



10.02.14

LESSONS FROM THE WEST AFRICAN EBOLA EPIDEMIC: TOWARDS A LEGACY OF STRONG HEALTH SYSTEMS

O'NEILL INSTITUTE

The O'Neill Institute for National and Global Health Law at Georgetown University was established to respond to the need for innovative solutions to the most pressing national and international health concerns. Housed at the Georgetown University Law Center in Washington D.C., the O'Neill Institute reflects the importance of public and private law in health policy analysis. The essential vision for the O'Neill Institute rests upon the proposition that the law has been, and will remain, a fundamental tool for solving critical health problems in our global, national, and local communities. By contributing to a more powerful and deeper understanding of the multiple ways in which law can be used to improve health, the O'Neill Institute hopes to encourage key decision-makers in the public, private, and civil society sectors to employ the law as a positive tool to enable individuals and populations in the United States and throughout the world to lead healthier lives. For additional information, please visit www.oneillinstitute.org.

O'NEILL
INSTITUTE
FOR NATIONAL & GLOBAL HEALTH LAW
GEORGETOWN LAW

The West African Ebola epidemic is an international public health crisis, representing a threat to international peace and security. UN Secretary-General Ban Ki-moon said on September 18th, “The gravity and scale of the situation now requires a level of international action unprecedented for an emergency.” As the international community begins to accelerate its response commensurate with the magnitude of the immense human suffering, additional actions – in both the immediate and longer term – are necessary. In the immediate term, the UN should exercise decisive leadership, and move the international response from a “catch-up” exercise to a well-planned, properly resourced, and diligently executed strategy.

Looking to the longer term, health outcomes, from epidemic response to healthy lifestyles, and injury prevention, are dependent on access to strong local health systems, with adequate facilities, staffed by well-trained personnel. As a global community, it is to our moral, financial, and security detriment not to invest in health systems. Although, amid such a grave



emergency, it can be overwhelming to look forward, we believe a positive legacy can come out of this tragedy—a legacy ensuring strong health systems, with comprehensive, rights-based universal health coverage.

This O'Neill Institute Briefing - updated and enhanced from [our previous Briefing](#) - offers a systematic account of the epidemic, how we got to this crisis state, the steps taken to bring the epidemic under control, and an ambitious plan for the future. We therefore offer this Briefing as a public service to provide the latest account and analysis of the epidemic, and also add our own ideas about the lessons learned and how to prevent future health threats.

THE SCIENCE AND EPIDEMIOLOGY OF EBOLA

Ebola Virus Disease (EVD) is a hemorrhagic fever that causes a wide range of symptoms, from fever and weakness to vomiting and rash—and, in many cases, external and internal bleeding in the late stages of the disease. Symptoms can be wide-ranging and ambiguous, particularly in the early stages, and can take up to 21 days to appear. This poses a particular challenge for health workers attempting to contain the pandemic. For example, a differential diagnosis between EVD and malaria is difficult to make.

The three EVD species that have caused illness in humans, Zaire, Bundibugyo, and Sudan, have exceptionally high mortality rates, killing between 25% and 90% of those contracting the disease. A new study suggests that the current West African outbreak, caused by the Zaire species, is currently fatal in around 70% of cases. No treatment or vaccine for Ebola has proven effective in humans, although clinical trials are now underway.

Ebola's animal reservoir is thought to be fruit bats, but while zoonotic (animal to human) transmission is often responsible for the first infection, an outbreak is sustained by humans infecting one another. Zoonotic infection often occurs through consumption of bush meat—the cooked, dried, or smoked remains of a host of wild animals. For many Africans, this is the food of their forefathers, and also contains life-sustaining protein. Domesticated animals can be rare and expensive in sub-Saharan Africa, so bush meat (even if legally banned) flourishes in local markets.

Although highly pathogenic, Ebola is not particularly contagious, less so than, for example, influenza viruses, which are airborne. Ebola virus disease is passed through bodily fluids (e.g., blood or saliva) and infected individuals are most contagious after their symptoms have appeared. As a result, most of the more than 20 previous Ebola epidemics died out quickly, killing relatively few.

THE EMERGENCE OF THE WEST AFRICAN EBOLA EPIDEMIC

Researchers believe that the West African Ebola epidemic stems from the infection of a 2-year-old-boy from Guinea. The child died on December 6th, 2013, just a few days after falling ill. Some of his family members contracted Ebola, and then mourners at his funeral carried the virus to a nearby village. The boy's pregnant mother was infected, and in turn infected a midwife, who treated her while she miscarried. By the time the outbreak was confirmed as Ebola on March



22nd, 2014, 49 people had contracted the virus, and 29 people had died. Four health workers were among the dead. By the end of March 2014, Ebola had spread to Liberia and Sierra Leone. In July, a visibly ill air traveler brought Ebola from Liberia to Nigeria. Ebola spread to Senegal in August, when an Ebola patient who escaped the surveillance system in Guinea traveled to Dakar, Senegal via road.

