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Diagnosing an international health crisis: A structural exploration of Ebola 2014

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DIAGNOSING AN INTERNATIONAL HEALTH CRISIS:
A STRUCTURAL EXPLORATION OF EBOLA 2014

A Thesis Submitted
in Partial Fulfillment
of the Requirements for the Designation
University Honors

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Abstract

The Ebola crisis of 2014, though concentrated most heavily in three small countries in western Africa, awoke the international community to its lack of effective health crisis infrastructure. As the disease rocked the globe, multinational groups scrambled to help those directly affected and protect the overwhelming majority of people not directly affected. Most preventative measures failed, and pre-existing initiatives to stem the flow of the disease only served to open the floodgates more. After careful examination of the literature surrounding medical, cultural, financial, national, and global circumstances enabling Ebola to flourish, as well as applying individual analysis and examination, it is evident certain changes must be made.

Diagnosing an International Health Crisis:

A Structural Exploration of Ebola 2014

On December 6, 2013, a two-year-old boy died in Guéckédou, a small border town in Guinea, in western Africa (Grady & Fink, 2014). Though unfortunate, the death at the time was not newsworthy. However, long after his passing, scientists around the world searched for him, calling him by a name he had never known: Patient Zero.

This Patient Zero was the catalyst for a devastating outbreak of Ebola virus disease, an illness with no known cure or vaccine that kills up to 90% of infected persons ("Ebola virus," 2015). Unfortunately, this diagnosis was not made until March of 2014, after dozens of Guinean towns and cities had already been affected as well (Grady & Fink, 2014); by that time, the disease had also been discovered in Liberia, Sierra Leone, and elsewhere in western Africa, with no signs of slowing or stopping.

The incurability of Ebola and illnesses like it suggests outbreaks such as these are unavoidable. Further problems associated with disease outbreaks are equally difficult, if not impossible, to solve: most of the affected countries are infamous for poor health infrastructure, sporadic and fruitless communication, and a general distrust for formal doctors and hospitals. Development and improvement of health infrastructure in the region is often ineffective because of rampant corruption.

Though Liberia was declared free of Ebola on May 9, 2015, the threat of new cases hangs over communities ("The Toll," 2015). Due to suspicion surrounding modern medicine and poor rural connection, estimates of those affected are difficult to obtain; still, the World Health Organization, or WHO, found over 28,000 confirmed cases and 11,000 deaths since March 2014, with more likely to come ("Ebola Virus," 2015).

Thus, an international health crisis was born.

Yet, this was not Ebola's debut on the international stage. In 1976, it struck the citizens of Yambuku, Democratic Republic of Congo, near the Ebola River from which the disease gets its name ("Ebola Virus," 2015). Since then, scientists have tracked twenty-four other controlled and uncontrolled outbreaks, with some as few as one confirmed case ("Outbreaks Chronology," 2015). Their report reveals the 2014 outbreak includes more confirmed cases than every past outbreak *combined* ("The Toll," 2015).

This comparison of past to present Ebola outbreaks poses an important question: if the medical aspects of the virus remain the same with few variations (as Ebola has since its discovery), how could the consequences of one epidemic differ so dramatically from another? That is, the problem surrounding Ebola 2014 was its ability to defy medical and structural history and theory about how epidemics affect countries, communities, and individuals; how did 2014 break the curve?

The international community has a responsibility to consider these large-scale impacts, even in outbreaks like Ebola 2014, where only a handful of states were significantly impacted. Tens of thousands of lives have already been lost; who knows how many more will be at stake if this crisis is allowed to go on without careful analysis?

In answering, the international community must then ask: what has changed in terms of the political and social factors surrounding the 2014 outbreak?

The circumstances surrounding Ebola 2014 spoke volumes to the preparedness, or lack thereof, of local communities, nations, and even the global community when an epidemic strikes. As participants in an increasingly globalized international community which will likely be affected by another outbreak of Ebola 2014's caliber, doctors,

politicians, leaders, and citizens alike have a responsibility to consider potential changes made to how we respond to epidemiological disasters, prompting the research question: *What could have prevented the 2014 Ebola outbreak, and what can it teach us about future outbreaks?*

Literature exists on the 2014 Ebola epidemic that explains certain aspects of the outbreak as they apply to different spheres of understanding, five of which will be broken down here. It is paramount to consider these challenges through a solution-oriented lens, which necessitates consideration of certain epidemiological changes made over time; however, the overwhelming majority of this analysis will discuss and suggest solutions rather than causes or effects.

Examining these works by breaking analysis down into five areas of literature review mixed in with investigation enables a more cohesive and thorough appreciation of what Ebola 2014 looks like from medical, cultural, financial, national, and global perspectives.

