

Boston University College of Arts & Sciences
African Studies Center Outreach Program
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Teaching Ebola:

Responses, Ethics, and the Future

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Introduction to the Curriculum

The 2014 ebola outbreak in West Africa has largely subsided, and some people have asked if ebola is still worth talking about. I would argue that it remains critically important not just to talk about this recent epidemic, but to teach our students about it.

By teaching about ebola, we do a number of important things for our students. First, we provide factual information about the nature of the epidemic: it's scope, the countries and people affected, and who responded and how. Just providing these facts helps to counter widespread misinformation and deeply rooted stereotypes about disease on the African continent. Second, teaching about ebola provides an entry point to discuss other important topics related to the African continent, global health, and emerging diseases. Discussions about ebola could easily lead to questions and answers exploring how diseases are deeply rooted in the environment and animal-human interactions; visual representations of the sick and the journalistic norms of how Africans are depicted in western media outlets; and the ethics of distributing scarce medical resources and experimental therapies.

I created and compiled these materials while teaching a freshman seminar at the University of Oregon and I twice used them during a three week ebola unit. The students were enthusiastic, and I made modifications based on their feedback and my observations. These materials are most appropriate for advanced high school students or first or second year university students.

The curriculum does not suppose any prior knowledge about ebola or Africa, and the readings and activities may be used independently or grouped together. Each introductory text sheet can be assigned to students to read at home, or is short enough to be read during class. The curriculum consists of:

- three introductory text sheets
- four activity sheets
- additional readings and resources that include films, slideshows, and visual images

These materials were commissioned by the Boston University African Studies Outreach Office, and I would like to thank Barbara Brown for her support. Caellagh Morrissey, a student in the Clark Honors College at the University of Oregon, provided excellent research assistance and an initial drafting of all materials. Any remaining errors are my own.

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Curriculum Contents & Teaching Ideas

The curriculum is made up of three introductory readings that can be assigned for students to read at home, or are short enough to be read together in class. They address three distinct aspects of the 2014 epidemic:

- Part 1: International and Local Responses
- Part 2: Vaccines and Biomedical Ethics
- Part 3: The Future of Ebola in West Africa

For those who would like to teach a more in-depth unit, or have more advanced students, “Recommended Readings and Additional Resources” provides an annotated list of other excellent sources. There are also multimedia materials that can be used for in class viewing, or that can be assigned for homework. All of the listed materials are available for free online. A sample three day curriculum is shown below.

Four new activities have been created for use in the classroom, and each sheet has instructions on how the materials can be used, and what should be given to the students. The activities are:

- Activity 1: Mapping Ebola
- Activity 2: Ebola Timelines
- Activity 3: Ebola Myths, Facts, and Misinformation
- Activity 4: Visual Representations of Ebola

Teaching Plan Options

	Class 1	Class 2	Class 3
Handout	Part 1: International and Local Responses	Part 2: Vaccines and Biomedical Ethics	Part 3: The Future of Ebola in West Africa
In Class Activities	<ul style="list-style-type: none"> • Map Activity • Read Dionne, “It’s Columbus Day, Let’s Talk about Geography” • View “In the Shadow of Ebola” (23 mins) 	<ul style="list-style-type: none"> • Myth/Fact Activity • Discuss NPR Slideshow 	<ul style="list-style-type: none"> • Photo Response Activity • Discuss Timelines
Homework	<ul style="list-style-type: none"> • View NPR Slideshow, “Life After Death” • Read Dr. Fischer “Dispatch from Guinea” • Read Sun, et al., “Out of Control” 	<ul style="list-style-type: none"> • Work on Timeline at home • Read Edwards, “From Miasma to Ebola” • Read Stern, “Hell in the Hot Zone” 	<ul style="list-style-type: none"> • Read Shepler, “The Ebola Virus and the Vampire State” • Read Benton, “Ebola, Mistrust and Humanitarian Mobility”

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An Outbreak Begins:

International and Local Responses to Ebola

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The 2014 ebola outbreak that struck the countries of Sierra Leone, Guinea and Liberia was unexpected and tragic. This outbreak was the first in West Africa, and unique in that it occurred in multiple countries, crossed international borders, and spread to densely populated urban capitals such as Freetown in Sierra Leone, Monrovia in Liberia, and Conakry in Guinea. The 2014 epidemic was the largest outbreak of ebola to date, and ultimately led to the documented deaths of more than 11,000 people. Although ebola is not a new disease, the scale of the epidemic, and how quickly it grew caught international organizations by surprise. The international response, which should have been organized by the World Health Organization (WHO), was criticized as lethargic and uncoordinated. The WHO did not declare the ebola outbreak a “Global Emergency” until August 2014—months after the outbreak had started. Donations of funds and medical supplies went to individual countries and were often delayed in reaching the hardest hit areas. The scale of the 2014 epidemic, and the inadequate international response can largely be explained by understanding the environmental roots of the disease, how easily the disease is transmitted to caregivers, and the political and economic realities of West Africa.

The epidemic began in December 2013 in a rural village in Guinea when a single child was infected with the ebola virus after coming in contact with an infected fruit bat. The ebola virus is a zoonotic disease (one that can be passed from animals to humans) and the disease is regularly found in fruit bats that migrate throughout Central and Western Africa. Since ebola exists in animals that live in West Africa, it is almost certain that there have been human cases of ebola in Liberia, Guinea and Sierra Leone prior to 2014. However, those prior cases of infection did not turn into large epidemics, for reasons that we don’t fully understand. After the first infection from the bat, new cases occurred when people came in contact with the sick child. Those initial contacts were members of his family and health specialists, but the number quickly grew and jumped outside of Guinea’s political borders.

