

5-26-2022

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Recommended Citation

Chulwoo Park. "Lessons learned from the World Health Organization's late initial response to the 2014-2016 Ebola outbreak in West Africa" *Journal of Public Health in Africa* (2022). <https://doi.org/10.4081/jphia.2022.1254>

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Lessons learned from the World Health Organization's late initial response to the 2014-2016 Ebola outbreak in West Africa

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Abstract

The purpose of this article is to 1) examine the role of the World Health Organization (WHO) in controlling infectious disease outbreaks, 2) evaluate if the WHO's initial response to the 2014-2016 Ebola crisis was appropriate, 3) evaluate current WHO's efforts to prevent future disease outbreaks after the Ebola elimination, and 4) suggest how WHO should be further reformed to provide prompt and accurate guidance to multi-sectoral health stakeholders at local, national, regional and global level for effective surveillance preparedness and response. This is a non-systematic narrative literature review. The articles from PubMed, Scopus, Medline, books, WHO documents and websites, and mass media were collected to be analyzed. WHO is the only specialized agency in the United Nations (UN) that promotes people's health with legitimacy around the globe. Due to the lack of funding and health workforce, weak global health governance, and political and economic concerns about afflicted countries, WHO failed to respond promptly to the 2014-2016 Ebola outbreak in West Africa. WHO has a central role in the architecture of global health governance. Although WHO was not the only one to be responsible for devastating 2014-2016 Ebola Virus Disease (EVD) outbreak in West Africa, it is undeniable that WHO was unprepared to respond to the EVD and failed to govern the global health response system. Furthermore, WHO should always remember its unique responsibility of taking the initiative to respond to the infectious disease outbreak by alarming a distress call.

Introduction

The 2014-2016 Ebola Virus Disease (EVD) epidemic in West Africa was one of the largest, most devastating, and most complex outbreaks in the history of infectious disease.¹ According to the World Health Organization (WHO), a total number

of 28,616 confirmed, probable and suspected cases have been reported in Guinea, Liberia and Sierra Leone in West Africa, and 11,310 died in those cases.² WHO identified the first case of the EVD through retrospective case-finding; a 2-year-old Emile Ouamouno from the remote village of Meliandou in Guinea fell ill with mysterious symptoms including black stool, fever, and vomiting, and died two days later on 28 December 2013.^{3,4} The virus, which caused the 2014-2016 West African Ebola outbreak, turned out to be the most lethal among the family of five distinct Ebola species, called the Zaire.^{3,5,6} Meliandou, the ground zero of EVD, is a triangle-shaped forested area where the borders of Guinea, Liberia and Sierra Leone converge, and hunters and their families in that area are presumed to have eaten Ebola-infected bush meat.³ Through the notoriously porous borders, the earliest EVDs from Meliandou cluster were rapidly spread to the whole country and its neighboring countries – Liberia in March 2014 and Sierra Leone in June 2014 – affecting entire territories of the three countries.^{3,5,7-9} Since all three countries had no experience of EVD at all and their health infrastructures were severely damaged due to past civil unrest,³ it was not in their capacities to stop EVD.

Case fatality rates (CFRs) of EVD have varied between 25% to 90% in the past outbreaks;⁵ the “naive CFRs” from 2014-2016 in West Africa were over/underestimated in the middle of outbreak due to an incomplete retrospective validation of cases and deaths.¹⁰⁻¹³ When WHO realized the gravity of the situation and declared the EVD outbreak in West Africa a Public Health Emergency of International Concern (PHEIC) on 8 August 2014, the outbreak was already out of control, with 1,070 confirmed cases and 932 deaths.¹⁴ Various mass media and scholars began claiming that WHO intentionally delayed declaring the Ebola emergency due to an ungrounded fear of damaging the economies of the afflicted countries.¹⁵⁻¹⁷ Most global health actors – multilateral organizations, international nongovernmental organizations (NGOs), and philanthropic foundations – failed to respond in the initial stages of the EVD outbreak,¹⁸ and it caused them to take more than two years to completely eliminate EVD from the onset of the first case. At long last, WHO declared all three countries free of the Ebola virus transmission as of 29 December 2015^{19,20} and terminated the PHEIC as of 29 March 2016.²¹ The “apparent CFR” of this Zaire EVD outbreak in West Africa with definitive recorded laboratory-confirmed cases (15,227), accounting for delays between the onset of Ebola

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Key words: World Health Organization, Public Health Emergency of International Concern, Ebola outbreak

Acknowledgments: The author gratefully acknowledges anonymous reviewers.

