who had direct contact with the patient on a 21 -day surveillance. They were taught the possible symptoms to look out for and what to do at the first sign of any symptom. Her anxiety level was at an all-time high as she checked her body temperature twice a day for signs of fever. The constant jingles on the media about the possibility of an EVD outbreak in the country didn't help either. She developed a sore throat and painful joints a few days later, but the onset of a fever on surveillance day-4 got her calling the authorities and some doctors arrived within the hour to take a blood sample. The following day, she received a phone call informing her that she would be picked up for further tests, as the earlier one was inconclusive. By this time, she had started experiencing frequent bowel motions. She was taken away by ambulance, by masked personnel, and after several hours of being in an ambulance, she was told by a WHO official, that her blood tests confirmed that she had the Ebola Virus Disease.

She was admitted into the wards and told that her chances of survival was dependent on the ingestion of the Oral Rehydration Therapy (ORT), which would help replace the fluids and electrolytes she was losing to the frequent bowel motions and vomiting, which were now established. Her symptoms became progressively worse from this point; very high fever which was not responsive to anti-pyretics, vomiting, diarrhea, painful joints, loss of appetite etc. She was the first to be admitted into the isolation ward, but was soon joined by others, most of whom were colleagues from work. Conditions on the ward where they had been admitted were far from optimal; and at first, they were only attended to by Dr. David Brett-Major, a WHO official; the few other health workers present kept their distance. However, she understood that the outbreak caught the health authorities somewhat unawares, and commended their efforts in putting things quickly in place. They were moved to a more suitable ward a week after she was admitted, and there they had more health workers available to attend to their health and personal

needs, as well as keep the wards clean. With regards to medical treatment, the patients had jointly asked for the acclaimed Z-Mapp drug, but were told this was not available, and was therefore not an option. So, they had to make do with the ORT and other supportive therapy already being given. She fearfully watched as some of her colleagues lost their battles with the disease, but clung to her faith that her story would be different.

A week later, she started experiencing relief from her symptoms; a blood sample was later taken from her for testing, and she received the news that she was Ebola-free.

This was a symbolic day for her, the patients on the ward, and the country as she was the first survivor of the EVD in Nigeria. She became a source of encouragement that there is hope of survival against the dreaded virus. She was thereafter discharged and allowed to join her family.

Recovery post-EVD has been slower than expected but progressive. She has had to cope with not just physical changes but emotional and psychological scars. She remains grateful to God, her family, the Lagos State government, the Federal Ministry of Health, and her 'First Consultants' family for their unflinching support throughout and after her harrowing ordeal. She now desires to take a postgraduate course in public health and infectious diseases.

Lessons learned and moving forward

- ⌘ It would have been preferable for the health authorities to have immediately isolated all those who had direct contact with the index case. This would have minimized the extended contact tracing and exposure that occurred
- ⌘ A standard national protocol for health workers is needed, especially for the junior workforce (such as the house officers and nurses), who usually have the first contact with patients in disease outbreak situations, so they know how to respond to these situations

- ✍ Continued reinforcement of basic hygienic practices in the hospitals, as these are often taken for granted
- ✍ Continuous public education and enlightenment programs on basic hygienic practices

DISCUSSION: Q&A

Comment: Complacency has already set in barely two months after the country was declared Ebola free. The hand gloves have come off, hand washing practices are no longer being encouraged or reinforced, and the hand sanitizers have disappeared. Public health promotion of basic hygienic practices is important in the control of many infectious diseases including EVD, and thus the public enlightenment and awareness needs to be a continuous thing.

Comment: While it is commendable that the government is improving the infrastructure in the universities, focus should also be on equipping the research laboratories; empower the researchers with what they need in order to be able to work at par with their colleagues abroad.

Comment: The country needs to harness the intellect of the scientists and resource people in-country, and desist from looking for help from outside, especially when they have the resource people here.