One hypothesis about why the epidemic grew so quickly was because of geography and where this first case occurred—in a region that is extremely interconnected. The political borders of Guinea, Sierra Leone and Liberia are crisscrossed with dirt paths and paved roads that facilitate easy travel. People regularly move from one country to another and, normally, these connections are a positive thing, allowing for trade to occur. But diseases do not respect national boundaries and the porous borders allowed for ebola to spread virtually unchecked as sick people

who were showing early signs of the virus moved from one place to another, exposing and infecting many people they met along the way. For a contagious disease, the movement of infected people is the easiest way for an epidemic to begin in a new place.

Ebola is a virus, and once a person is infected and begins to show initial symptoms of fever, fatigue, and vomiting, the person becomes contagious to others. In the early stages of the disease, when mild symptoms have begun, such as fever, it was still very possible for a person to travel. The virus is easily spread through bodily fluids such as blood, urine, saliva, sweat, feces and vomit, and large amounts of diarrhea and vomiting make it difficult for safe caretaking. People who cared for the sick—such as family members, local health practitioners, and those working inside health clinics—were at high risk for infection. Activities such as providing food or fluids, changing bed linens, cleaning up vomit, urine or feces, or helping a weak patient enter an ambulance or arrive at a treatment facility were all dangerous. Best practices for protection involved the use of rubber gloves and layers of protective clothing and chlorine solution for cleaning. Inside the ebola treatment units, doctors and nurses were clothed in moon suit-like garb, which left no part of their body exposed. But much of the caretaking that took place inside homes—and even in some health clinics—occurred without appropriate protection. Caretaking activities that were needed to keep a sick patient alive (feeding, providing fluids, and changing dirty sheets or clothing) were the same activities that virtually guaranteed exposure to others in the household. Families were faced with devastating choices. Caring for sick family members created new infections, and throughout West Africa, ebola raced through extended family and kin networks.

In addition to the hazards of caregiving in the home, there were larger structural weaknesses in the West African states that also created ripe conditions for the ebola virus to spread. The national health systems of Liberia, Sierra Leone and Guinea were quickly overwhelmed by the scale of the epidemic, and the level of care needed by patients. In each of the countries, the health care infrastructure was weak: there were few hospitals, those hospitals were often missing key medicines and equipment, and—critically—there were not enough doctors and nurses to respond to all the patients who needed care. Without specialized hospitals, doctors, and testing and laboratory abilities, the vague early symptoms of ebola (vomiting, fever) were initially misdiagnosed as a cholera outbreak, thus allowed the disease to spread unchecked for a number of months. Staffing shortages and adequate protective equipment within health

facilities meant that in the early stages, hospitals may have inadvertently served to *amplify* the epidemic. In the first months, hospitals and ebola treatment centers became hotbeds of new infections, dystopian places where committed African health care workers become infected and died, and where unlucky patients who had entered the hospitals without ebola often became infected.

The shortcomings in the health services were partially due to structural adjustment programs implemented in the 1980s at the suggestion of the International Monetary Fund, which defunded many public health systems. The funding norms of global health during the 1990s and 2000s also didn't help, which tended to provide money for specific projects targeting single diseases such as HIV/AIDS or malaria, as opposed to strengthening healthcare systems over all. However, there is also no way around the fact that each of these countries is also extremely poor. Liberia spends the most government funds on health care, and that is estimated at only \$29 per person, per year. Sierra Leone and Liberia also have suffered through decades of recent civil wars and corrupt political regimes, which only further destroyed public resources.

Once the scope of the epidemic became clear and international responses began, those efforts were not without problems. Some international health campaigns were criticized for their insensitivity to local customs, particularly around the need to see the dead while mourning and the preparation of the body for burial. In the American media, African victims of the disease were often portrayed as uncooperative and unwilling to accept the biomedical explanation of, and treatment for, ebola. (These reports neglected to mention that there was no effective treatment for ebola, and that very little was being offered in many clinics.) While there were pockets of resistance to groups of international experts and global health professionals, that was a minority of cases. Far more frequent were requests for more international assistance.

Government responses during the epidemic were often heavy handed and contributed to citizens' suspicion about whether their own governments had their best interests in mind. In Liberia, the government mobilized in a militarized way and instituted a ten-day quarantine in the neighborhood of West Point, in the capital city. In Sierra Leone, the parliament passed a law making it illegal to hide ebola patients, and threatening up to two years in prison for those who were caught. Such tactics worked to further alienate the government responders from citizens. There were sporadic cases of violence against foreign public health workers as communities demanded that the experts leave, or argued that ebola was a myth. Some of this resistance was

due to insensitive international programs, but some of it was also due to local conditions that had been festering for decades. However, for the most part, communities were appreciative of the equipment, hospitals, and foreign aid that arrived in the midst of the epidemic.

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Searching for Answers: Treatment, Vaccines, and Biomedical Ethics

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In the midst of an epidemic, there are at least two distinct ways to respond: work to prevent new cases through education, modifications in behavior, or the use of a vaccine; or focus on treating those already infected to try to save lives. In the case of ebola, there is no proven effective treatment—there is no cure for people who are already infected. Some people are able to survive and recover on their own. The only medicines given in 2014 were all experimental drugs that were in extremely short supply, and there was no available vaccine. Only in 2016 has data shown that a newly created vaccine prevents infection. Even with the identification of an effective vaccine, there will still be difficult questions about how to equitably allocate life-saving therapies under conditions of extreme scarcity.

