

# The Ebola Virus Disease: Problems, Consequences, Causes, and Recommendations

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ARAMIDE ODUTAYO, APR 22 2015

### Problem Definition

On September 2014, the United Nation Security Council (UNSC) declared the Ebola Virus Disease (EVD) outbreak in Africa a threat to international peace and security.[1] The outbreak began in December 2013 in the rural Gueckedou district of Guinea.[2] It was hoped that the virus could be confined to Guinea, as even by April 2014, very few cases were identified in the neighbouring countries of Liberia and Sierra Leone. In addition, a drop in the number of confirmed cases in Guinea inspired hope that the epidemic was beginning to subside.[3] However, by May 2014, the number of reported cases increased sharply in the three aforementioned countries, and by August 16<sup>th</sup>, the disease had spread to Nigeria, with 2, 240 total cases and 1, 229 deaths in the four countries.[4] According to Dr. James M. Hughes[5], delays in recognition, reporting, and response in Guinea likely led to the spread of EVD to the regions' urban centers, where it rapidly intensified with deadly consequences for patients, healthcare workers, family members, and local communities.[6] By March 2015, a total of 24, 247 cases of EVD, causing 9, 961 deaths, had been reported in nine countries: Nigeria, Senegal, Guinea, Liberia, Mali, Sierra Leone, Spain, the United Kingdom, and the United States.[7]

The current EVD outbreak is unprecedented in a variety of ways. First, it has killed more than the previous 25 Ebola epidemics combined.[8] Second, it has affected nearly the entire territory of the three most affected countries including both rural and urban areas.[9] Third, it has been occurring for over a year.[10] Fourth, it is occurring in West Africa, an area that has not previously had an Ebola outbreak.[11] Hence, the nature of the outbreak in the three most affected countries has been devastating.[12] As of November 30<sup>th</sup>, the Ministries of Health of Guinea, Liberia, and Sierra Leone reported a total of 24, 247 cases of Ebola and 9, 961 deaths.[13] However, the spread of the outbreak has been inconsistent in these three countries. The World Health Organization (WHO) concluded that there has been a total of 58 new confirmed cases reported in Guinea, 0 in Liberia, and 58 in Sierra Leone in the first week of March.[14] The case fatality rate across these three countries is approximately 72% for all cases and 60% for hospitalized patients.[15]

The WHO and the United Nations partnered with other international organizations to help coordinate the global response to the outbreak.[16] On August 8<sup>th</sup> 2014, the WHO declared that the Ebola epidemic was a Public Health Emergency of International Concern (PHEIC).[17] PHEIC is an instrument of the International Health Regulations (IHR) – a legally binding agreement signed by 196 countries committing them to containing major international health threats.[18] PHEIC is defined as an extraordinary event that constitutes a public health risk to other nations through the international spread of disease, requiring a coordinated international response.[19] In a statement made by Director-General Margaret Chan, the WHO held that due to the continuing transmission of Ebola in West Africa, the high fatality rate, and the weak health services of the region, Ebola constituted a global public health emergency.[20]

The United Nations Security Council also deployed an emergency health mission to combat Ebola on September 18<sup>th</sup>. [21] The United Nations Mission for Ebola Emergency Responses, or UNMEER, has five priorities: stop the outbreak of the virus, treat the infected, ensure the provision of essential services, preserve the stability of the region, and prevent further outbreaks.[22] A comprehensive 90-day plan was established in West Africa to control and

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reverse the outbreak.[23] Two of the plan's key objectives were treatment and isolation of 70% of cases, and burial of 70% of those killed by the virus, safely and with dignity, by December 1<sup>st</sup>, with the ultimate goal to reach 100% in these objectives by January 1<sup>st</sup>, 2015.[24]

## Possible Consequences

Even if little or nothing is done to alleviate the situation in West Africa, the likelihood of an outbreak occurring in the West is very low. Although President Barack Obama,[25] the European Parliament,[26] and other international organizations have declared that the Ebola epidemic constitutes an international security threat, the Federal Health Minister of Canada,[27] the United States Department of Homeland Security,[28] and the National Health Services of the United Kingdom[29] have all concluded that the likelihood of people outside Africa contracting the virus is low.