Medicine

Ebola 2014 is, at its most fundamental, a medical catastrophe created by poor health practices. It is worth noting that though the strain present in Ebola 2014 being a particularly virulent one, the disease has not developed or changed much over time (Fauci, 2014). Despite Ebola's resistance to inoculation and cure, it is entirely preventable and in some cases very treatable. How did prevention and treatment slip through the cracks to enable the disastrous medical consequences of Ebola 2014?

First and foremost, though Ebola is nearly impossible to root out because of its ability to infect multiple types of animals, it is avoided by implementing healthy daily

routines, such as handwashing and sanitation of food and water. Proper sanitation procedures were not in place around the time the outbreak began (Garrett, 2014). Ebola is an extremely highly communicable disease and should be treated as such (Arwady et. al., 2015); taking small but effective precautions such as antibacterial soap is the first step in stemming the spread and growth of any illness.

Additionally, part of the answer lies in a lack of trained medical professionals in the area. In terms of raw numbers, there simply were not, and are not, enough nurses, doctors, and volunteers to go around. The United States, for example, enjoys about 245 doctors per 100,000 people, whereas Guinea only has ten per 100,000 (“The Toll,” 2015). This is a funding issue, so the specific implications of the lack of doctors will be more effectively explored later in this document. Not only did these countries suffer from a lack of doctors, they also dealt with a lack of proper training for those few medical professionals. Unsurprisingly, countries like Guinea and Sierra Leone did not sport the highest-paid or most renowned medical schools or staff, making it difficult to draw talent to the area. Doctors Without Borders noted one of their biggest projects in Guinea particularly was establishing a then-absent component of the Ebola 2014 response – infection surveillance and control protocol (“Ongoing Challenges,” 2015). The presence of Doctors Without Borders here spoke volumes to the lack of preparedness in medical training and personnel in and of itself, and the challenges were only further exacerbated by poor training. Officials with training, therefore, must be present in later outbreaks, such as Dr. Thierno Souleymane Diallo, a Guinean doctor once infected with Ebola now treating those with the disease (Aribot & Horowitz, 2015). Dr. Diallo’s insight as a doctor

and survivor makes him an invaluable asset for future battles against Ebola, but most importantly, he is valuable because of his training and willing presence.

Similarly, the poor state of medical offices and hospitals were partly to blame as well. Keep in mind Sierra Leone, Liberia, and Guinea, the three most affected countries in Ebola 2014, were also battling other endemic health concerns, such as malaria and diseases that bear close symptomatic resemblance to Ebola (Fauci, 2014). Experts assert large-scale threats from occurrences like Ebola 2014 are limited primarily to countries with weak public health systems; this is due to the poor health system itself, as well as the fact that they are often based in countries made up of small, ill-connected communities (Siedner et al., 2015). Connecting these small communities is particularly important, as rural communities tend to be at particular risk because of their lack of connection to formal health infrastructure (McGinnis, Williams-Russo, & Knickman, 2002). Laboratories are a necessary part of local health infrastructure, as they provide testing and short-term treatment options for patients; however, the lack of lab capacity during the early stages of Ebola 2014 was most definitely a contributing factor to the early and rapid spread of the disease (Goodfellow, Reusken, & Koopmans, 2015). This is particularly pressing given the fact that other pathogens were circulating around West Africa at the time and also deserve lab attention. In the meantime, several countries have provided resources from twenty-seven labs around the world to test patients, and were able to conduct tests with the very limited resources in local labs; yet, the doctors and technicians in these labs advocated for a 'post-Ebola legacy' of sustained laboratory support (Goodfellow et al., 2015).

Another medical challenge posed includes poor health promotion in vulnerable populations. All this information concerning what went wrong is useless if it cannot be effectively communicated and taught to persons that would benefit from knowing it; for that matter, in theory, spending money on preventative measures should lead to saving money on treatment measures. A lack of health promotion was endemic worldwide; in the United States, one of the best prepared countries to handle an outbreak, nearly ninety-five percent of healthcare spending goes to direct medical care services, while just five percent goes to health communication and prevention (McGinnis et al., 2002). It is difficult to discuss health promotion in a straightforward, digestible manner, because prevention calls for addressing multiple types of medical issues; illness can be borne of viruses, genetic predisposition, activity patterns, and access to regular health screenings, a combination of a few or more, or other concerns (McGinnis et al., 2002). Health promotion necessitates that leaders in communities, both formal and informal, must call upon community members to be active guardians of their health. As finances allow, experts in developed countries have called for incentives to change bad habits for the better, such as advertising which restaurants have poor food sanitation, or raising taxes on a good that makes people ill (McGinnis et al., 2002). Promoting and sustaining health requires taking an active role in law, policy, and the public eye.