THE SEARCH FOR EFFECTIVE TREATMENT

When the ebola virus enters the body, it invades the cells and begins to replicate. It damages the blood vessels and interferes with the immune system. Those who die from ebola often go into shock from bleeding or suffer from multi-organ failure. Although our knowledge is still incomplete, based on what has been observed in hospitals with lower fatality rates, ideal treatment seems to include early administration of intravenous fluids; careful monitoring of electrolytes, oxygen and blood pressure; and treating other infections if they appear. Some other trial treatments include transfusions of whole blood and plasma from ebola survivors and experimental drugs.

Normally, every drug prescribed to a patient in the United States or administered internationally by a US agency must go through multiple stages of testing in animals and humans to establish that it is safe and effective. However, due to the gravity of the 2014 ebola epidemic, the US Food and Drug Administration granted a special authorization to allow the use of experimental drugs that had shown promising results in animals. But even with this authorization, the quantities of experimental drugs were extremely limited, which created a set of complex ethical questions. Who should get access to doses of experimental drugs? And who—drug companies, the WHO, or national governments—should make these decisions?

Questions of how to distribute scarce resources are extremely difficult to answer. There were only a dozen doses of one of the experimental drugs, ZMapp. This experimental therapy was in high demand. Even though it was West Africans who were primarily suffering from ebola, it was Americans who received a vast majority of the ZMapp doses. No more than three doses

went to treat West Africans, and this occurred only after Liberian President Ellen Johnson Sirleaf publicly requested the help of President Obama in securing access to the experimental drugs. Many bioethicists have questioned whether this was fair, equitable, or just? There were, and are, no easy answers to these questions, and to date, no formal or public system for deciding how to allocate scarce experimental therapies (or available vaccine doses) has been created.

Another ethical quandary without an easy answer is what to do about differences in the quality of care globally, and disparities in access to that care. It is a fact that the treatment available in West Africa differed significantly from that available in a European or American hospital. The care available in Africa was, for the most part, inferior. Differences in care meant hospitals looked and operated differently: they were staffed with more doctors and nurses, more infectious disease specialists, had more access to specialized or expensive drugs, and more access to high tech interventions such as respirators or other life-support machines. These differences led directly to different outcomes: higher death rates in African treatment facilities, higher survival rates in European and American hospitals. In the United States, at specially equipped hospitals, it cost roughly \$30,000 per day to treat an ebola patient, and dozens of professionals were involved in a single patient's care. It is not surprising that eight of the ten ebola-infected patients transferred to American hospitals survived. Foreigners who became infected in West Africa were routinely evacuated to richer countries, yet West Africans who were also bravely fighting the epidemic rarely had the opportunity to be evacuated. At ebola treatment centers in West Africa, facilities were often overcrowded and understaffed, and pictures emerged of patients sharing beds or lying on floors. Higher patient to doctor ratios meant that in many treatment facilities even basic supportive care, such as setting up an intravenous line for fluids, could not be given and monitoring was not as sophisticated or continuous. In Liberia, it was estimated that 60% of those infected with ebola ultimately died. These disparities in the care available, in access to medical evacuation, and ultimately, in the likelihood for an individual's survival, were deeply troubling.

VACCINES TO PREVENT NEW INFECTIONS

Many people argued even in the midst of the epidemic that it was more important to focus on *prevention* of new infections by developing an effective vaccine. During the 2014 ebola

outbreak, there was no effective vaccine available, although by the start of 2016, there are several vaccines that have been tested and look extremely promising.

Four different vaccines have made it to Phase III testing (which is the final stage of testing in humans, the one most likely to find definitive, positive, results). All of the results to date have been extremely positive. In 2015, as the epidemic was winding down, the vaccine was administered to a variety of front line workers who were at high risk of exposure to ebola through their daily work. This included doctors, nurses, ambulance teams, surveillance teams, burial workers, and any individual who had been in contact with a recently diagnosed ebola patient. To date, no one who received the vaccine has become infected. The work on the ebola vaccine has been notable in how quickly the vaccines were developed and tested on humans, how the testing has gone on in the midst of the epidemic (requiring some creative study designs), and that the early results have been so clearly positive.

One of the sad ironies is that testing for ebola vaccines can only be conducted in the midst of an epidemic since it would be unethical to purposefully expose someone to ebola. As the number of new cases dwindles, it has become impossible to continue testing with these vaccines. The global health community will continue with other types of biomedical research that is not dependent on active cases of ebola, such as animal research, follow up with survivors, and genetic work around sequencing the virus. And, the good news is that whenever ebola reemerges, researchers will be able to quickly use the still-experimental vaccine and hope that it continues to demonstrate its efficacy.

As the vaccines were being developed, and the WHO and the governments of the West African nations were deciding whether to go ahead with experimental vaccine trials, there was a general worry that the medical research could lead to greater mistrust about biomedical interventions. It is well documented that West Africans have reason to be wary of medical research. In recent decades there have been multiple publicized cases of unethical research, such as the pharmaceutical company Pfizer's testing of the experimental drug Trovan in the midst of a meningitis outbreak in Nigeria. In the Trovan trial, the parents of the sick children argued that their children were given the experimental drug without their consent or knowledge; they sued the drug company and ultimately won a multi-million dollar settlement. Even with careful protocols, it is challenging to make sure people fully understand that a vaccine or therapy is experimental, and to consider the risks that come with participating in medical research.

Desperate circumstances mean a person may feel compelled to participate in an experiment because no other options are available. However, it appears that the ebola research conducted in West Africa was run extremely carefully and that there has been little to no backlash.

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What's Next?