WHERE WE ARE NOW

As of the end of September, the West African Ebola epidemic had claimed more than 3,000 lives, nearly 2,000 in Liberia; there has been an exponential increase of cases in Liberia and Sierra Leone. According to CDC modeling, by January 20th, 2015, without scaled-up interventions, the number of cases in Liberia and Sierra Leone will increase to approximately 550,000, or 1.4 million, when corrected for underreporting. (Many experts believe, however, that we can avert this worst-case scenario.) The World Bank that, if the virus continues to surge, gross domestic product will fall by nearly 12% in Liberia, 9% in Sierra Leone, and approximately 2% in Guinea, in 2015. World Bank President, Dr. Jim Yong Kim said that fear of contagion is the main driving factor, and that if the virus spreads further afield in Africa, economic losses may reach many billions.

WHY EBOLA IS OUT OF CONTROL: A RETROSPECTIVE ANALYSIS

Ranked lowest in global development, the affected countries in West Africa do not have the basic infrastructure to contain the Ebola epidemic. Even with international help, it will take months (or longer) to bring the crisis under control. EVD is spreading unchecked because of fragile health systems, emergence in densely populated urban areas, cultural practices that lead to new infections, lack of public education, and deep-seated distrust among the population. This “perfect storm” has fueled an unprecedented health and humanitarian crisis.

Broken health systems

Being treated, or working, in a hospital in affected states is extremely hazardous. Hospitals have become amplification points, fueling EVD transmission. Health professionals are most susceptible, working in hazardous conditions. They care for infected patients without personal protective equipment and infection controls; they lack training in diagnosis of and treatment for EVD; there are few safe and sterile isolation units; and they are underpaid. As a result, the disease is decimating the West African workforce, which was fragile even before the crisis emerged—nearly 400 health workers have contracted Ebola and more than 200 have died.

Public distrust in governments and health workers

Patients have learned that hospitals are unsafe places, rife with Ebola contamination. They realize that no effective treatment exists for their disease. If patients do go to a hospital, they may be confined in unhygienic rooms, without amenities, unable to communicate with their families. Consequently, patients with Ebola-type symptoms stay away, fueling spread of infection in their communities. Patients who need treatment for myriad health hazards – from AIDS and malaria to cancer and heart disease – also stay away, suffering or dying prematurely for lack of care. In



this atmosphere, patients become frustrated and can lash out with violence. In the most shocking example to date, villagers near Nzérékoré, Guinea killed 8 members of an Ebola awareness-raising team, including local officials, health workers, and journalists. The team fled after being pelted with stones upon their arrival in the village of Wome, and the Guinean government found their bodies nearby. The villagers' motive has not been confirmed, but it is thought to be the belief that health workers are spreading Ebola. What has transpired is a vicious cycle of unsafe health facilities, low morale, mutual distrust, and trepidation—all fueling EVD transmission.

Ebola's urbanization

EVD's unprecedented spread is also attributable to the urbanization of a once rural disease. Previous outbreaks have mostly been confined to rural areas. Now, Monrovia, Liberia, is in the grip of the EVD epidemic. Cases of EVD have emerged in other major cities, including Conakry, Guinea and Freetown, Sierra Leone, while reaching Lagos, Nigeria, Africa's most populous city, by an air traveler. For the first time, health officials are facing the immense challenges of containing Ebola in urban centers. Results have been mixed, but interventions that undermine human rights principles have served to drive the epidemic underground. An Ebola quarantine established in West Point, a large slum in the Liberian capital, was lifted after ten days, following food shortages, public unrest, and deadly clashes between residents and security forces (see below).

Traditional cultures and the need for public education

Ministries of health have ordered cremation of bodies, but traditional burial and other cultural practices persist. Traditional West African burial services pose major transmission risks. Loved ones come in close contact with the deceased, including ritual touching and bathing of the body. Burials, which bring family members and friends together, create the conditions for transmitting EVD, which then can spread throughout the community – creating a dangerous dynamic. As the traditional caregivers, women are more likely to come into close contact with those affected, and thus, are more likely to contract the virus.

Common misperceptions about Ebola abound, with public education neglected, and governments curtailing accurate news reporting. Epidemic control requires trust and an informed public, so risk communication is a basic public health tool.