Question: The government needs to compensate the survivors of the EVD, as well as the families of those who lost their lives. If the country had emerged winners of an international football match, the footballers would have been handsomely compensated.

Response (Dr Jide Idris): While the government appreciates the sacrifices of the survivors and those who lost their lives to the EVD, the outbreak revealed many facets that also would have required compensation.

The government, therefore, had to be careful to avoid creating a precedence that cannot be sustained. The government has and will continue to provide support to all concerned in any other capacity possible.

Comment: International aid organizations provide health insurance and adequate remuneration for health workers who go out to the field to work, and this is increased when they are exposed to high risk, life-threatening situations. They do not necessarily do this because they can afford to, but because they value and appreciate their staff. We hope that Nigeria will get to a point where the lives of Nigerians will have more value to the government and each other, and be treated with respect. This will allow more people who truly want to serve their nation, boldly come out to do so whenever the need arises.

SESSION TWO:

CONTROLLING THE OUTBREAK

Community mobilization and communication in EVD control

(Bayo Onajole, Director, Community Mobilization, EEOC)

Social mobilization is defined by UNICEF as a broad scale movement to engage people's participation in achieving a specific developmental goal through self-reliant efforts. It involves all segments of the society, and in the context of the EVD, community mobilization is the ability to strengthen case definition and surveillance at the community and facility level.

Following the EVD outbreak, a Social Mobilization and Communication Unit was set up with the main aim of getting the right information about EVD to the public to empower them as well as engage them in the joint effort to contain the disease spread. Three major approaches adopted to spread the information were:

- ✍ Social media: Facebook, twitter, bulk text messaging, Ebola helpline
- ✍ News media: print and electronic
- ✍ Community engagement: community, stakeholder, political/administrative/incidence and contact mapping. The objectives of the mapping were risk identification, risk quantification and risk reduction

The incidence mapping/contact tracing was one of the most important functions of the unit. The objective was to reach and follow up all contacts of the index case, as well as ensure increased awareness of the public to the disease. Another major activity of the unit was the training of health workers and workers in the organized private sector and schools on preventative measures, how to handle suspected cases, and referral pathways.

Challenges

- ✍ The EVD was one-of-a-kind, with a mixed transmission pattern, transcending rural, urban and trans-border communities. Therefore the community mobilization and communication had to be adapted as such
- ✍ Community resistance
- ✍ Controlling rumors: all rumors had to be investigated. No stone was left unturned
- ✍ Stigmatization of contacts

Success factors

- ✍ High index of suspicion on the part of the First Consultants Hospital, and acting on it
- ✍ Efficient reporting mechanism
- ✍ Equity in treatment of contacts and cases
- ✍ Strong political goodwill
- ✍ Hard work and volunteerism

What could have been done better?

- ✍ Better recognition for all those who freely volunteered their time and expertise to the cause

Next steps

- ✍ Sustenance of basic hygienic principles
- ✍ Maintaining external vigilance
- ✍ Continued public enlightenment and/or awareness

Media and information management in a national health crises: EVD as a case study

(Declan Okpalaeke, President, African Health Journalists Association)

The media plays a crucial role in any national crises situation. They are to provide accurate and reliable information that will educate and enlighten a large number of people at once, conveying the necessary

seriousness of the situation, without creating fear or panic, and advocating the right behavior and/or action.

To enable the media carry out this function, they must understand the science of the disease or health crisis at hand, the national and/or international policies governing the disease, and the recommendations for its containment. Most importantly, the media must know the best way to communicate the information.

The media was a huge contributor to the successful containment of the outbreak. During the EVD outbreak, most media houses created an Ebola desk and ensured that they were ahead on the latest news and information on the outbreak. They delivered daily situation reports to their editorial board, and ensured that the latest Ebola news story made the front page headlines, with constant monitoring of the social media and internet on news around the world. Reporters took a special interest in the story especially as it was one that was in our country and had the potential to spread.