Though it is improbable for the foreseeable future, vaccines may one day be a part of Ebola's future and are worth discussing. Inoculation trials have been conducted since March 2015, with near 100 percent efficacy (Bagozzi, Harris, & Hartl, 2015). Though vaccinations are a great first step, the WHO is more interested in a concept called 'herd immunity,' in which the disease is wiped out by eliminating its ability to

reproduce and flourish in a host (Bagozzi, Harris, & Hartl, 2015). However, because Ebola 2014 was likely started by a child eating food infected by an animal (Grady & Fink, 2014), it is highly unlikely herd immunity would provide the necessary protection. Thus, vaccinations are still the optimal prevention tool. A particularly hopeful characteristic of this advancement is that Guinean leaders and doctors were instrumental in developing the vaccine (Bagozzi, Harris, & Hartl, 2015), proving that progress is being made both in health and development of health in these devastated but developing countries.

Certainly, other aspects of Ebola 2014 relate to medicine as well; later on, this paper will discuss burial practices, trust of doctors, and other practices. However, because these ideas bear closer resemblance to other topics, they will be brought up according to relevance.

Culture

As discussion develops, one must note the culture of these nations is by no means flawed or somehow wrong. Culture represents an important part of history, identity, and behavior, and should be respected. Offering solutions and examining causes and effects in this manner in no way offers 'replacement' cultural practices, but rather, frames existing ones in terms of Ebola 2014 and its potential future deterrents. Being Ebola-free and being inherently Guinean or Liberian are two characteristics that can live in harmony with one another.

Ebola 2014 was treated as many other outbreaks in these and other nations are treated: with stigma and distrust for national figures denying the magnitude of the

supposed outbreak. Thus, people ignored suggestions to limit the spread of the disease, enabling Ebola 2014 to flourish by turning to their cultural roots.

This suspicion, though a part of political culture in countries with a weak or young state, was further enabled by health practices that exacerbated such existing cultural factors. For example, Liberia closed hospitals and schools, enacted local and regional quarantines, and closed borders; not surprisingly, this bred widespread public distrust of health authorities, causing some analysts to wonder what were people supposed to think (Siedner et. al., 2015). For that matter, consider what a person who does not practice Westernized medicine thought of a figure in full-body protective gear, which looks like a moderately-threatening, deflated space suit. These oddly-dressed figures then took their sick loved ones into isolation units, where *alleged* treatment occurred in a shroud of secrecy, but when people did not come out alive, rumors began to circulate that far more sinister activity was occurring there at the hands of the volunteers that admitted them (Thompson, 2014). This led to widespread distrust, which in some cases caused attacks on volunteer groups (Sy & Copley, 2014); this was a vicious cycle of wariness, followed by and caused by misunderstandings conducted by well-meaning groups.

As the disease manifested in the sick, traditional healers were enlisted (Kanubah, 2014). Thankfully, though medical professionals sent to help assumed the healers were doing so, traditional healers that use medicine extracted from more natural means were not participating in the spread of Ebola 2014 (Kanubah, 2014). In fact, many natural healers were more aware of the risks of the disease than the common person and advocated for common precautions to prevent transmission, such as quarantines and

sanitation (Kanubah, 2014). These community leaders being truthful and forthcoming about their ability to treat or prevent Ebola are part of the solution to educating at-risk populations.

Still, as volunteers tried harder to root out infected persons, those at-risk populations drove further away, often into heavily-wooded areas or mountainous regions that were difficult to reach (Thompson, 2014). Those found to be at risk often lied about their travel histories and avoided medical treatment and diagnosis altogether (Greeley & Chen, 2014). In response, Sierra Leone made it a crime in July 2014 to hide infected persons; unfortunately, punitive measures then make it more difficult for public health responders to do their jobs because they end up punishing rather than treating the sick (Thompson, 2014).

For example, customary burial practices involve high attendance, concentrating persons in a tight, bacteria-rife space, so they all stand the risk of being infected; washing the body, enabling bacteria living on the skin to infect new persons; and in some cases, physically interacting and even kissing the dead body at the service (Garrett, 2014). This unfortunately was no different during Ebola 2014. To stop the spread of this highly infectious disease, burials must, despite religious or cultural insistence, be carried out without such a ceremony (Garrett, 2014). Medically sound, safe burial practice was widely ignored in the early months of Ebola 2014 because of its conflict with traditional cultural practice. Thus, bodies must be placed in deep-dug graves away from rivers to avoid spread within funerals and in the water supply; thankfully, this practice has become more widely accepted (Garrett, 2014).

Military forces, mostly from the United States, stepped in to make the transition to Westernized medicine more timely (Guilbert, 2015). However, this was heavily disruptive to communities, because many military representatives carried guns and, in some isolated cases, exacerbated existing humanitarian concerns (Guilbert, 2015). To accommodate for traditional practices, therefore, Doctors Without Borders called upon world leaders to deploy civilian and military medical teams to be implemented in smaller-scale projects; to be clear, this is a dramatic step, but according to a spokesperson for the International Committee of the Red Cross in Africa, “The crisis was simply too big for humanitarian agencies to deal with on their own,” and thus required additional forces (Guilbert, 2015). By making use of large services in small groups, local execution is smoother than a general attempt, and traditional practices are not shut down completely, but rather, they are accommodated for in a medically sound and culturally sensitive way.