Developed countries are well situated to respond if the Ebola crisis touches their borders for a variety of reasons. Canada, the United States, and the United Kingdom all have strong healthcare systems that are capable of reacting effectively to deadly viruses.[30] Dr. Keith Martin, executive director for the Consortium of Universities for Global Health, states that while some 50 countries had just begun developing networks aimed at responding to disease outbreaks, Canada, the United States, and the United Kingdom had already implemented strong response systems.[31] Dr. Martin cited the Severe Acute Respiratory Syndrome (SARS) crisis in 2003, which blindsided many health agencies at the time, as the impetus for creating a more unified approach to global infectious disease control.[32] For example, agencies in several countries had already established enhanced screening protocols for viruses such as Ebola prior to the current outbreak.[33] Following the UN declaration of Ebola as an international threat, enhanced screening programs were immediately put into effect in major international airports in these countries.[34]

Global consequences of the outbreak are thus very different for the more affluent West than for African countries. Unlike North America and Europe, the consequences of continued outbreak for West Africa are highly destructive. According to a recent UNDP study, the Ebola crisis is having ripple effects on regional economies and is destroying livelihoods.[35] The virus disproportionately affects women, as they are often the primary caregivers to family members.[36] In Guinea, women represent up to 74% of the infected.[37] Because women are often responsible for growing, trading, and cooking food in West Africa, the virus has impacted these sectors in particular.[38]

Based on a UNDP survey, 97% of respondents reported significantly reduced incomes from farming, petty trading, and service delivery, and Liberia is reported to be facing 30% deflation, insecurity, and social disruption in capital cities that were already struggling to recover from decades of war.[39] In some countries, mining operations ceased as workers left affected areas; farmers who account for two-thirds of the working population abandoned their fields, threatening food shortages; and cross-border commerce was stifled.[40] Furthermore, employment in the informal sector and in education continues to decline in the three most affected countries.[41] The UNDP study also reported that two million children in the affected countries have been affected by school closures.[42] Finally, the destabilization of healthcare systems in these countries is also having a devastating impact on health beyond EVD as clinics become overwhelmed or nonfunctional.[43] As the epidemic progresses, it is likely that health system will further disintegrate and, as a result, some countries could experience greater suffering and deaths due to non-Ebola diseases such as malaria, tuberculosis, or AIDS.[44]

## Probable Causes

Although the first recorded Ebola outbreak occurred in 1976[45], the source of the outbreak is still unknown.[46] Ongoing investigations have found that the disease may have originated in bats hunted for meat in forested areas where the initial cases were reported.[47] Scientists have yet to come to a consensus as to the specific bat species which serves as the host of the virus.[48] It is likely, according to Dr. Eric Leroy, that the current outbreak originated in a single infection from a bat that then triggered multiple cycles of human-to-human transmission.[49]

The destructive nature of the current epidemic can also be attributed to the combination of several intersecting factors, including fear, infection and death of healthcare workers, traditional funeral practices, poverty, and

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international indifference.[50] With a 72% infection rate and the lack of any cure, Ebola triggered widespread fear among local populations that led to the rapid intensification of the disease. [51] Fear of infection caused many individuals in contact with infected persons to evade screening programs, and led patients to leave treatment centers early.[52] Fear also motivated relatives to hide symptomatic family members from health workers or to seek out traditional healers for help.[53] Rumors circulated in many West African countries about miracle cures, with at least two individuals in Nigeria dying after drinking salt water that was rumored to prevent infection.[54] Effective communication and community engagement are necessary to prevent fear from creating new transmission chains.[55]

A second factor in the rapid spread of the disease was the infection and death of healthcare workers, which profoundly impeded outbreak control.[56] Sierra Leone, Guinea and Liberia together recorded 840 confirmed health worker infections and there have been 491 reported deaths.[57] Many other health workers refused to show up to work for fear of infection. Because medical staff is critical in controlling outbreaks, the loss of so many health workers and resulting hospital and clinic closures dealt a critical blow to containment efforts.[58] Loss of healthcare workers and facilities further increased fear within the community.[59] The high risk of infection for health workers has also made it difficult for the WHO to recruit sufficient international medical workers to help in the area.[60]

A third short-term cause of the outbreak is traditional West African funeral practices that involve close contact with infectious corpses.[61] The problem of conducting burials in a safe and dignified manner has made it increasingly difficult to reduce the transmission of the disease.[62] In Guinea, 60% of Ebola cases were linked to traditional funeral practices that involved the touching and handling of a potentially infectious body by family and community members.[63] Consequently, in Liberia, all corpses are now being cremated, while in other countries a healthcare worker is present during the burial to make sure that proper measures are taken to prevent further infections.[64]