Success factors to the EVD media coverage

- ✍ Regular briefings from the EEOC, particularly as the briefing was done by the Honorable Minister for Health
- ✍ Accessibility to health experts and organizational platforms for information. The Association of Public Health Physicians of Nigeria (APHPN) must be acknowledged for its major role in this regard.
- ✍ Accessibility to the policy makers; especially officials of the Lagos State Ministry of Health
- ✍ News from international correspondents, providing situation reports from around the world

Challenges

- ✍ Though the EVD scourge had been ravaging parts of West Africa, it still caught the media unawares, when it got into the country. Journalists should have done more critical reporting on the disease

before it got into Nigeria. The reports on the disease that had been done prior to its emergence were not strong enough

- ✍ Inadequate training opportunities. Some reporters should have been included in the crash course training on EVD that was done for health workers. This would have aided the reporting process
- ✍ Access was not granted to the news hotspots, such as the treatment center. Some reporters were ready to go to the frontlines, but were refused access. This is unlike other countries where certain reporters were allowed access to the treatment centers, after taking the necessary precautions

Post-EVD challenges

- ✍ Keeping Ebola in the news has been difficult. Lessons learned from the experience should still be in the news, and precautionary measures instituted to prevent a re-occurrence. Periodic media briefings from the government on country and international situation report should be done to keep the media alert and duly informed. Information on current research on Ebola should also be reported regularly. It is also very important that the media is trained, and prepared for future outbreaks.

The Ebola toll on health workers

(Olukayode Oguntimehin, Deputy Incident Manager, EEOC)

Of the eight deaths that resulted from the Nigerian outbreak of the EVD, five were health workers.

A total of 899 contacts were traced in-country and 599,204 passengers were screened at both the Lagos and Port Harcourt airports as at the 30th of September 2014. All these happened during the strike of the Nigerian Medical Association (NMA).

Overall, there were 800 documented workers at the EEOC, including the Community Mobilization Unit, Ebola Treatment Centre, and the Ports of Entry. As a result of the on-going strike of the NMA, almost all these workers were volunteers. It was relatively easy to recruit non-health staff, as everyone wanted to help out in whatever way they could. The major recruiting problem however, was that of clinical staff, hygienists, evacuation personnel, decontamination and burial staff. At that crucial time, when there was no-one available to work at the treatment center, Drs. Brett-Major and Kamar from the WHO, stepped in and worked tirelessly for the first 4 days of the outbreak, caring for the infected patients at the treatment center, training volunteers on infection control, and providing crucial on-the-job advice. Staff from existing institutions such as the Lagos State Health Environmental Unit, LASAMBUS, NCDC, Nigerian Field Epidemiologists Laboratory Program, and APHPN volunteered their time and expertise to the cause. The main problem was getting volunteers to work at the Ebola Treatment Centre (ETC). It took the state government offering an incentive package, which included a daily remuneration fee (based on the weighted exposure of the volunteer to the patients), as well as guaranteed life insurance for health workers before health workers stepped forward to volunteer. What this situation revealed was that there is no existing scheme available to Nigerian health workers, which would allow them to voluntarily perform their regular duties in a health crises as service to

their nation, without asking for extra remuneration. Some of the volunteers are yet to be remunerated for their service, during the outbreak and this reveals the value that the government places on its health workforce, and yet still expects them to show up daily to work. Moving forward from this, using the incentive package put together for the volunteers as a model, the hazard allowance currently being paid to health workers should be revised according to the level of exposure to work-related risks, and possibly introduce health insurance policies.

At the ETC, there were two main objectives;

1. To ensure that the patients on the wards received adequate care
2. To ensure that no health worker caring for the patients got infected.

To achieve these objectives, a lateral flow of movement needed to be established on the treatment ward; where health workers would go into the facility sterile, and leave sterile. This meant that the wearing and taking off of the PPEs had to be done on the facility adjoining the ward, and thus a facility was built with that in consideration. Also, a lot of practice sessions had to be done with the volunteers to ensure that they got things right. An observer system was also instituted, with volunteers placed in pairs, with each pair looking out for each other, ensuring that the other does not make any mistakes that could jeopardize their safety.