Yet, when they were alive, community members wanted nothing to do with quarantined or sick individuals. Doctors without Borders representatives noted even if a person miraculously survived Ebola, the person was stigmatized as dirty, infectious, and distrustful, though all other signs may have pointed to the contrary (“Ongoing Challenges”, 2015). Moreover, family members were also social pariahs; Ebola 2014 victim Maima Kiawu left six children behind, whom could not get stalls to sell to them at markets or get friends to spend time with them even after undergoing quarantine and being declared Ebola-free (Aidoo, 2014). Though this kind of overcompensation could have been helpful in limiting transmission for those cases that necessitated quarantine, these habits wreaked economic and social havoc on communities.

Solving culturally-bound conflict takes time, self-awareness, and the ability to take critique; this makes doing so a time-consuming, arduous process for the culture involved. Yet, solutions existed, and some have already been implemented.

Two cultural practices to unravel and prevent these problems manifested on two levels: communication and education.

Initially, communication was key in staying on top of new developments in the spread and elimination of Ebola 2014. Though international news sources maintained a startlingly thorough analysis and maintenance of goings-on in western Africa, news outlets like Liberia Public Radio were unfortunately underutilized; many doctors in the early stages of Ebola 2014 did not even know the disease was present in the western part of the continent, despite its infamy in the medical community (Thompson, 2014). Infrastructure that enables this communication already existed; it simply was not implemented properly in high-need areas (Perry, 2011). Further strengthening that infrastructure with better development and aid practices is key.

As previously mentioned, large-scale implementation is most successful in smaller, more manageable installments. Communication infrastructure is no different. For example, Michiel Hofman of Doctors Without Borders explains, though medical impacts of foreign militaries have yet to be studied in their entirety, “the call of desperation as a last resort unleashed a wave of international support,” (Guilbert, 2015). This made use of existing communication infrastructure while allowing groups to organize, mobilize, and implement successfully. These groups also provided important training to medical and logistical staff (Guilbert, 2015).

In terms of education, because suspicion often comes on a national level from impersonal interactions, this distrust could be rooted out on a local level with personal interactions. In Monrovia, Liberia, community meetings and forums were established as early as November 2014 to educate community members about the medical phenomenon (Aidoo, 2014). These meetings empowered survivors to share their stories, allowed doctors to discuss symptom recognition and medical procedure, and enabled sharing of resources to households that could not afford them (Aidoo, 2014).

Margaret Harris, spokesperson for the WHO, offers a unique solution: speaking to sociologists and anthropologists (Anyadike, 2015). These professionals could provide a more complete picture of the cultural and social implications to be drawn from Ebola 2014. Anthropological study not only draws knowledge and information from cultures, but does so in a way that does not interrupt or seek to change the culture at hand.

Culture contextualizes how individuals react to their surroundings, and in this case, caused reactions that had devastating consequences. However, cultures like Guinea's are not inherently doomed to suffer traumas like Ebola 2014. Examining other aspects of Ebola 2014, such as finances, will give us a more complete picture.

Finance

Unfortunately, keeping people healthy is an increasingly expensive practice, forcing one to consider the financial ramifications of keeping countries safe from threats like Ebola.

A key aspect of international aid is donation from players like the Bill and Melinda Gates Foundation (Perry, 2011). However, voluntary contributions are earmarked for the donor's preferred projects, meaning they get to decide to which project the funding

goes (Gostin, 2015). As of September 2015, automatic contributions from organizations like the UN and the WHO totaled \$929 million American, whereas voluntary contributions total over \$3 billion American (Boseley, 2015). This often leads to more 'popular' concerns getting more support; for example, when malaria projects needed funding, it had to compete with major donors for funding reserved only for HIV/AIDS ventures (Perry, 2011). Ebola 2014 demanded attention, for sure, but to avoid capital gaps in the future, funding must come from reliable, solvent sources. Because highly communicable diseases are unfortunately common in developing nations, as identified by the fact that Ebola 2014 came from a completely natural and random occurrence, funding must be secured early and consistently.

This can be solved by requiring member states such as larger-income countries United States, Germany, and others, based on their income, to agree to mandatory dues (Gostin, 2015). Too often, disaster aid involves getting as much money as an organization can and, simply put, throwing it at affected parties. Since UNICEF introduced things like targets and funding deadlines in the early 1990s for disasters, more financing models have been based on this system of organization, and Ebola 2014 needed such a system (Perry, 2011). Funding can be preventatively secured, so the next time a US\$998 million UN price tag such as Ebola 2014's rears its ugly head, the international community is better prepared to respond, and is obligated to come up with less money in a short amount of time (Greeley & Chen, 2014).