Conflict of interest: The author declares no potential conflict of interest.

Funding: None.

Received for publication: 12 September 2019. Accepted for publication: 29 October 2021.

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Journal of Public Health in Africa 2022; 13:1254
doi:10.4081/jphia.2022.1254

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symptoms and final outcome until 8 May 2016,^{10,20} is 74.3%.

WHO is the only global health institution from the United Nations (UN) that rationalizes global health funding and activities with the legitimacy, but it faces a leadership crisis due to the advent of conflicted powerful actors and multilateral organizations that are pursuing their vested interests.²² This article investigates the following curiosities: 1) If WHO had not ignored the screams for help from staffers on the ground in Guinea in mid-April 2014,¹⁶ could a number of Ebola deaths have been prevented? 2) As the agency that has the unique authority to lead a global response to a health crisis, why was WHO content to adopt a “sit back and wait” attitude at the initial stage of Ebola outbreak? 3) Why does declaring a PHEIC matter since WHO has no hard power to compulsorily collect financial aid and govern global health actors? 4) What lessons has WHO learned from the Ebola outbreak and how has the organization been changed? 5) How should WHO strengthen public health sur-

veillance with rapid detection, assessment, and response in order to better fight a disease outbreak in the future?

Materials and methods

The study design was a non-systematic narrative literature review. Articles written in the English language during 2014-2016 were selected from PubMed, Scopus, Medline, books, WHO documents and its websites, and online mass media. For PubMed, Medical Subject Heading [MeSH] terms were used: “Ebola virus,” “Hemorrhagic Fever, Ebola,” “Ebola Vaccines,” “Africa,” “Africa, Western,” “Sierra Leone,” “Guinea,” “Liberia,” “World Health Organization,” “Government,” “Centers for Disease Control and Prevention (U.S.),” “Organizations,” “Health Policy,” “Policy Making,” “Public Health,” “Public Health Surveillance,” “Emergency Responders/organization and administration,” “Infectious Disease Incubation Period,” and “Infectious Disease Medicine.” Title/Abstract [TiAb] or Text Words [TW] were additionally used: “response,” “preparedness,” “emergency” and “governance.” Same keywords from PubMed were used for Scopus and Medline. Inclusion criteria were “the WHO’s performance during 2014-2016 Ebola outbreak in West Africa,” “Governments and NGOs efforts to contain the EVD,” “PHEIC,” “International health regulation and funding,” and “Global health governance and reform.” Exclusion criteria were all others from the screening process, such as not mentioned the global health actors’ reaction to the EVD, PHEIC, regulation and funding, and global health governance and reform. Among 486 records screened, 47 articles from core qualitative studies, books, and newspapers were included.

Results

Public health emergencies of international concerns

After experiencing two frightening outbreaks – Severe Acute Respiratory Syndrome (SARS) and highly pathogenic Influenza A (H5N1) – political leaders at last realized the urgent necessity to revise the International Health Regulations (IHR) that has not been updated since 1969.^{22,23} The 58th World Health Assembly (WHA) – the supreme governing bodies for the WHO²⁴ – adopted the second edition of IHR on 21 May 2005, including PHEIC “an extraordinary event which is determined, 1)

to constitute a public health risk to other States through the international spread of disease and 2) to potentially require a coordinated international response.”²⁵ In 2009, WHO declared the first PHEIC in response to the swine flu (H1N1) pandemic.²² The communication flow for constituting PHEIC is illustrated in Figure 1.^{22,26,27}

In a globalized world, the government has decreased the ability to control a deluge of information, so WHO cannot entirely rely on official state reports that are possibly antiquated.²⁶ Since NGOs are doing actual fieldwork on the ground, they face urgent health crises much faster than the government. To reflect this situation, Article 5 of IHR (2005) empowers WHO to consider unofficial sources from NGOs, mass media, newspapers, independent scientists, and any other non-state actors.^{22,23,25,26} Also, Article 12 of IHR (2005) clearly states that WHO Director-General has the exclusive power to make a final decision regarding declaring a PHEIC.^{22,23,25} However, Margaret Chan, the current WHO Director-General, postponed declaring PHEIC for the Ebola outbreak for 5 months, from the date that the Ebola virus began to spread internationally. Only a few international NGOs, Médecins Sans Frontières (MSF), Partners in Health, and Samaritan’s Purse, promptly went to the frontline to fight the EVD, and they continuously sounded the alarm about the seriousness of the outbreak through the media. Staffers in the field in Guinea and an Ebola expert from WHO Regional Office for Africa (WHO-AFRO) sent a number of emails separately to the WHO’s Geneva headquarters in mid-April 2014 saying “WE NEED SUPPORT.”^{16,17} MSF urged WHO to deploy a massive supply of resources in June 2014, claiming that “the epidemic is out of control.”