Despite the many challenges and the toll of the outbreak on the health workers, those who stepped forward as volunteers moved and worked as one, and that ultimately contributed to the successful containment of the disease.

Discussion: Q & A

Comment: From the discussions today, stigmatization has been pointed out as a huge problem. The government needs to put

measures in place such as jingles and public awareness programs to educate people against it.

Comment: The media played a vital role in passing on information to the public during the outbreak. However, there were instances where some reporters misconstrued scenarios just so they could get a story out there. It is therefore important that a mechanism be set up by the relevant authorities where accurate information is shared with the media on a regular basis. This will help ensure that the media have the right information on all issues more often than not.

Comment: During the outbreak, there was an embargo placed by the EEOC on the sharing of information. The policy was that only the Minister and Commissioner of Health could share updates to the media and public. While this turned out to be a beneficial policy in terms of the fact that it helped to reduce public panic, it may not always be the case. Therefore, it may be necessary for the relevant authorities to revise this policy on a case by case basis, depending on the crises at hand.

Question: What is the benefit of exit screening of people in a country that has been declared Ebola free?

Response (Dr Alex-Okoh, Director, Port Health Lagos): Some countries such as the United States of America and Dubai, insisted that passengers coming from Nigeria needed to be screened from their point of departure, and it was also a recommendation from the WHO. So even though Nigeria is now Ebola-free, as long as it still remains a problem in West Africa, other countries around the world will still be skeptical and would prefer us to screen our citizens before departing the country.

Response (Prof Tomori): Entry screening in Nigeria is necessary, especially since Ebola is still a threat in neighboring countries. However, it is a choice left to individual countries to decide if they want to carry out exit screening. The

new policy by the WHO on exit screening now is that this is only necessary for countries that have active outbreaks of Ebola in-country. A country that has been declared Ebola-free such as Nigeria need not carry out exit screening.

Question: Are there measures in place to screen passengers who are in transit?

Response (Dr Alex-Okoh): All arriving and departing passengers are being screened at the airport. The airport staff has also been duly sensitized and made aware of the outbreak and so call the attention of Port Health to passengers who show overt signs of illness.

SESSION THREE:

BUILDING OUR FUTURE FROM LESSONS LEARNED

Staying out of the woods of emerging and re-emerging infections: Disease control initiatives for future epidemics

(Emmanuel Abanida, Director Disease Control and Immunization, NPHCDA)

The world is facing challenges from both new/emerging and re-emerging diseases. With re-emerging diseases, countries have the advantage of having time to develop control strategies and implement them thus limiting the effect of the disease. This is unfortunately not the case in Nigeria as we fail to prepare and/or put in adequate control strategies, and when a re-emerging disease rears its ugly head again, there are again many casualties.

Pandemics and epidemics have become a part of mankind as a result of global evolutionary changes and natural phenomena, with new diseases being recorded every decade. In the last 40 years, about 25 new diseases have been recorded, 70% of them are zoonotic in nature, and about 23% are vector borne. This is not surprising owing to human influences, such as human demographics, international travel and migration, wars and conflicts, breakdown of health infrastructures, pollution, and global climate changes. The African continent, in the last decade particularly, has had to grapple with more emerging and re-emerging disease conditions, resulting in the channeling of most of the public health resources meant for communicable and non-communicable diseases into its resolution.

In the last few years, two major disease control policies have been put in place for emerging and re-emerging diseases

1. Integrated Disease Surveillance and Response (IDSR); an initiative by the global community, and owned by Africa and Nigeria. It is currently under the purview of the NCDC, and the Nigerian

Academy of Science recently held workshops and training on disease surveillance for all states in the country.