Developers may suggest the answer here is to provide affected areas with more aid. Yet, the manner in which international aid is structured and distributed may have led to the problem at hand, because with aid comes stipulation.

Most developing nations depend on aid from the International Monetary Fund, or the IMF, to remain competitive in the international economy. In exchange for receiving aid, Liberia, Sierra Leone, and Guinea had to agree to certain terms, which in theory would strengthen their economies in the future. Economic reform programs by the IMF have required reductions in government spending, prioritization of debt service, and augmenting of foreign exchange reserves (Kentikelenis et al., 2015). Though all these determinants can help build an already developed nation, it comes at a price for industrializing countries. Conditions on IMF loans to Guinea, Sierra Leone, and Liberia over the past two decades unfairly prioritized things like debt repayments and building foreign exchange reserves over healthcare spending (Arsenault, 2014; Kentikelenis, et al., 2015). Furthermore, the IMF insisted upon decentralized, inflexible healthcare, such as poorly-connected and greatly physically dispersed treatment centers and laboratories, because it is cheaper (Blattman, 2014). This is unrealistic for countries whose people stand at great risk for contracting highly communicable disease, because it starves the health system of resources such as data sharing and outreach.

Thus, healthcare and many other publicly provided or subsidized services were financially out of reach for many regional and local governments, as well as individuals themselves, because debt repayment is such a significant part of a country's expenses under this model. In contrast, countries with stronger healthcare systems, such as Nigeria and Senegal, experienced cases during Ebola 2014 as well, but because they had more developed, fairly funded health systems, they experienced only a small fraction of the chaos experienced by the small western African nations (Arsenault, 2014). Whereas Spain spent over US\$3,000 per person at purchasing-power parity on

health care last year, for Sierra Leone, the figure is just under US\$300 (“The Toll of a Tragedy,” 2015).

In the future, the IMF must restructure debt repayment schedules to reflect both industrialization goals of the indebted nation and the crises at hand. To put it another way, aid is often distributed by the IMF with no problems, but a recent analysis of its operations recommends it allows time for the absorption of aid first (Salop, 2007). For example, if a country owes \$100 million, payments of \$25 million per year makes the loan less effective; the indebted country has the money for a shorter period of time and cannot juggle both the steep terms of repayment and the responsibilities of providing services.

Yet, international aid is only part of the equation. Wall Street philanthropist Ray Chambers once said, “Aid is never something we want to be permanent, something people depend on. It can get you out of a crisis and over the hill, but then the private sector has to make it sustainable” (Perry, 2011, p).

Thus, it is important to have a basic understanding of the finances of these states even before Ebola 2014. Despite poverty running rampant in developing nations, Guinea, Liberia, and Sierra Leone enjoyed impressive growth rates, at 4.5%, 5.9%, and 11.3% respectively (Soumare, 2014). Despite an unfortunate history of civil wars and mistrust of the central government, investors were interested, and economies were responding well to that interest, such as iron ore development funded by Chinalco, Rio Tinto, and the International Finance Corporation (Sy & Copley, 2014).

After Ebola 2014, however, positive economic indicators plummeted as negative ones skyrocketed; the largest economic effects of the crisis, as explained by the World

Bank, are “not as a result of the direct costs (mortality, morbidity, caregiving, and associated losses to working days) but rather those resulting from aversion behavior driven by fear of contagion” (Sy & Copley, 2014, para. 11).

President Ellen Johnson Sirleaf of Liberia, who has worked tirelessly for most of her tenure in office to revitalize the economy, was unable to draw and maintain international investment during Ebola 2014 (Cooper, 2014). Travel restrictions mandated by international groups blocked crucial trade flows (Sy & Copley, 2014). President Johnson Sirleaf responded to critique that she worried too much about the economy during Ebola 2014, stating, “If we don’t focus on our economy, we will not be able to sustain it when [Ebola is] gone” (Cooper, 2014, para. 8). As a preventative measure, President Johnson Sirleaf was correct to worry about the economy; current World Bank estimates state the economies of Sierra Leone and Guinea are expected to shrink this year, and Liberia is expected to grow at less than half the pace it enjoyed before Ebola 2014 (Soumare, 2014).

Combining the effects on revenue and spending with cuts made to public investment to finance the response to Ebola 2014, the total fiscal impact is well over half a billion US dollars in 2014 alone (Soumare, 2014). Drawing investors to rebuild shattered, underdeveloped infrastructure in affected countries could prevent exacerbation of fiscal and physical resources that otherwise would have been used to fight Ebola 2014.

In terms of financial administration, because so much aid and development moneys come from international sources, some may find it reasonable that implementation is then done by international groups. However, in doing so, well-

intentioned global groups sideline African governments and make national functionality a completely new issue in and of itself (Perry, 2011), which is the next topic of consideration.