DOMESTIC RESPONSES

Local populations live in dread, not only of Ebola but also of the militarization of the disease. Countries have restricted travel, closed schools, and banned public gatherings, including sporting, shopping, and entertainment. They have invoked quarantine, ranging from stay-at-home days for “reflection, education, and prayers” to home confinement under guard. The military has been deployed for house-to-house searches, traveler checkpoints, and cordon sanitaire (a guarded line preventing anyone from leaving)—separating people and regions of the country. In West African “hotspots” (with uncontrolled transmission) armed troops have established blockades, closed roads, and banned travel, beyond the guarded perimeter. The populace is fearful, not only of exposure to EVD, but also of isolation and starvation, as food prices soar.



After deadly violence ensued, the Liberian government lifted a 10-day old quarantine in the West Point slum in Monrovia. During the quarantine, enforced by military and police, the price of food and basic goods doubled. A 15-year-old boy caught in a violent battle between residents and military and police, suffered fatal bullet wounds.

The government of Sierra Leone recently completed a country-wide, 3-day quarantine. Between September 19th and September 21st the government ordered all of the country's 6 million citizens to stay at home while nearly 30,000 volunteers, supported by soldiers and police, searched homes for people infected with Ebola, who are being harbored by concerned family and friends. The home visit teams were also tasked with educating the population about the disease and how to prevent it. The quarantine elicited mixed reactions. Sierra Leone's president, Ernest Bai Koromo, said the lockdown had "achieved its objectives," while a local NGO expressed concern over the "poor training" of the volunteers and Sierra Leoneans complained of widespread food shortages and lost income.

Despite the massive effort, as of late September the situation in Sierra Leone seemed only to be worsening. In reaction to deteriorating conditions, including a "sharp increase" in cases in Freetown, Sierra Leone's densely populated capital city, the country imposed new quarantines covering over a quarter of the country.

Targeted travel restrictions now may be necessary to prevent spread to other regions – but not by depriving communities of human rights. Following the West Point quarantine, Médecins Sans Frontières (MSF) warned that the nationwide lockdown in Sierra Leone could worsen the situation. "It has been our experience that lockdowns and quarantines do not help control Ebola, as they end up driving people underground and jeopardizing the trust between people and health providers."

Governments can implement a "smart" cordon sanitaire through humane care and incentives, even if community policing remains necessary. They should provide people with nourishing food, clean water, health care, and psychosocial support. Local residents could use their cellphones (common in Africa) to report unexplained fevers and other symptoms. When they become available, vaccines and drugs should be deployed instead of armed soldiers in volatile regions. Transmission hot zones can't be ignored, but neither can the needs and human rights of frightened communities.

INTERNATIONAL RESPONSE

Though the death toll rose to over 1,000 during the month of August, and the disease spread from Guinea, Liberia, and Sierra Leone to Nigeria and Senegal, a major international response did not occur until western aid workers were infected.

Two US aid workers who contracted Ebola while working at a missionary clinic near Monrovia were evacuated to Emory University Hospital in Atlanta, Georgia, where they ultimately recovered. A Spanish priest became the epidemic's first European victim. Even though these cases drew significant international attention to the West African Ebola epidemic, coverage tended



Lessons from the West African Ebola Epidemic: Towards a Legacy of Strong Health Systems

to focus on ethical concerns over these foreign workers' access to an experimental treatment, ZMapp, while none was available in the affected countries. On September 30th 2014, medical officials announced that a man in Dallas, Texas, had been diagnosed with Ebola, after flying on a commercial flight from Liberia. He is in critical condition, and is being treated in isolation. A full-scale outbreak appears unlikely and CDC Director, Tom Frieden, expressed "no doubt that we will contain this."

Over the past months, in the absence of meaningful international assistance, MSF, and other humanitarian groups, have shouldered the burden of caring for the vast majority of Ebola patients. MSF started a dedicated Ebola program in West Africa in March 2014, and now has over 150 international staff and 1,700 nationally hired staff in the region. MSF's latest work on Ebola includes collaborating with the World Bank and other experts to develop a clinical protocol to treat and prevent infections, for use at all Ebola treatment centers.

Now, finally, international organizations are beginning to give the devastating epidemic the attention, and the funding and resources, it deserves—still too little and very late. Had the response been adequate and timely, it would have cost a fraction of the amount that is now required. As the number of Ebola cases has risen exponentially, so has WHO's estimates of the amount of funding and resources required to contain Ebola's spread. Initially calling for less than \$5 million in March/April, WHO increased its estimate to \$71 million in July, then to \$490 million upon the release of its Ebola Response Roadmap in August – and finally to \$600 million just 8 days later. On September 16th, 2014, the UN released an updated document, Ebola Virus Disease Outbreak: Overview of needs and requirements. Senior officials increased the estimated cost of international efforts to contain Ebola to \$1 billion. It is becoming quite clear that this latest cost estimate of \$1 billion will prove grossly inadequate to the enormity of the task.