2. Re-modeling of the IDSR into the national health regulation; an initiative of the World Health Assembly resolution. One of the outcomes of this is the exit and entry screenings in the face of outbreaks, which is being currently practiced.

However, the overriding issue in Nigeria is not a lack of initiatives or adequate policies, which already exist for every conceivable scenario, but a lack of:

- a. Good governance
- b. Accountability
- c. Saying no to impunity

One of the major contributing factors to the successful containment of the Ebola outbreak was the fact that someone or a group of people took ownership of the situation, and decided to be held accountable. It is therefore necessary to hold officers in notable public offices accountable for the portfolios they supervise. This is not a practice that is common in Nigeria and thus contributes to the national decadence.

Taking our success on the Ebola containment into account, there is need for the country to look inward; take the lessons learnt, refine them, and translate them into the health sector, in the fight against other diseases. Accountability needs to be ensured, with every officer taking ownership of their responsibilities. Measures also need to be put in place to encourage those doing well, as well as to punish the defaulters.

Immunization in disease prevention and control: the Ebola vaccine

(Oyewale Tomori FAS, President, the Nigerian Academy of Science)

There are two experimental vaccines being currently tested. Both of them consist of a harmless virus 'spiked' with a protein derived from the

Ebola virus which is supposed to prompt an immune response to the harmless virus and the Ebola protein, thereby developing Ebola virus antibodies which will lead to protection upon exposure to the live virus.

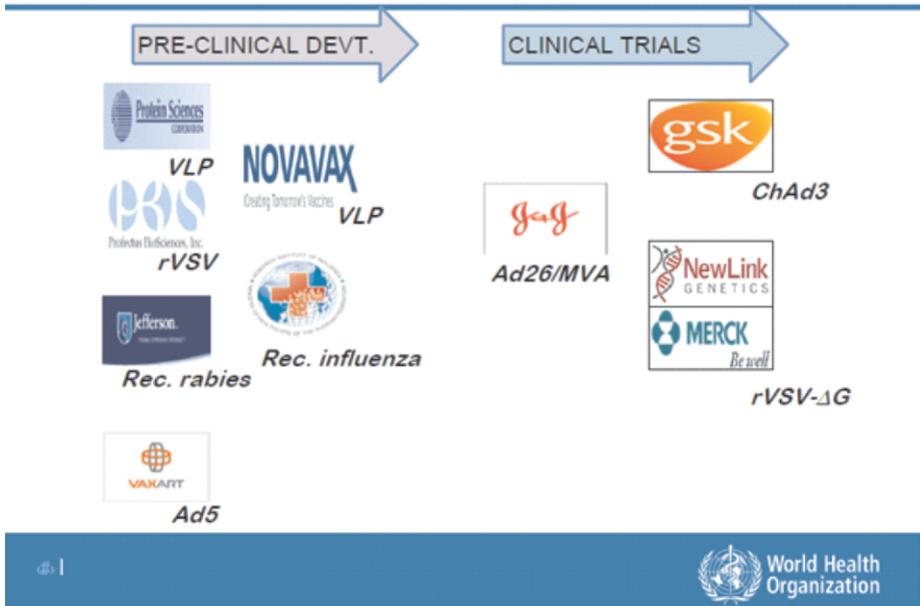
1st Vaccine- Chimp Adenovirus Serotype 3 (ChAD3)

- ✍ Recombinant adenovirus that affects chimpanzees
- ✍ Contains genetic material from 2 Ebola virus strains; the Zaire and Sudan strains
- ✍ The recombinant adenovirus does not replicate in the human body but stimulates an immune response to the disease

2nd Vaccine- VSV-ZEBOV

- ✍ Consists of a vesicular stomatitis virus (VSV), that mainly affects animals (including rodents, cattle, swine and horses)
- ✍ One of the VSV genes is replaced with a gene for the outer protein of the Zaire strain of the Ebola virus