National Challenges

Aside from national development challenges as previously discussed, the countries in question are infamous for living in gross poverty, being managed by selfish politicians, and encouraging a cycle of money mismanagement.

Nationally, Ebola 2014 was a nearly insurmountable problem. However, one would not necessarily know that it was a national priority by the lack of national mobilization of local health infrastructure during the crisis. A study of four southern counties in Liberia reveals, though Ebola task forces had been established in each county, they failed to mobilize the local communities by providing infrastructure and leadership, which were conspicuously absent (Forrester et al., 2014). Though they cannot be expected to operate completely independently, they must be given the resources to provide basic care.

Guinea, for example, must work to decentralize healthcare in a way that makes it more available to small, rural communities; central government agencies that only visit these areas are then seen as so-called 'foreign elements,' which heightens distrust and discourages positive interactions with medical staff (Schroven, 2014).

Certain epidemic-wide trends, such as a lack of health supplies and fleeing medical staff, plagued western Africa (Forrester, 2014). One Morbidity and Mortality Weekly Report released by the Centers for Disease Control and Prevention states, though Ebola task forces has been established in each county in Liberia, medical

caretakers were poorly trained, if at all, in sterilization procedures, identifying and treating Ebola, and informing citizens of their risk of exposure (Forrester, 2014). These rural centers are crucial to stemming the outbreak, and must be better supported.

Health infrastructure in Ebola 2014's affected nations also endures pressure from measles, meningitis, malaria, and other health crises (Schroven, 2014), revealing an exacerbated and poorly-run system. Even in crisis, child-bearers need safe places to deliver babies, and many sick and untreated west Africans were turned away from the hospital for fear of having or contracting the disease (Chothia, 2014). For instance, Redemption Hospital, an important health facility in Liberia's capitol, was, and still is, a poorly-renovated warehouse, and it showed significant signs of water damage, improper lighting, and general dilapidation, an inadequate place to treat the sick (Murphy & Ricks, 2014). In September 2014, at the height of Ebola 2014, Liberia had 51 doctors for the country's 4.2 million people, and Sierra Leone had 136 doctors for its six million citizens (Chothia, 2014). Moreover, in a civil war, the ramifications of which are still being felt over ten years since its formal conclusion, 354 of Liberia's 550 medical facilities were destroyed (Murphy & Ricks, 2014). Sierra Leone's own civil war ended in 2003 with similar long-term results for infrastructure (Murphy & Ricks, 2014).

Yet, there is hope. The Liberian Ministry of Health, and its leader Dr. Walter Gweligale, wrote a 10-year, comprehensive national health policy and roadmap for development with funding from USAID (Murphy & Ricks, 2014); Sierra Leone and Guinea should do the same. Guinea, for example, invests only 1.8% of its GDP in public health (Schroven 2014), and has drafted no such health renovation policy, though it desperately needs such. Building public health infrastructure will in turn create space for

doctors to practice, drawing more health professionals into the area. As national efforts take shape, the international aid that arrives to benefit these countries should respect and support these initiatives where they exist.

The infrastructure provided by global initiatives may outlive its immediate use as Ebola 2014 comes to a close; yet, the brick-and-mortar could still find purpose (Anyadike, 2015). A glut in treatment facilities only serves to exacerbate a key issue: ineffectively decentralized and poorly interconnected healthcare (Anyadike, 2015). Ebola testing labs could be incorporated into a national laboratory service, or permanent treatment units could be re-launched as community-based treatment facilities. This infrastructure does not have to go to waste.

Even with all the aid other parties can offer, if organizations which implement these changes are incapable of spending money well, the funds will be wasted (Blattman, 2014). Though the IMF can restrict ways money can be spent, prescribing that same spending takes more power and boots on the ground than the IMF can support. The IMF cannot count, deposit, consider, and spend every dollar (or whatever the currency may be), and when countries like Liberia are more concerned with other reasonable, such as power and roads, and unreasonable, such as lining the pockets of politicians, financial responsibilities, healthcare simply is not covered.

The textbook solution is government transparency (Perkins, 2014) to prevent, for instance, a distant national elite in Guinea from disregarding the greater populous as it often does (Schroven, 2014). While certain IMF requirements are unfair as previously discussed, transparency should be the utmost priority. This will not be easy; Guinea has a history of derailing international interventions because of its tendency toward

authoritarian military rule (Schroven, 2014). Similarly, income inequality as revealed by Ebola 2014 highlights the padding of officials' pockets rather than the building of infrastructure, a secret many nations would rather keep hidden (Perkins, 2014).