The Future of Ebola in West Africa

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Although the 2014 ebola outbreak has subsided, the effects of this epidemic on the region and on individuals are continuing to be felt. The region and the world are now tasked with making plans for future prevention and determining how to respond more robustly to future epidemics.

Concern about future outbreaks has led to increased pressure to improve the global pandemic monitoring and response system. The World Health Organization was responsible for leading the global response to ebola, but was roundly criticized for lacking the coordination, authority and funding necessary to adequately mount an effective response to the outbreak. Researchers identified lack of investment in research and early warning systems as contributing to slow response time. Some critics have also called for more involvement by social scientists, suggesting that the earlier involvement of non-clinicians in the crisis may have served to better prepare medical staff for language and cultural obstacles.

Although international organizations were criticized, there were also many failures of the African governments that involved a combination of outright mismanagement and the presence of weak institutions that were strained as professionals got sick. In some cases, local governments were unable to process donated medical materials. In other cases, supplies were distributed along political lines rather than to the most needy areas. Ebola hotlines, call centers, and ambulance services were unable to keep up with the number of new patients. Ebola treatment centers were also overburdened. In the early stages of the epidemic, facilities were extremely overcrowded and health care professionals were scarce; death rates inside the centers were high and some people believed that entering an ebola treatment facility was tantamount to receiving a death sentence.

Government responses were also militarized in a way reminiscent of the civil wars that have been present in the region over the past two decades. The neighborhood of West Point in Liberia was forcibly quarantined and government officials restricted the transfer of food, dispersal of healthcare and disposal of bodies. Military soldiers were stationed at the neighborhood's borders and those who tried to leave were shot at. Eventually the multi-day quarantine was lifted and local volunteers worked to contain the outbreak within their own neighborhoods with only limited outside assistance. Cumulatively, these official responses to the epidemic contributed to West Africans' mistrust of institutions of authority.

For the tens of thousands of individuals who were infected with ebola and survived, many have now been left to confront a range of unexpected secondary symptoms such as vision problems, sensory pain, hair loss, fatigue, liver inflammation, joint pain, and headaches. The long and slow recovery has been compounded by the stigmatization some survivors have experienced, such as being excluded from jobs, social gatherings, and housing opportunities and finding it difficult to reintegrate into their communities. Survivor communities have been created in some regions to provide mutual support, and efforts by local leaders and NGOs to reintegrate survivors have met with varied success. There is also the question of care and integration for the many children who were orphaned during the epidemic; it's estimated that more than 16,000 children lost a primary caregiver.

In addition to the tens of thousands of people who were directly affected by ebola, there were many others who were indirectly affected. One of the longer term implications of the 2014 epidemic relates to food security across the West Africa region since the most productive agricultural areas were amongst the regions most devastated by the disease. Survivors and their dependents are at risk for food shortages as agriculture and trade came to a complete halt in some heavily affected areas. As the 2014 epidemic raged, planting and harvesting of crops didn't happen in normal ways or at expected times. The debility and illness caused by an ebola infection, caretaking responsibilities for family or friends, or the grief suffered by those who were left behind, all caused farming practices to be abandoned or deeply modified. In 2015, the UN Food and Agriculture Organization estimated that \$32.4 million US dollars would be necessary to provide for shortages, and Action Against Hunger USA estimated the number of people in need of food relief could be over one million.

The economic consequences of this outbreak were devastating. The World Bank has estimated that the worst affected countries have lost almost \$1.6 billion US dollars in forgone economic growth. As businesses shut down, and markets were closed, as formerly productive and healthy citizens became sick and died—work stopped, which damaged the economies of each nation and the entire West African region. The ramifications also extended to countries far removed from the epidemic. On the other side of the continent, tourism to the East African countries of Tanzania, Kenya and South Africa dropped dramatically even though these countries are thousands of miles away and were entirely unaffected by ebola. This is not a

trifling matter as tourism accounts for almost 10% of the gross domestic product (GDP) of Sub-Saharan African countries.

The good news is that donors from around the world have pledged more funds to ebola research, crisis response, and capacity building to help avert and respond to future outbreaks. The WHO has released plans to ensure better research on ebola, and all three countries have had only a handful of sporadic cases through the second half of 2015 and the start of 2016. These are hopeful signs. Yet, the realities are that West Africa remains an extremely poor region of the world, and there is still limited capacity on the ground. What is the right response to a future epidemic? It will clearly require a coordinated global response, but what exactly that looks like, who will coordinate it, and how it will be funded remains to be figured out.

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Additional Readings and Resources

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Kim Yi Dionne, “It’s Columbus Day, Let’s Talk about Geography and Ebola,”
Washington Post.com October 13, 2014.

<http://www.washingtonpost.com/blogs/monkey-cage/wp/2014/10/13/its-columbus-day-lets-talk-about-geography-and-ebola/>

In this article Yi Dionne discusses the perceptions about distance and concerns about disease spread in the United States. This article is recommended with summary article #1.

Stassa Edwards, “From Miasma to Ebola: The History of Racist Moral Panic Over Disease,” *Jezebel.com*, August 14, 2014. <http://jezebel.com/from-miasma-to-ebola-the-history-of-racist-moral-panic-1645711030>

<http://jezebel.com/from-miasma-to-ebola-the-history-of-racist-moral-panic-1645711030>

Edwards gives a historical perspective on disease, contagion and colonialism especially as it relates to Ebola and Sub-Saharan Africa. She focuses on media discourse and narratives of illness, filth and immigration. This piece is recommended with summary article #1.

Lena H. Sun, Brady Dennis, Lenny Bernstein, Joel Achenbach, “Out of Control: How the World Health Organization Failed to stop the Ebola Disaster.” *Washington Post.com*, October 4, 2014.