Pipeline



Other Vaccines in the pipeline Source WHO

On the 23rd of January 2015, GlaxoSmithKline (GSK) and the National Institutes of Health (NIH) achieved a major milestone, as their candidate Ebola vaccine had its first doses shipped to Liberia for use in phase III clinical trials. This milestone has sparked various questions and ethical issues for consideration. One of such is the fact that there has been a steep fall in the number of Ebola cases in Liberia. While this is a good development for the country, the vaccine cannot be adequately tested where there are not enough cases. During the course of the current outbreak, Africans have been clamoring for a cure and/or vaccine, even though the disease has been in existence in Africa since 1976, and had not been taken seriously. Now the global community has also now taken the disease seriously, especially seeing that it has

spread beyond the shores of Africa into other continents. The question now is, should we be focused on a cure and/or vaccine development, rather than strengthen our health systems and infection control measures which have greatly contributed to the spread of the infection? Vaccine development and the trial process is a lengthy one; we cannot afford to allow these diseases to thrive among us in view of a vaccine still in the production stages, while our people suffer and die.

Right now, different drugs, by different companies, are being tested in Liberia, Sierra Leone, and Guinea. As we are desperate for a cure, we seem to allow & accept any and every claim for a cure, which may be to the detriment of our people. Africans need to take charge of their problems, and find ways to solve them; taking the initiative to solve our own problems as against waiting for the Western world to bail us out and/or initiate the process. Nigeria was able to successfully contain the outbreak within a short period of time because we took ownership and were able to diagnose it internally, without waiting for international organizations to come in and help us solve our crises. This should be the attitude in Africa for us to move forward. Vaccines and drugs are not magic bullets in disease management, but instead we need to focus on adhering to basic hygienic principles and PREPAREDNESS.

Preparedness in:

- ✍ Disease surveillance
- ✍ Good hospital services
- ✍ Well trained health workforce
- ✍ Good laboratory services
- ✍ Community involvement
- ✍ Communication

Improving Nigeria's health system post-EVD outbreak

(Akin Osinbogun, Former CMD, LUTH)

To ensure improved performance and response in any disease outbreak situation, it is imperative for the country to have a strong health system. Though we were able to successfully contain the outbreak within a short period of time, and to the surprise of the international community, our initial response was rather sluggish, and suggested that we were not as prepared as we ought to have been, considering that the disease had been ravaging neighboring countries. With regards to our current health system, two things were clear from the outbreak:

- ✍ The local diagnosis of the virus within 48 hours was a life-saver for Nigeria. More importantly, that the outbreak occurred in Lagos was a miracle. This is because Lagos is one of the very few states in the country with the necessary tools and skill-set needed to diagnose certain diseases. Thus, the outbreak occurring in another state may have been disastrous, showing the need for the Nigerian health system to be up and running and equip many more centers around the country to be able to diagnose rare and emerging/re-emerging diseases
- ✍ The high mortality amongst health workers in Liberia and Sierra Leone resulted in the collapse of their already weak health systems. The local media hype in Nigeria, reporting several suspected cases around the country also heightened the fear amongst health workers, resulting in a contest between the professional's "duty to care", and an obvious threat to their lives. This revealed the lack of skilled manpower needed at this time, as well as the obvious knowledge gap, creating an urgent need for the education and re-education of the health workers

Factors that aided rapid control of the outbreak

- ✍ The resolute actions of the Lagos State government in making prompt decisions and in deploying resources, and the firm support provided by the Federal government

- ✍ The availability of financial resources, and the willingness of the Lagos State government to rapidly deploy same for disease control without hesitation or waiting for external support
- ✍ The above average health infrastructure already in existence in Lagos
- ✍ The above average human resource availability and distribution in Lagos, even despite the on-going strike action at the time
- ✍ Ability and willingness of the Federal and State health officials to work together. The professionals were also left to their jobs without interference; political or otherwise