Although WHO headquarters in Geneva was well informed of how serious the situation was, they worried that a PHEIC would ramp up political and religious pressure and give rise to catastrophic economic consequences for the afflicted countries.^{16,23} A PHEIC includes imposing travel and trade restrictions, so afflicted countries would suffer from precipitous reductions in tourism and trade.²³ In addition, Saudi Arabia would not want to allow Muslims from West Africa to visit Mecca for the Islamic Hajj pilgrimage due to the fear of the EVD.^{16,28,29} For these reasons, WHO declined all requests by downplaying the seriousness of the problem until 8 August 2014. WHO was quoted as saying, “This outbreak isn’t different from previous outbreaks... It may be more effective to use other diplomatic means for now.”¹⁶ WHO was criticized for unnecessarily fueling public fear from the PHEIC declaration for 2009’s H1N1 and 2014’s polio because H1N1 was not that contagious and polio was peripheral in a certain area.²³ Because of this, WHO did not want to exaggerate the magnitude of the disease crisis and wanted to wait for the absolute certitude of the situation in order to issue a PHEIC declaration.¹⁵ However, the WHO’s approach to this crisis was against the basic pattern of the epidemiologic curve, that the earlier detection and faster responses reduce morbidity and mortality.²³

According to the preamble of WHO constitution, “Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.”³⁰ In the same vein, Margaret Chan said that “We are not the first responder. You know, the government has first priority to take care of their people and provide health care.”³¹

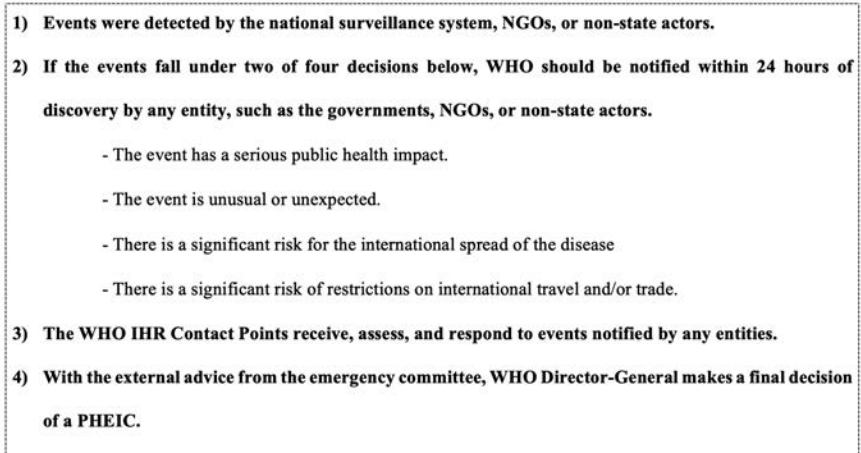


Figure 1. The communication flow for constituting PHEIC.

Keiji Fukuda, WHO Assistant Director-General for Health Security, concurred with her that “WHO did not have enough health workers, doctors, nurses, drivers, and contact tracers to manage the high numbers of Ebola cases.”³¹ However, these three West African countries had almost no resources, including a lack of health facilities, health workforce, and knowledge about the disease, to contain the EVD and needed absolute humanitarian assistance.

WHO monitors 800 disease outbreaks worldwide every year, but its staff size of 7,000 employees is 50% less than that of the Centers for Disease Prevention and Control (CDC).^{32,33} Margaret Chan made a speech at the 68th WHA that “WHO was overwhelmed, as were all other responders,” regarding public criticisms of WHO’s late initial response to EVD outbreak.³⁴ Also, Bruce Aylward, the WHO’s top Ebola official, adhered to the conservative thought that labeling the EVD outbreak a PHEID would not have been a magic bullet;¹⁶ in that case, then, does a PHEIC even matter? There are in fact a few reasons supporting the importance of a PHEIC because it can deliver a prestigious, authoritative message that everyone pays close attention to. A PHEID does not involve dispatching a workforce from WHO on the ground but is about functioning as a global distress call. A PHEIC declaration should come with temporary, non-binding recommendations about health measures that member states are required to follow.³⁵ Thus, it would be able to press all global health stakeholders to focus on true crises among the 800 disease outbreaks each year and convey what resources are needed to respond to a particular disease. Likewise, Joanne Liu, MSF’s international president said that “[PHEIC] is important because it gives a clear signal that nobody can ignore the epidemic anymore.”¹⁶