<http://www.washingtonpost.com/sf/national/2014/10/04/how-ebola-sped-out-of-control/>

This article details the initial outbreak of Ebola and follows its path after the initial case. It critically analyzes responses by the World Health Organization and West African governments. This article is recommended with summary article #1.

Dr. William Fischer II, “Dispatch from Guinea: Containing Ebola” *UNHealthCare.org* June 2014.

<http://news.unhealthcare.org/news/2014/june/dispatch-from-guinea-containing-ebola>

This article consists of emails from UNC’s Dr. Fischer to his family and friends while he was working with Doctors Without Borders in Gueckedou, Guinea. His personal accounts provide an up-close perspective about the way that the disease was affecting rural populations as well as some medical analysis. This article is recommended with summary article #2.

Jeffrey Stern, “Hell in the Hot Zone,” *Vanity Fair*. October 2014.

<http://www.vanityfair.com/politics/2014/10/ebola-virus-epidemic-containment#>

Stern follows the spread of Ebola from the initial outbreak. This individualized perspective of the disease is easily accessible, and provides commentary on responses by the local governments and international health providers. This article is recommended with summary article #2.

Finlay Young, "Love in the Time of Ebola: Meeting the Locals Struggling to Cope With an Epidemic," *Newsweek.com*, August 20, 2014.

<http://www.newsweek.com/2014/08/29/love-time-ebola-meeting-locals-struggling-cope-epidemic-265615.html>

This piece details how Liberians responded when government officials did not step in to respond to the epidemic. This reading is recommended with summary article # 2.

Susan Shepler, "The Ebola Virus and the Vampire State," *Mats Utas Blog*. July 21, 2014. <http://matsutas.wordpress.com/2014/07/21/the-ebola-virus-and-the-vampire-state-by-susan-shepler/>

Shepler describes her experiences in Sierra Leone during the outbreak. She considers Sierra Leone's experience with Ebola by expanding on the country's history of civil war and mistrust of government. This piece is recommended with summary article # 3.

Theresa Ammann. "The Complexity of Ebola & Its Misrepresentation in the West." *Mats Utas Blog*. July 21, 2014. <http://matsutas.wordpress.com/2014/08/22/the-complexity-of-ebola-its-misrepresentation-in-the-west-by-theresa-ammann/>

Ammann's article details how the outbreak unfolded in Liberia speaks specifically to the experience of people in Liberia. It challenges notions about "ignorance" in West African countries during the crisis. This reading is recommended with summary article # 3.

Sharon Abranowitz, "Ten Things that Anthropologists Can Do to Fight the West African Ebola Epidemic." *Somatosphere Blog*. September 26, 2014. <http://somatosphere.net/2014/09/ten-things-that-anthropologists-can-do-to-fight-the-west-african-ebola-epidemic.html>

In this piece, Sharon Abramowitz discusses the role of anthropologists can help fight ebola. It is a good way for students to think about what kinds of expertise is relevant and how someone other than a doctor or nurse might have a role (or be vital) in the fight against ebola.

Adia Benton. "Ebola, Mistrust, and Humanitarian Mobility?" *Mats Utas Blog*. August 18, 2014. <http://matsutas.wordpress.com/2014/08/18/ebola-mistrust-and-humanitarian-mobility-by-adia-benton>

This piece contextualizes the hostility experienced by some international health workers during the 2014 outbreak. This reading is recommended with summary article # 3.

Additional Online Resources:

WHO – Ebola Vaccines, Therapies, and Diagnostics.
http://www.who.int/medicines/emp Ebola_q as/en/

VIDEO: *In the Shadow of Ebola* (23 minutes):
<http://www.pbs.org/independentlens/videos/in-the-shadow-of-ebola/>

VIDEO: The Guardian, “Ebola Virus: How it Spreads and What it Does to You. (3 minutes): <http://www.theguardian.com/world/2015/jul/31/ebola-vaccine-trial-proves-100-successful-in-guinea>

NPR Slideshow, “Life After Death.” February 20, 2015: <http://apps.npr.org/life-after-death/>

An excellent resource that integrates video, visual images and interviews to paint a very detailed picture of how the epidemic affected one particular area in West Africa. My freshman students were extremely moved by this piece, and we spent nearly 45 minutes of class time in very thoughtful discussion.

Ebola Deeply.org. <http://www.eboladeeply.org/>
An independent digital media project serving as a clearinghouse for articles, media and information about the Ebola outbreak. This source is comprehensive, accessible, and offers a variety of perspectives.

Ebola Timeline: <http://www.eboladeeply.org/background/timeline/>

WHO – Current Situation Update. <http://www.who.int/csr/disease/ebola/en/>
The official page for the World Health Organization. This site provides current situation updates, fact sheets, and technical papers on the 2014 outbreak and other unfolding epidemics.

Center for Disease Control and Prevention (CDC). <http://www.cdc.gov/vhf/ebola/>
Official web page for the CDC relating to Ebola. This resource offers details about transmission, risk of exposure, situational updates, as well as the most recent policies regarding disease treatment.

Activity: Maps of Africa and Ebola

These three maps are meant to be used in one single activity, and challenge students to test their knowledge of African political geography, and then to identify the region and specific countries affected by the 2014 outbreak. Finally, they're asked to consider the relative size of the continent and the small area that has been affected.

Part 1: Blank Political Map of Africa

Using the following blank map of Africa identify:

1. As many nations as you know
2. The region affected by the 2014 Ebola Outbreak
3. The three hardest-hit countries



Image Source: <http://www.worldatlas.com/webimage/countrys/africa/afoutl.htm>

Part 2: Political Map of Africa & Identification of Ebola Affected Areas

Compare your blank map to the political map below and make any necessary corrections.