Preparing for future outbreaks

In preparing Nigeria for future disease outbreaks, as well as safeguarding the socio-economic losses that could occur during such outbreaks (It was estimated that missed business opportunities, and a reduction in production activities during the Ebola outbreak would have caused a reduction in the GDP of Lagos state, to the tune of NGN 81 billion), the current health system needs to be strengthened for improved performance and response. The inefficiencies in the current health system which include 1) uncoordinated finance mechanisms, 2) dysfunctional referral mechanisms, 3) incessant strike action by the various groups of health workers, need to be looked into and worked on. There is also the need to focus on the key tasks involved in dealing with emerging and re-emerging diseases which include:

- 1) Surveillance at the national, regional and global level in these aspects:
 - ✍ Epidemiological
 - ✍ Laboratory
 - ✍ Ecological
 - ✍ Anthropological
- 2) Investigations and early control measures

- 3) Implementation of early control measures:
 - ✍ Behavioral
 - ✍ Political
 - ✍ Environmental

Further action needed to move Nigeria's health system forward

- 1) Refining the present preparedness structure
 - ✍ Enhancing the disease reporting system
 - ✍ Enable academic centers to oversee state and local health authorities for regular collection, analysis, and interpretation of epidemiological data. There is need for the NCDC to leverage on our existing academic medical centers; make use of those in training to collect, analyze, and publish data, rather than set up new ones and spend more money on personnel
- 2) Investing in developing specialist human resource such as:
 - ✍ Epidemiologists
 - ✍ Infection control specialists: at the time of the outbreak, there was no infection control specialist on ground, and we had to rely on the volunteer from WHO, who single-handedly worked in the ETC in the first few days.
 - ✍ The NCDC should try to source funding for the ETC volunteers for specialist training in infectious diseases
 - ✍ Laboratory diagnostic specialists who can work at various centers around the country
 - ✍ Infectious disease physicians
 - ✍ Health communicators
- 3) Re-structuring the funding mechanism to include funding for:
 - ✍ Research; both field and laboratory
 - ✍ Logistic support to academic centers to collaborate in surveillance with defined state and local health authorities
 - ✍ Field equipment and mobility for contact tracing and investigation

Above all, a strong health system is better able to prevent disease outbreaks and respond faster in containing outbreaks when they do occur. Further investment required to strengthen the Health System is only a fraction of the potential economic losses we are at risk of if adequate precautions are not taken.

DISCUSSION: Q & A

Comment: It is very important that the Federal Government recognizes the heroes of the Ebola outbreak for posterity reasons. It is high time that Nigeria starts recognizing people who have done things for the sake of national interest and public good such as this. The NAS should continue to advocate for this, till it is done.

Comment: We need to really look into getting the public health consultants in the medical teaching hospitals to oversee local governments in their respective states. They can get their resident doctors to carry out the necessary data collection, collation, and analysis.

Comment: The social network of individuals was a major contributor to the smooth cooperation between the Federal and State governments during the crises. It was professional colleagues calling on each other for advice, alumni of colleges providing necessary links etc. Round-table meetings such as this foster such relationships and should therefore be encouraged, and the successful relationships should be translated to other aspects of health system strengthening and not just in crises situations.

Comment: The outbreak has provided a rich opportunity for research, and the NCDC should try to collaborate with the medical institutions around the country to channel some of the burning issues into research topics, and make the post-graduate thesis being written in the universities more useful. UNICEF is in collaboration with some institutions

to sponsor some research studies on some of their interest areas in Nigeria. The NCDC can look into having such collaborations.

Comment: From this outbreak, we have seen best practices in people, policy, and practice. We should therefore be looking at how to harness these best practices shown here into burning issues within the health system, in a bid to achieve success as was achieved in the successful containment of the outbreak.

Comment: The Federal Ministry of Health is currently reviewing the 2004 National Health Policy. The state commissioners have not been invited to be a part of the planning and review process. These are issues for consideration. How do you expect these people to "own" the policy and run with it, if they are not part of putting it together, especially if it is meant to meet the needs of their people? Also, the National Health Act has recently been signed into law, and has a budget for emergency medical situations. However, as the parameters and or criteria needed to benefit from the fund have not been established, it will be difficult for this act to be implemented. The Nigerian Academy of Science is in a position to give advice on how the FG can implement the fund.