Thus, community encouragement and oversight is the best option. In response to the malaria pandemic that continues to plague nations, some heads of state established the African Leaders Malaria Alliance; this encouraged a more cohesive set of guidelines and accountability measures for all participating countries, boosted regional unity, and was composed of the leaders of affected nations rather than tertiary parties (Perry, 2011). Ebola 2014 deserved the same consideration, and as more is learned about the disease and its impacts, future outbreaks can be dealt with transparently and successfully in this manner.

Already, signs of this solution are proving it to be effective. After being investigated by the CDC in September 2014, county health care staff received trainings on infection prevention and control, as well as disease detection and burial practices (Forrester et al., 2014). County Ebola task forces met regularly to implement an Ebola incident management system (Forrester et al., 2014). Decentralizing health has led to the provision of additional emergency vehicles for county health teams (Forrester et al., 2014).

For the sake of small nations with developing public infrastructure, the international community cannot rely on under-supported domestic health systems, then wait for international aid groups to come to the rescue after a problem becomes a crisis (Siedner et. al., 2015). The international community must be proactive.

Global Challenges

Even highly developed nations would have had difficulty dealing with Ebola 2014 independently had it occurred within their borders. Thus, because disease epidemics are of international concern, implications of Ebola 2014 are worth exploring worldwide, because they can better prepare countries for future crises.

First, the WHO should not have waited as long as it did to declare Ebola 2014 an emergency (Boseley, 2015). Official documents reveal the WHO was contacted by one of its experts in the field as early as April 2014, and several times over the months after that, begging the organization to officially declare Ebola 2014; however, it did not do so until August (Boseley, 2015). Furthermore, in its early stages, WHO spokesman Gregory Hartl insisted, “this outbreak isn’t different from previous outbreaks;” Dr. Sylvie Brand of the Department of Pandemic and Epidemic Diseases at the WHO later apologized for this statement (Boseley, 2015, para. 5). While declaring an emergency is not a decision that should be taken lightly, remaining silent on the issue caused far more economic and political distress than affected countries would have endured had they had the help they needed in April 2014. The WHO must write and follow protocols for infectious diseases like Ebola that take into account the respective health systems and infrastructures.

In increasing oversight, one must also increase communication with countries the WHO oversees. The WHO must give major non-state stakeholders, such as Doctors Without Borders, a louder voice in policymaking, as suggested by the US Government Accountability Office as early as 2012 (United States Government Accountability Office, 2012). Currently, non-state actors play no formal role in WHO governing structures

because the WHO makes it difficult to gain “official relations” status (Gostin, 2015).

Reform is a member-state-only driven process (United States Government Accountability Office, 2012), yet community-based organizations were instrumental in battling Ebola 2014 and had a first-hand understanding of the pressures associated with fighting an epidemic (Gostin, 2015).

Additionally, direction of international aid is a global political prioritization issue. After their release in 2000, UN Millennium Development Goals 4, 5, and 6 directed a large majority of aid to combating HIV/AIDS, with most of the rest of it supporting maternal and child health services; thus, relatively little development was left to build up existing infrastructure (Kieny et al., 2015).

On September 25, 2015, the United Nations released the Sustainable Development Goals. These goals are more general, but even more ambitious. As they are applied and considered in the development and prioritization of aid, general health infrastructure upkeep, applying specifically to outbreaks such as Ebola 2014, must be emphasized as well. Specifically, SDG 6 (clean water and sanitation) and SDG 9 (industry, innovation, and infrastructure) are particularly important in developing regions like western Africa (Beaubien, 2015).

The international panic surrounding Ebola 2014 impeded investigations not just in western Africa, but worldwide. A *Dallas Morning News* review showed Dallas-area taxpayers spent about \$825,000 on two infections and one death (Floyd, 2015). In the United States, precautions became ridiculous; blockades were put up and traffic was stopped after a carsick passenger was ill on a bus near the Pentagon (Floyd, 2015). These situations did nothing but incur unnecessary panic and stigmatize those related

to the disease. Precautions such as quarantining affected persons should, in the future, come with reassurances that Ebola can be stopped with the proper health infrastructure and procedure.

Yet, the panic revealed an important problem: stemming disease spread without completely isolating nations. In Maine, an elementary school teacher was placed on three weeks' leave after she attended a conference ten miles from where Dallas Ebola patients were being treated (Floyd, 2015). As discussed before, secrecy and a lack of transparency aids in distrust and further spread of diseases, whether a state has developed health infrastructure or not. Further, the economic ramifications of stopping aid and investment because of infection or disease have been explored and proven to be extremely detrimental to the overall health of the nation and the economy. A young economy needs constant attention, despite crisis, to thrive.

In the 2006 film *Blood Diamond*, Ambassador Walker explains, "The third world is not a world apart." The international community must see Liberia, Guinea, Sierra Leone, and other affected nations as members of a global public, and in doing so, develop aid strategies to help and humanize populations.