1. How accurate was your version of the map?
2. Were you able to correctly identify the region and the three hardest-hit countries?



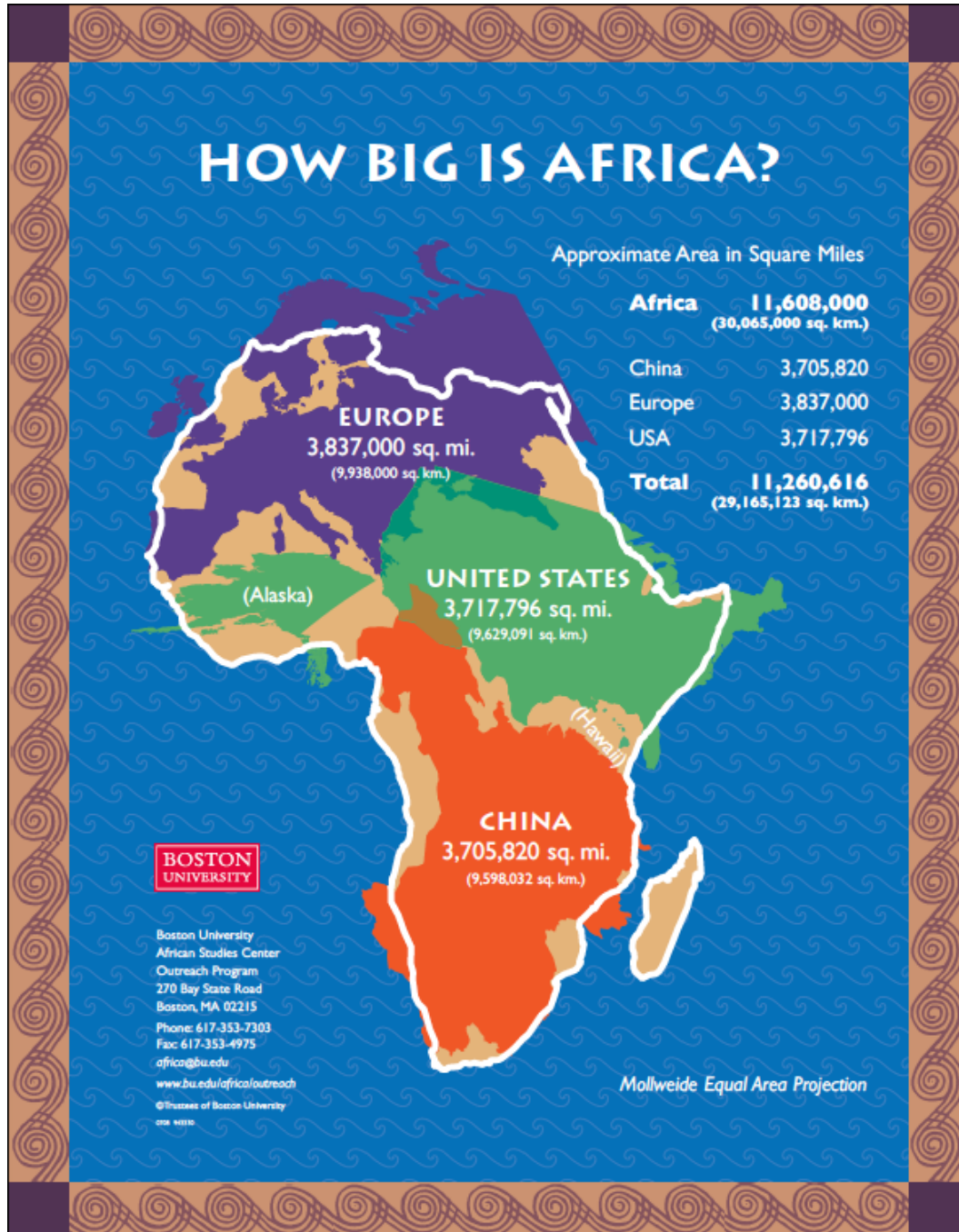
Answer: The 2014 outbreak occurred in West Africa, in the countries of Liberia, Sierra Leone, and Guinea.

Image Source: <http://www.nationsonline.org/oneworld/map/africa-political-map.htm>

Part 3: How Big is Africa?

The map below demonstrates the size of the African continent.

1. Can you what guess what percentage of the continent the countries of Guinea, Liberia and Sierra Leone make up?



Answer: the three countries only account for 2% of Africa's total land mass.

Activity: Ebola Myths, Facts, and Misinformation

There are a few different ways this activity can be used. One is to use this as a pre/post test, having students fill out the sheet independently at the start of your ebola unit, and again at the conclusion. Have the students discuss what they learned and review any areas they are still confused about. Another possibility is to use the list as part of a classroom discussion or a small group activity to make sure students are clear on all the statements below. The second page provides information about each statement.

Read the statements about Ebola listed below.

Is each statement true or false?

If you identify a statement as false, can you state what specifically is inaccurate?

Discuss why each these statements might seem plausible, and to whom.

1. Ebola is an airborne disease
2. Contracting Ebola is a death sentence; there are no Ebola survivors
3. Ebola victims die of blood loss
4. Ebola is caused by Africans who eat bush meat
5. International aid workers are the only ones effectively reacting to the Ebola virus
6. Ebola is no longer a threat in West Africa

Read the statements about Ebola listed below.

Is each statement true or false? ***Each statement is false!***

If you identify a statement as false, can you state what specifically is inaccurate?