APPENDIX

Acronyms

AHJA	African Health Journalists Association
APHPN	Association of Public Health Physicians of Nigeria
ChAD3	Chimp Adenovirus Serotype 3
EEOC	Ebola Emergency Operations Center
ETC	Ebola Treatment Center
EVD	Ebola Virus Disease
FMOH	Federal Ministry of Health
GSK	GlaxoSmithKline
HERFON	Health Reform Organization of Nigeria
IDH	Infectious Diseases Hospital
ISDR	Integrated Disease Surveillance and Response
IM	Incident Manager
LASAMBUS	Lagos State Ambulance Service
LASEMA	Lagos State Emergency Management Agency
LSMOH	Lagos State Ministry of Health
LUTH	Lagos University Teaching Hospital
MSF	Medecins Sans Frontieres
NAS	Nigerian Academy of Science
NCDC	Nigeria Center for Disease Control
NMA	Nigerian Medical Association
ORT	Oral Rehydration Therapy
POE	Port of Entry
PPE	Personal Protective Equipment
RSMOH	Rivers State Ministry of Health
SAN	science Association of Nigeria
SOP	Standard Operating Procedure
VSV	Vesicular Stomatitis Virus
WHO	World Health Organization

Attendance List

Name	Surname	Affiliation
Jide	Idris	Lagos State Commissioner for Health
Abdusalam	Nasidi	Director, NCDC
Emmanuel	Abanida	Director, Disease Control & Immunization, NPHCDA
Akin	Osibogun	Consultant Public Health Physician LUTH
Olukayode	Oguntimehin	Deputy IM, EEOC
Bayo	Onajole	Director, Community Mobilization EEOC
Benjamin	Ohiaeri	CMD, First Consultant Hospital Lagos
Declan	Okpalaeke	President, AHJA
Ada	Igonoh	Medical Officer, First Consultant Hospital
Oyewale	Tomori	President, NAS
Temitayo	Shokunbi	Fellow, NAS
Stephen	Owa	President, SAN
Oladele	Kale	Fellow, NAS
Mosto	Onuoha	Vice-President, NAS
Yussuf	Quduus	Director, Public Health Ogun State Ministry of Health
Morenike	Alex-Okoh	Director, Port Health Lagos
Ben	Anyene	Chairman, HERFON
Sunday	Omilabu	Head, Virology Laboratory LUTH
Luther-King	Fasheun	Well Being Foundation
Alero	Roberts	Ebola Trust Fund Private Sector
Adeyeye	Arigbabuwo	President, AGPMPN
Tolu	Olufunlayo	Vice-Chair, APHPN Lagos Chapter
Irene	Isibor	World Health Organization
Ismail	Abduls-salam	State Epidemiologist, LSMOH
Ify	Nwaduifo	State Epidemiologist, RSMOH
Tochi	Okwor	Volunteer, EEOC
Bankole	Cardoso	First Consultant Hospital
Yetunde	Abatan	Volunteer, Port Health
Ebun	Sesso	Vanguard Newspapers
Nneka	Nwaneri	Daily Independent Newspapers
Bukola	Adebayo	Punch Newspapers

Tunde	Saiki	Nigerian Television Authority
Tosin	Oodusola	EKO FM Radio
Bimbo	Alabi	UNILAG FM
Michael	Ilesanmi	Voice of Nigeria
Temie	Giwa-Tubosun	Nollywood Workshop
Oladoyin	Odubanjo	Executive Secretary, NAS
Scholastica	Lan	Program Manager, NAS
Kikelomo	Ogunsulire	Program Officer, NAS
Anjolaoluwa	Olanipekun	Program Officer, NAS



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