Discussion

Equipped with pages of research, it is now time to return to the research question: *What could have prevented the 2014 Ebola outbreak, and what can it teach us about future outbreaks?*

The WHO had access to information, but the organization did not take advantage of its resources. Alternatively, groups on the ground like traditional healers and local governments were starving for information, but did not have access to it.

Thus, education and research are two key preventative measures that could have prevented the 2014 Ebola outbreak, and can provide insights about future outbreaks.

Raw and unadulterated education thrown at the masses, however, is not the answer. Two implications arise from considerations of education: responsibility and infrastructure.

At a time when the Western community is providing a significant amount of aid to northern African and Middle Eastern refugees, citizens in aid-providing countries often hold the opinion that too much is given to sick, ill-governed, or nonfunctional countries. Yet, the author would argue that global forces, whether they be public governments or private organizations, have a humanitarian, ethical responsibility to help. Put another way: can the international community trust, or force, an underdeveloped, cash-strapped, war-torn country such as Liberia to build and rebuild its own public education infrastructure? However, with the help of international investors, Liberia must. This is why the WHO must pay more attention and compassion to affected countries; this not only draws international attention, it allows officials like President Johnson Sirleaf to draw investors and prevent crises.

Similarly, in terms of infrastructure, Sierra Leone had few public entities to provide officials or training; this is key in preventing and fighting public crises. That is, can a state that doesn't provide opportunities for its citizenry be trusted to mold or protect the young minds of tomorrow? Without public education, those seeking higher formalized learning will leave affected countries to be trained elsewhere, leaving their home countries without their expertise. Particularly in terms of Ebola 2014, having

domestically-trained medical professionals that understood community norms and behaviors would have made all the difference. That way, western Africa would not have had to import its medical professionals.

Second, research in and of itself is not nuanced enough to provide the solution to outbreaks like Ebola 2014. Two implications can be drawn to more clearly describe the proper way to implement research: the Western lens, and immediacy.

The Western lens shapes much research conducted by North American and European entities; this advocates, for better or for worse, on purpose or accidentally, for heavy antibiotic use and bureaucracy, two things that are often foreign to non-western cultures. In terms of Ebola 2014, Doctors Without Borders and military doctors encouraged these practices as well. Yet, as previously mentioned, traditional healers were significant in preventing Ebola's spread because they taught sanitation and quarantine. Thus, would Western medical practices have formalized health for the worse and interrupted the few working implements of western African medical infrastructure? Formal research should be conducted by more developed nations only within the perspectives and cultural lenses of affected communities. Research is paramount to knowing more and doing better, but it must have unique and appropriate focus.

Similarly, research on Ebola 2014 is still in its infant stages; much of the information presented in this document is first-hand knowledge provided by journalists and officials in the field, which is important. Yet, research conducted about involved people and organizations, such as the IMF and its inner workings, was critical in the development of ideas presented here, but requires months, if not years, to plan,

conduct, and complete; time provides a lens through which to view, more opaquely and objectively, what actually happened in what contexts. Unfortunately, those documents need several months, if not years, to be drafted, written, and determined to be accurate. Ebola 2014 went from a single infection to thousands affected in a single rainy season; would more research benefit other health crises? Can we afford to wait years for comprehensive analysis, especially given the glacial pace at which aid is administered after research is concluded? For example, an Ebola vaccine is currently in human trials as previously mentioned, but the outbreak has considerably dwindled since then; Liberia hasn't reported a new infection in months. Research is important, but time is of the essence.

In August 2014, the United States' national media was awash with Ebola panic; in some ways, this was worse than the disease itself for nations not directly affected. Yet, as privileged citizens in a global community, the world stage has a humanitarian obligation to implement a reasoned, immediate, complete response to a health crisis responsible for thousands of lost lives.

After exploring the medical, cultural, financial, national, and global ramifications of Ebola 2014, its clear mistakes were made, but that they are largely avoidable in the future. For example, funding must be secured before crises, cultural practices must in some cases give way to medical security, and governments must give people a reason and a means to bestow trust upon them.

It is difficult to maintain interest in local, national, and global health infrastructure, and even more difficult to improve it quickly and effectively. Despite this, Ebola 2014 proves this discussion is worth having around the world.

Author's Note

This document contains information that should have been present to parties involved in Ebola 2014 before the crisis, but is still a resource to those who want to know more, do more, or both.

However, information without action is arguably useless. What can the layperson do to prevent or deter another tragedy like Ebola 2014?

In March 2015, the Malawi Project, an African-based nonprofit, began collecting used, clean medicine bottles. This way, help can make its way to patients in tamper-proof, waterproof containers. The author has been collecting these bottles, sanitizing them, and packaging them for shipping since May 2015, and as of the date of publication, has over twelve hundred bottles. She will be collecting them until May 2016, and hopes to find two thousand bottles to help those in need.

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