Discuss why each these statements might seem plausible, and to whom.

1. Ebola is an airborne disease
The ebola virus is transmitted when a person comes in contact with infected bodily fluids such as blood, urine, saliva, sweat, feces, vomit, breast milk, and semen. Airborne diseases are spread from one infected person to another the air by activities such as coughing or sneezing.
2. Contracting Ebola is a death sentence; there are no Ebola survivors.
Roughly half of the people who contract Ebola die. Case fatality rates have varied from 25% to 90% in past outbreaks, and vary tremendously depending on where in the world the individual is being treated.
3. Ebola victims die of blood loss
In the 2014 outbreak, most of the deaths were not a result of severe hemorrhaging (bleeding). Rather, most deaths were the result of the body going into shock and multi-organ failure.
4. Ebola is caused by Africans who eat bush meat
Ebola is a zoonotic disease (one that can be passed between animals and humans) and it is likely harbored by fruit bats that live in West and Central Africa. The initial case probably came from humans and bats sharing the same space, resulting in a child ingesting bat saliva or feces on food or through direct handling of the bat. Once the disease has infected a human, it passes from person to person through infected bodily fluids. The eating of “bush meat” (wild animals hunted in the forest or jungle) is not a cause of ebola, nor does it spread ebola.
5. International aid workers are the only ones effectively reacting to the Ebola virus
West Africans have been vital participants in helping to treat ebola patients, in developing policies and procedures, and in courageously working and volunteering in Ebola treatment centers. Many West African health care workers continued to labor in dangerous conditions, putting themselves at risk, often treating the sick without proper supplies or support, and without overtime or hazard pay.
6. Ebola is no longer a threat in West Africa
Ebola will likely continue to be a threat in West Africa since the disease can remain dormant in bat populations that live in the central and western part of the continent. Even when there is no active human transmission of cases, the virus will continue to reside in bat populations. Whenever an infected bat comes into contact with a human, there will be a chance to begin a new set of human infections.

Activity: Visual Representations of Ebola

This activity is best run with the image displayed on a screen so everyone can view it at the same time. You may also want to ask students to view the image online before coming to class and to consider the questions individually before the group discussion.



During the 2014 Ebola outbreak, major media outlets in the United States stationed their photographers in West Africa to capture visual images of the ongoing epidemic.

This image was published on National Geographic's website on January 27, 2015 with the following caption: "At Sierra Leone's Hastings Ebola Treatment Center, staff help a man suffering from Ebola-induced delirium after he fled the isolation ward and tried to escape." – Peter Muller 2014¹

¹ Amy Maxmen, "How Ebola Found Fertile Ground in Sierra Leone's Chaotic Capital," January 27, 2015. Photographs by Pete Muller. <http://news.nationalgeographic.com/2015/01/150127-ebola-virus-outbreak-epidemic-sierra-leone-freetown-photos-pictures/>

Discussion Questions:

1. What is your immediate reaction to this picture? How does it make you feel?
2. What do you think is the photographer's intention?
3. How might the man in this photo feel about this image being posted on the National Geographic website and being viewed by people around the world?
4. Is this an appropriate depiction of a person suffering?
5. Would a photo like this have been taken in the United States? Would this image be published if it was taken in the United States? Why or why not?
6. How might a family member or friend of the man depicted react to this photo?

Activity, Part II: Visual Representations of Mental Illness in West Africa

In October 2015, the New York Times published two stories about mental health care in West Africa. In addition to the stories, a series of intimate photographs were published that showed people with mental illnesses.

The New York Times dedicated a column to discussing the ethical questions and challenges of producing the images, including a question and answer with the photographer, Joao Silva.

View the images Silva produced and then read column where he explains his thinking about consent, special considerations when photographing people with mental illnesses.

View the Images in “Part 1: The Chains of Mental Illness in West Africa”:

<http://www.nytimes.com/2015/10/12/health/the-chains-of-mental-illness-in-west-africa.html>

Re-View the Image of Kodjo Didier Akarabi:

<http://www.nytimes.com/imagepages/2015/09/25/science/12togo6.html>

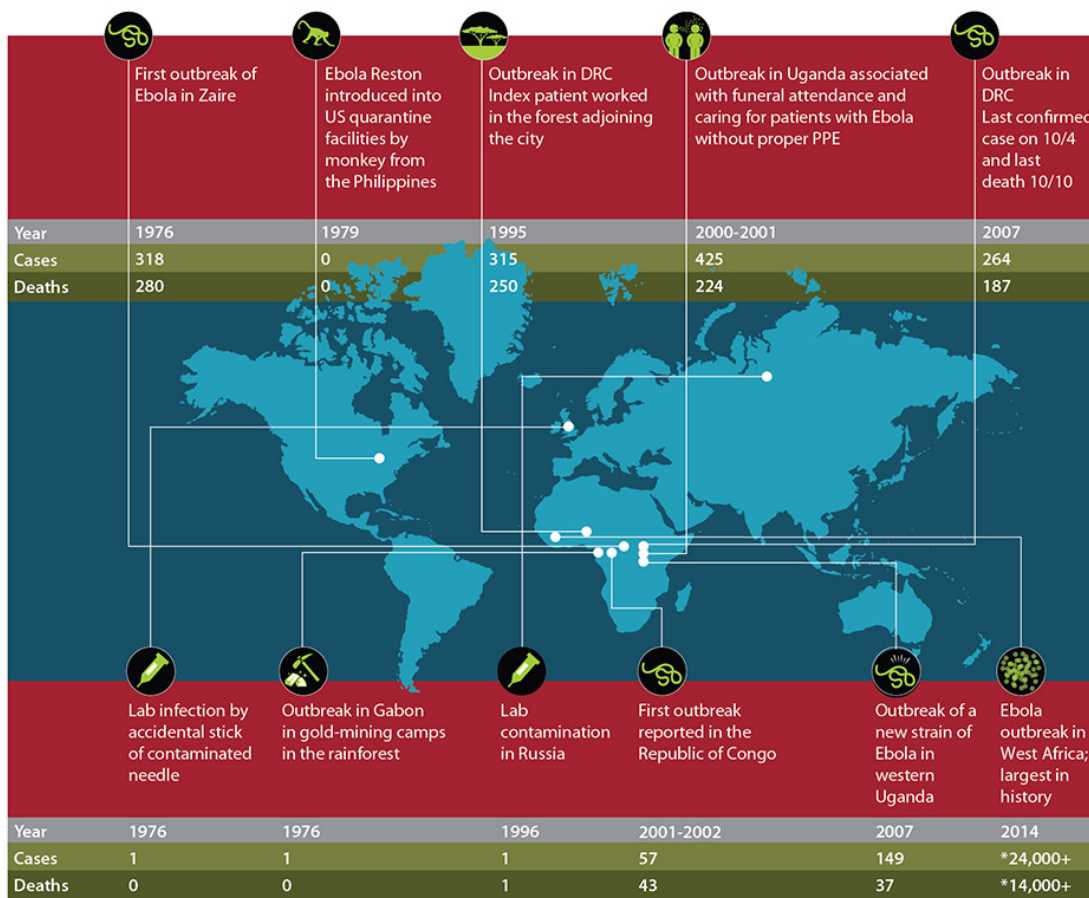
Read “Q&A: Joao Silva on Photographing Mental Illness with Sensitivity” :

http://www.nytimes.com/2015/10/12/health/photographing-mental-illness-with-sensitivity.html?_r=0

- After reading Silva's approach, do you have new opinions or thoughts about the National Geographic image?
- Silva was capturing images of people with mental illnesses, not sufferers of ebola. Do you think there are different considerations when photographing these different groups? Why?

Activity: Ebola Timelines

Consider the following two timelines: the graphic below, and the list of important dates listed on the next page. Answer the discussion questions below.



CS 252971

* As of March 24, 2015

Outbreaks Chronology: Ebola Virus Disease¹

¹ Centers for Disease Control and Prevention, <http://www.cdc.gov/vhf/ebola/outbreaks/history/chronology.html>

Discussion Questions

1. Which event would you consider the most significant? Why?
2. Can you think of one event prior to the start date of December 28, 2013 that could be important?
3. Note the start and end dates; why do you think the makers chose these dates? Could you make an argument for a different start or finish date?
4. Does this include all significant geopolitical, social, and economic events that may have affected the ebola outbreak? Should event such as civil wars, international economic policies, or political changes be listed on a timeline of ebola? Could these types of events shape future epidemics?

Some Important Dates for the 2014 Ebola Outbreak

December 28, 2013

A two-year-old child dies of an unidentified hemorrhagic fever in the town of Gueckedou, Guinea.

March 22, 2014

Guinea reports that the fever has been confirmed as Ebola, and has already killed 59 people.

March 28, 2014

Two Ebola cases are reported in Liberia among people who have been to Guinea.

May 26, 2014

The WHO confirms Ebola has reached Sierra Leone.

July 20, 2014

Liberian government employee Patrick Sawyer arrives in the city of Lagos, Nigeria. He dies of Ebola five days later, sparking concerns about the ease with which the virus might jump national borders or continents.

July 27, 2014

Liberia closes nearly all of its border crossings.

July 30, 2014

The international aid group, *Médecins San Frontières* (Doctors Without Borders) declares Ebola “out of control.”

August 8, 2014

The WHO declares Ebola an “international health emergency of international concern.” Four days later, the death toll exceeds 1,000 people.

August 12, 2014

After some debate, the WHO agrees to the use of experimental drugs to treat people infected with Ebola.

August 22, 2014

A doctor in Nigeria's oil hub, Port Harcourt, dies of Ebola. His is the second death in Nigeria.

August 29, 2014

Senegal becomes the fifth country to be hit by Ebola, while riots break out in neighboring Guinea over rumors that health workers are deliberately transmitting the virus to locals.

September 5, 2014

The WHO estimates that 2,100 people have died from Ebola, and that roughly 4,000 people have been infected.

September 16, 2014

US President Barack Obama announces that the United States will send 3,000 military troops to West Africa to build Ebola Treatment Centres and establish a military coordination center.

September 19, 2014

Sierra Leone institutes quarantines that affect nearly 2.2 million people, roughly one third of the total population.

September 26, 2014

The WHO estimates that 3,091 people have died, with a total of 6,574 suspected cases. Liberia, Guinea and Sierra Leone remain the hardest-hit countries, with Nigeria and Senegal faring better.

September 29, 2014

Thomas Duncan, a Liberian who flew from Monrovia, Liberia to Dallas, Texas, became the first person diagnosed with Ebola within the United States; he died of Ebola two weeks later. Two healthcare workers involved in Duncan's care also test positive for Ebola.

October 9, 2014

The United Kingdom introduces temperature screening for passengers arriving at London Gatwick and London Heathrow on flights from West Africa. In the United States, New York's JFK airport enhances Ebola screenings just days later.

October 14, 2014

The WHO announces that the fatality rate from Ebola has reached 70%.

January 14, 2016

The WHO declares the end of Ebola in Liberia and says "all known chains of transmission have been stopped in West Africa."