There are also several long-term factors that contributed to the current Ebola outbreak, notably poverty and international indifference. Those countries that have had the largest outbreaks, Guinea, Liberia, and Sierra Leone, are among the poorest in the world and have only recently emerged from years of armed conflict that destroyed or severely disabled healthcare systems.[65] There are only one or two doctors available for every 100,000 people in these countries, with the vast majority working in urban areas. Hospital resources for infection control, such as isolation wards, are nonexistent.[66] Although contacts with infected persons are traced in many of the infected countries, individuals are not consistently isolated for monitoring.[67]

Another probable cause of the outbreak is that the lack of consistent employment leads many to travel across borders to find work.[68] Transmission rates at the intersection of the Guinean, Liberian, and Sierra Leonean borders are particularly intense due to cross-border migration.[69] While the WHO's decision to quarantine this area was necessary for containment, it has resulted in severe economic hardship for more than a million people.[70]

Perhaps most importantly, Ebola was able to establish itself as an epidemic infection because of international indifference and an inadequate and delayed global response.[71] In contrast to the 2013 Ebola outbreak in the Democratic Republic of the Congo, which was diagnosed within a matter of days, diagnosis of the current outbreak took three months. Additionally, it was not until eight months had passed and over 1, 000 people had died that a global health emergency was declared, with another month lapsing before the first arrival of humanitarian assistance.[72] The international NGO, Doctors Without Borders, which has been spearheading the response and care for patients with Ebola since March, continually called for a greater international response over the course of many months.[73] As the UN's Ebola Response Team stressed, responding promptly to an emerging outbreak is critical in order to contain it before it becomes epidemic in both the number of cases and its geographic reach.[74]

International indifference was also illustrated by the failure to invest in the IHR agreement of 2005, which was drafted specifically to deal with such an emergency.[75] The IHR was designed to prevent the international spread of disease, while minimizing interference with world travel and trade.[76] Unfortunately, the IHR was limited in several crucial aspects. First, it provided few mechanisms for countries to collaborate when investigating outbreaks and lacked specific risk-reduction measures to prevent the international spread of disease.[77] The IHR also created a disincentive to report disease outbreaks because unaffected countries might apply severe and unnecessary travel

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and trade restrictions that crippled tourism and industry in the infected country.[78]

Most importantly, the IHR required affected countries to notify the WHO of health crises that could constitute an international health emergency, and to develop core public health capacities.[79] Countries lacking effective core health capacities were given until 2012, with a possible 2-year extension, to satisfy the WHO's surveillance, diagnostic, and containment requirements.[80] With no additional financing for impoverished countries, and in the absence of effective accountability mechanisms to ensure countries met their commitments, many low and middle-income countries never developed the capacity to implement the IHR framework.[81] In Sierra Leone and Liberia, a variety of factors made it difficult to meet IHR goals, including decades of armed conflict that eroded public trust in the state, dysfunctional health services, and shortages of healthcare workers.[82] Thus the global surveillance and reporting systems envisioned in the IHR[83], which could have helped to prevent the Ebola epidemic, remained inadequate due to a lack of investment from member states.[84]

## **Policy Options and Recommendations**

The evolution of the current Ebola outbreak proves that there is a risk of the disease spreading to unaffected countries. With sufficient preparation,[85] however, such outbreaks can be contained before they become epidemic.[86]

In response to the significant health, economic, and social havoc caused by Ebola in West Africa, governments and WHO have instituted a policy of using International Preparedness Teams to ensure currently unaffected countries are prepared to deal with the disease. The immediate objective of each team is to ensure that high-risk countries are operationally ready to effectively and safely detect, investigate, and report potential cases of Ebola, and to coordinate an effective response that will prevent a larger outbreak of the virus.[87] The Ebola virus preparedness teams are supported by UNMEER and are formed with national and international partners such as the International Associations of National Public Health Institutes, the Global Outbreak Alert and Response Network, and the national public health authorities in Canada, England, and the United States.[88]

The preparedness teams' primary focus should be on neighbouring countries which have weak health systems, and that are related to infected countries through trade and migration patterns that make transmission of the disease likely.[89] Teams were deployed to Mali and Cote d'Ivoire in October, Cameroon, Ghana, Guinea Bissau, and Mauritania on November 10<sup>th</sup>, Benin, Burkina Faso, Gambia, and Senegal on November 17<sup>th</sup>, Togo on November 24<sup>th</sup>, and the Central African Republic, Niger, and Ethiopia on December 1<sup>st</sup>. [90]

