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VIEWPOINT

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Public Health in the Age of Ebola in West Africa

The world is witnessing the unprecedented unfolding of the West African Ebola epidemic. The epidemic could have major ramifications for global public health in ways that no other modern infectious disease has, perhaps including AIDS, and can be viewed as a “Black Swan” event. Nassim Nicholas Taleb, the Lebanese-American author and scholar, introduced the metaphor of the black swan, a bird that was once thought not to exist, to explain financial events. Subsequently, Taleb extended the Black Swan concept, in his 2007 book of the same name, beyond finance to explain high-profile, difficult-to-predict, and rare events in history and the present^{1(ppxxi-xxii)}:

What we call here a Black Swan (and capitalize it) is an event with the following three attributes. First, it is an outlier, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. Second, it carries an extreme “impact.” Third, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.

The West African Ebola epidemic has all the makings of a Black Swan event with one exception—the global public health community will be working to contain it for months, or years, to come. As of October 2014, there is no evidence that this devastating epidemic is anywhere near under control. If the number of new cases of Ebola virus disease projected by the World Health Organization (WHO) (20 000 cases by early November 2014)² and the Centers for Disease Control and Prevention (1.4 million cases in Liberia and Sierra Leone by the middle of January 2015 if there are no or unsuccessful interventions)³ materialize in West Africa over the next several months, it is difficult to imagine that the virus will not make its way into other African countries, particularly densely populated cities such as Dakar, Senegal; Abidjan, Ivory Coast; Lagos, Nigeria; Kinshasa, Democratic Republic of the Congo; or Nairobi, Kenya. Newly infected, but not ill or only mildly ill, persons could leave the affected countries by foot, automobiles, trains, and even planes that move across the continent. With millions of Africans living in crowded, squalid conditions of poverty in the large slums of major urban centers, circumstances are ripe for an even larger Ebola epidemic throughout continental Africa.

What can be learned from the first phases of the unfolding Ebola epidemic in West Africa? Already, we have learned that Ebola in urban Africa creates a much different situation than Ebola in rural Africa, that early rapid interventions are needed to prevent Ebola from spiraling out of control, and that quarantine efforts are more likely to backfire than to curtail the spread of disease. Two lessons, however, have changed our thinking about infectious disease threats

and their potential effects on international and regional security, economic stability, and overarching public health governance.

Research and Response

There is now clear evidence that an infectious disease such as Ebola virus disease can threaten the stability of a country's or region's government, economy, and social fabric. Although other infectious diseases, including AIDS, malaria, tuberculosis, childhood diseases that are preventable by vaccine, and diarrheal illness, have killed more people in Liberia, Sierra Leone, and Guinea during the past year than Ebola virus disease has killed to date, those diseases have not destabilized the region. This is another painful lesson that what kills us may be very different from what frightens us or substantially affects our social systems.

Individuals and organizations that exert influence in global health should keep this point in mind as they allocate limited public health resources to prepare for infrequent, but nonetheless predictable, disease outbreaks, epidemics, or pandemics caused by a wide range of infectious disease agents, such as a novel influenza virus, an intentional release of a known or chimeric bioterrorism agent, or a new emerging respiratory pathogen such as the coronavirus that causes Middle Eastern respiratory syndrome. Before September 2014, most researchers in global health would not have considered it good public policy to allocate limited resources toward developing an effective vaccine against Ebola virus disease—at least with the same level of commitment as the development of vaccines for human immunodeficiency virus, tuberculosis, malaria, or diarrheal diseases. Developing vaccines for these other diseases remains critically important. But the Ebola epidemic in West Africa has deepened the realization that the historical morbidity and mortality of an infectious disease does not necessarily predict what might happen in the future. An essential characteristic of a Black Swan event is the inappropriate rationalization after the fact with the benefit of hindsight. Researchers and public health officials should have and could have imagined what a virus such as Ebola that is transmitted through direct contact could do once it infected people outside of sparsely populated rural Africa and found its way into the crowded and impoverished neighborhoods of large African cities. The lesson to be learned is that more creative imagination is needed in considering future infectious disease scenarios and in planning accordingly. Governments and other organizations that fund global public health efforts should be willing to support this type of forward thinking, which ultimately is aimed at securing our collective future.

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Global Governance for Health

Since the WHO was established in 1948, we have relied on the organization to lead and coordinate the international response to infectious disease outbreaks of global importance. In 2005, the WHO revised the International Health Regulations,⁴ which were intended to form the basis for a rapid and effective response to what are known as “public health emergencies of international concern.”⁵ The International Health Regulations require 196 countries to develop public health capacities to detect and respond to outbreaks. In August 2014, when the WHO, under the International Health Regulations, declared a public health emergency of international concern about the Ebola epidemic, it was 5 months after the international spread of the virus disease had occurred. The WHO took several more weeks to issue an “Ebola Response Roadmap” to stop Ebola transmission in affected countries within 6 to 9 months and to prevent international spread.^{6,7} As of October 2014, however, the WHO has not been able to mobilize sufficient funding to implement the response plan that the roadmap calls for. The WHO’s resources have been decimated by budget and staff cuts.⁸ We are concerned that, without fundamental reform, the WHO will no longer be able to fulfill the mandate in its constitution to be the leading, coordinating agency for global health, even though the organization may have a strong desire to do so. If its member states were to ensure adequate funding and authority, it could become, once again, the leading global health agency—and it should.

Remarkably, Médecins Sans Frontières, the international medical aid organization, has called for a military response to the Ebola epidemic in West Africa, after 43 years of discouraging military intervention in other humanitarian crises.⁹ In September 2014, the United

States, in partnership with other states, deployed its military to Liberia to help stabilize the country and allow for an effective public health response. Also in September, the United Nations Security Council for only the second time in its history (AIDS was the first) adopted a resolution declaring this epidemic a threat to international peace and security. Unlike the WHO and even the International Health Regulations, the United Nations Security Council can seek to compel sovereign states to conform to established international rules and raise the level of political will and global legitimacy needed to tackle the ongoing epidemic. The military response of the United States and other key nations provides immediate expertise in logistics, incident command and control, engineering, and transportation.

The Ebola epidemic in West Africa could become an inflection point for fundamental reform of the WHO and usher in an era of direct United Nations engagement in health threats that could potentially destabilize nations and regions. Time will tell if global health governance is transformed.¹⁰

In conclusion, before the West Africa Ebola epidemic, most people in the United States had never heard of the virus, and if they had, considered it to be the cause of an obscure disease that lurked in the remote forests of a faraway continent. Almost no one would have predicted that physicians in the United States would be caring for patients with Ebola virus disease, that college campuses would be wrestling with matriculation policies for international students because of concerns about importing the virus, or that US troops would be sent to West Africa. Once again, we are reminded that microbes can humble us and that we should constantly work to improve our ability to detect, predict, and respond to the Black Swan events that they may cause.

ARTICLE INFORMATION

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