When WHO was on the verge of declaring a PHEIC for the EVD, the World Bank Group heard about WHO’s exigent circumstances and pledged \$200 million in emergency funding to help contain the outbreak in West Africa.³⁶ After a PHEIC was declared, several member states reacted quickly to the EVD. U.S. President Barack Obama made a pledge to deploy 3,000 troops to Liberia on 16 September 2014;³⁷ the U.S. Department of Defense (DoD) spent a total cost of \$402.8 million to train 1,539 local health care workers, build 10 Ebola treatment units, and contribute to Ebola research.³⁸ The United Kingdom decided to send 750 troops and a hospital ship to West Africa to establish an Ebola Treatment Center and Ebola Training

Academy.^{39,40} France, China, Cuba, Germany, South Korea, and many other member states also provided humanitarian aid by building Ebola clinics, or sending lab/ disaster relief teams, health workers or motorbikes for the EVD response.^{16,41,42} The EVD was finally contained thanks to consistent hard work and efforts from inter-governmental organizations, member states, NGOs, and private sectors. The consequence of the late response to the EVD was brutal, however; the death toll reached 11,310 in three West African countries, Guinea, Liberia, and Sierra Leone.²

Contingency fund for emergencies

To keep global health governance operational, WHO needs to receive financial support from member states and non-state actors.^{26,43,44} WHO receives two types of funds annually: 1) regular budgetary funds (RBFs), called assessed contributions, and 2) extra-budgetary funds (EBFs), called voluntary contributions.^{26,43,44} While it is required for each member state to contribute to RBFs aligned with the size of its economy, WHO has no control over EBFs because member states or other private actors decide entirely on their own how much they will allocate to EBFs.^{26,43,44} Due to member states’ resistance to increasing RBFs, these funds have had no nominal growth in recent years.^{26,43-45} WHO has mainly relied on unpredictable EBFs, and these funds are 77% of the organization’s total funding.^{26,43-45} In addition, there has recently been a budget cut for WHO’s emergency category; funding for outbreak and crisis response was cut 51.4% (from \$469 million to \$228 million) for the 2014-2015 budget cycle, while funding for noncommunicable diseases increased 20.5% (from \$264 million to \$318 million). WHO attempted to reform its health system when the world experienced the 2009 swine flu pandemic,²² but its budgetary limitations were the biggest obstacle preventing the organization from becoming more responsive to global health threats.²⁶ To meet the economic demands for response to the infectious disease, the 2009 IHR review committee proposed several solutions: 1) establish a global health emergency workforce, 2) create a \$100 million contingency fund for emergencies (CFE) for use during a PHEIC, and 3) modernize strategies for IHR capacity building implementation.²² However, political will for the implementation of this proposal was challenging due to the global economic recession,²⁶ and WHO failed to raise a CFE and had no capacity or practical support to contain the EVD.

Who should be a champion for global health threats?

It is true that WHO has very limited funding to take action against a disease outbreak with its own capacity. It is also apparent that individual member states remained unmotivated to contribute EBFs to WHO. However, the WHO’s failure to initiate response to the EVD was not about a lack of funding, but a lack of will. WHO is not an international financial institution that provides grants or loans to afflicted countries, which is what the World Bank, Global Fund, Gates Foundation, and other philanthropic foundations do. WHO has six major roles to direct and coordinate authority on international health; 1) providing leadership, 2) shaping the research agenda, 3) setting norms and standards, 4) articulating ethical and evidence-based policy options, 5) providing technical support, and 6) monitoring and assessing health situation.⁴⁶ WHO did not fill any of these roles during the early stages of the EVD outbreak. Even if WHO does not have enough resources to deploy its own staff to the field, the organization should provide accurate, prompt, and impartial data and information concerning global health threats in order to gather all potential capacities from the multi-sectoral global health communities. The reason why WHO was severely criticized for its response to the EVD outbreak was that the public did not see the organization’s willingness to put energy into developing and implementing a disease response program to contain the EVD. It is the WHO’s fundamental role to lead and guide all stakeholders in how to react to unprecedented disease outbreaks; that is why the organization exists. Though governments are responsible for initially responding to diseases to protect their citizenry, WHO still needs to take the initiative to gather all global power to contain diseases if it is judged that the government has no health system to control the disease.