The international coalition that organized these teams has drafted a comprehensive checklist of core principles, standards, capacities, and practices that all high-risk countries must satisfy.[91] The checklist identifies ten tasks that both high-risk countries and the international community should meet within the next 30 to 60 days from issue of the guidelines.[92] These include: overall coordination, rapid response, public awareness, community engagement, infection prevention and control, case management and safe burials, epidemiological surveillance, contact tracing, laboratory capacity, and capacity-building for points of entry.[93] In-country training and capacity-building activities are also undertaken during each mission, including field visits and simulation exercises.[94] Key areas for improvement are identified during the initial visit and, if possible, some technical experts remain in the country to oversee preparations.[95] Action plans, including strategic priorities and estimated costs, are also drafted during the team missions so that subsequent capacity-building activities can be implemented rapidly.[96] These preparedness efforts represent the best policy for containment and should be expanded to other regions in Africa to restrict the spread of Ebola.

The deployment of International Preparedness Teams has profound implications for the international community's approach to future public health emergencies.[97] The first implication of this policy option is that traditional "outbreak control" efforts are no longer sufficient for an epidemic of this size.[98] In preparing the budget for the crisis, the World Health Organization relied on a misplaced confidence that it would be able to rapidly raise funds in the face of such a global threat.[99] The delay in donations contributed to the spread of the disease.[100] A better approach would be to employ large-scale coordinated humanitarian, social, public health, and medical responses,

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implemented in a timely manner, and be combined with more traditional public health measures.[101]

Second, an appropriate response also requires an appreciation of the culture of the affected countries. Interventions should only occur with the population's consent, as was the case with the preparedness teams that were deployed throughout Africa.[102] Interventions should also involve collaboration with the affected communities, and the rebuilding of trust with the population must be a priority.[103] To ensure the success of these integrated efforts, communication must be improved among governments, NGOs, international organizations, academic institutions and the wider civil society.[104]

Third, the development of diagnostic tools, therapies, and vaccines for rare but potentially devastating epidemic diseases must be prioritized during inter-epidemic periods, and mechanisms for the accelerated development and testing of such tools during outbreaks must be established.[105] Ultimately, the Ebola epidemic has shown the limits of classic containment policies.[106] International Preparedness Teams equipped with pre-approved diagnostics, therapies and vaccines would be more effective in dealing with future outbreaks.[107]

More importantly, prevention of future outbreaks requires a bridging of the development gap between African countries and the rest of the world, particular in terms of healthcare.[108] The underdevelopment of countries such as Guinea, Liberia, and Sierra Leone and the relative poverty of their healthcare systems were major factors in the spread of Ebola. Underdevelopment is a result of the decline in Western investment and trade, and the inadequate levels of economic aid and technical assistance to the region.[109]

One solution currently underway is fostering mutually beneficial relations between China and African countries that contribute to economic development in the region.[110] Chinese-African relations are a model of "South-South" cooperation and development, which is more likely to generate win-win outcomes for both parties, in contrast to the zero-sum outcomes of globalization and Structural Adjustment Policies that have marked Africa's five decades of postcolonial relations with the West.[111]

As a result of disappointing economic performance in the 1970's and 1980's, many African governments came to depend almost exclusively on loans from the International Monetary Fund that imposed draconian Structural Adjustment Programs and other harmful conditionalities in return for loans.[112] In contrast, China attaches no conditionalities to its investment and infrastructural development projects, technical assistance, debt write-offs, foreign aid, or preferential market access to Africa.[113]

The main concern with this policy proscription is that African countries must be proactive to ensure they derive the maximum benefit from such investment, as their economic interests and development goals will not always coincide with the economic interests of China.[114] Highly-impooverished countries in particular must determine how to leverage their relationship with China in a manner that will be mutually advantageous.[115] China "should not be allowed to follow the usual pattern of big powers that have traditionally treated Africa mainly as a source of raw materials, cheap labor, and market for finished goods." [116]

While Chinese investment has been overwhelmingly focused on infrastructure related to resource extraction and export, there is a potential for African governments to leverage such investment into wider economic development.[117] Revenue from increased exports, and the growth of a larger tax base through increased employment could provide the government revenue necessary for investments in social infrastructure such as national healthcare systems.[118] Improved public healthcare systems would in turn drastically improve the ability of African governments to contain and treat disease outbreaks such as Ebola.

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