Current WHO’s efforts for disease response

Member states began investing in CFE to enable WHO to respond to the global health threats with its own capacity. Although WHO needs \$66.22 million more to fill the funding gap, a total of \$18.16 million was allocated to a number of WHO responses to disease outbreaks and natural disasters, such as the Hurricane Matthew in Haiti, the cholera outbreak in Yemen and DRC, the yellow fever outbreak in Angola, DRC, and Uganda, and the Zika virus in the Americas.⁴⁷ In early 2015, an outbreak of the Zika virus was identified in northeast

Brazil, and more than 3,000 suspected microcephaly cases were reported in Brazil during the second half of 2015 alone, which is 40 times higher than usual.⁴⁸ The Zika virus has spread to almost every country in the Americas. On 1 February 2016, WHO declared a PHEIC in response to the Zika virus.⁴⁹ Although it remains to be seen whether WHO used its authority and legitimacy to label Zika a PHEIC based on objective communication flow or as an evasion of more criticism from the media, it was a prompt action to attract great attention from all global health actors. In addition, WHO provided authoritative public health advice regarding the 2016 Summer Olympics, stating that canceling or changing the 2016 Olympics location from Brazil would not significantly alter the spread of the Zika virus internationally.⁵⁰ Thanks to the WHO's insight, the Rio Olympics was successfully held as planned with no Zika cases reported.⁵¹ As seen in this case, one of the WHO's functions is to minimize disruption by offering advice.

Heading for the future: essential reforms

WHO is long overdue for reforms that will allow the organization to respond to health emergencies more effectively. WHO should consider the following reforms:

- i. The WHO's next Director-General should not only have a working knowledge concerning the purpose and role of WHO but also possess a strong, assertive, decisive, and time-bound leadership.⁵² Good governance and leadership within WHO would be from a Director General.
- ii. WHO needs to lead the global health system governance by convening governments and other major stakeholders and developing a global strategy of investing national core capacities.^{35,52} Each government should agree to a regular assessment of its core capacities, provide adequate support to countries that suffer from diseases,⁵² and contribute to EBF and CFE.
- iii. It is necessary to review and define the WHO's core functions again to make sure everyone understands the scope of the function that WHO is required to do. WHO itself was confused concerning what to do during the EVD outbreak in West Africa due to the lack of understanding about the organization's constitution, mandate, legitimacy, and authority.
- iv. WHO needs to encourage NGOs and non-state actors to join in the 2030 Agenda for Sustainable Development and be willing to cooperate with

them.^{53,54}

- v. The Director-General's exclusive responsibility for a PHEIC should be broadened to a vote held by all member states.⁵² Making a final decision of a PHEIC from one person at the internal Emergency Committee meeting is not a democratic and transparent way, so all member states should exercise their rights to make an opinion by casting its vote.
- vi. Sovereignty, accountability, and responsibility should be clearly designated to respond to the disease without any confusion.⁵⁵
- vii. The governments, and NGOs should be the front line of working on the ground, but when their capacity is limited to control an outbreak, WHO should provide international support immediately by guiding all global health actors with clear direction.

Discussion and conclusions

As always, we have to learn from history. Someone may argue that it is nobody's responsibility to contain emerging infectious disease because an outbreak outside of the border is beyond the control of nation's sovereignty. However, in this global era, it only takes two days to fly around the world through commercial flights; it is everyone's responsibility to respond to the devastating diseases that take a human being's life because the disease on the opposite side of the earth can spread to any place at any time. If other nations and WHO chose to remain silent and ignore the disease outbreak that kept transferring across borders, how could the EVD be eliminated? Amidst the high tension of this sovereignty challenge, we need someone who can take the lead on transnational coordination and collective action. That is why we need the multilateral institutions, and WHO should have been the one that led the organization of an international response to the EVD. It is the WHO's role to enlighten all countries to the fact that stopping the EVD in West Africa should be in the interest of citizens around the world because it is a matter of time that regional disease crises can quickly become global threats. It is expected to see that WHO will be able to improve people's health globally by leading global health governance system with excellence in the near future.

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