The World Bank made the first substantial funding commitment on August 4th, 2014, pledging up to \$200 million. By September, the World Bank had increased its commitment to \$400 million for Liberia, Sierra Leone, and Guinea, including \$230 million in emergency funding. The African Development Bank contributed \$60 million for WHO to recruit and train health workers, buy medical equipment and treatments, and improve local logistics for emergency care. On September 10th, 2014, the Gates Foundation committed \$50 million to containing the Ebola epidemic, with funds immediately available to UN agencies and NGOs involved in the international effort.

Foreign governments, too, are beginning to mobilize, committing funding and civilian and military personnel to the fight against Ebola. The Cuban government has announced that it will send 63 doctors, 102 nurses, as well as infection control specialists, epidemiologists, and intensive care specialists, to Sierra Leone for 6 months. The Cuban medical personnel will set up WHO-funded Ebola clinics. On September 27th, the Cuban government announced that an additional 296 doctors and nurses will be sent to Liberia and Guinea. China is sending 59 clinicians, epidemiologists, and nurses, and a mobile laboratory to Sierra Leone. This is in addition to over 100 medical staff members of China's Center for Disease Control and Prevention, already working in Sierra Leone. The UK government has pledged £25 million to assist to contain



Lessons from the West African Ebola Epidemic: Towards a Legacy of Strong Health Systems

the Ebola outbreak. Additionally, UK military and humanitarian experts are constructing an Ebola medical unit in Freetown, Sierra Leone, to include 50 beds for victims of the disease and a 12-bed specialist treatment center for local and international health care workers. The French government has announced that it will set up a military hospital in the forest area of Guinea.

The US government mobilization

The US government has contributed over \$100 million to fight Ebola in West Africa, and has plans to make available an additional \$75 million (its total commitments could eventually exceed \$1 billion). USAID is providing funding for 1,000 treatment beds, 50,000 hygiene kits, and 130,000 sets of personal protective equipment. Combined funding from USAID and the Department of State will bring 25 doctors, 45 nurses and other personnel to manage and run treatment units in Liberia, Guinea, and Sierra Leone.

On September 7th, President Barack Obama confirmed that the United States would help coordinate a global effort to contain the West African Ebola epidemic. His announcement came on the heels of a heartfelt plea from the Liberian President Ellen Johnson Sirleaf, highlighting the critical need for a ramped up international response. President Obama foreshadowed US military involvement, including setting up isolation units, delivering equipment, and providing security for a global force of public health workers. He asserted that US leadership and military involvement are required to prevent the further spread of the virus, and possible mutations that may render the virus more transmittable. The first signs of what the US military's contribution will entail came the day after the President's comments, when the Pentagon announced that it would send a 25-bed field hospital to Liberia, to provide treatment to health workers struck down with Ebola. The Pentagon has since confirmed that it is also sending two diagnostic laboratories to Liberia.

The West African Ebola outbreak has entered uncharted territory, and humanitarian groups such as MSF have called on the international community to “immediately deploy civilian and military assets with expertise in biohazard containment.” The support from humanitarian groups and health-focused organizations for military involvement to contain an infectious disease outbreak may be unprecedented. MSF says states must dispatch disaster response teams to work with affected countries to scale up isolation centers, set up field hospitals and mobile laboratories, and establish air bridges to move equipment and personnel.

On September 16th, President Obama provided details of the ramped up US response to the crisis. The US will set up a Joint Force Command in Monrovia, to provide “regional command and control support to US military,” and “a regional intermediate staging base (ISB) to facilitate and expedite transportation of equipment, supplies and personnel.” President Obama also committed to send up to 3,000 military personnel to West Africa, to construct up to 17 100-bed Ebola treatment centers in Liberia, and to train up to 500 health workers a week. The US commitment is desperately needed, as current capacity only allows for 18% of people infected with Ebola in Liberia to be treated in hospitals or isolation facilities.



Lessons from the West African Ebola Epidemic: Towards a Legacy of Strong Health Systems

MSF however, says it will be a real challenge for the US to fulfill its pledge of training 500 health care workers a week, as so many West African health workers have fled from the collapsed system, or been infected themselves. Groups recruiting international health workers have had great difficulty persuading volunteers to work on the ground in West Africa. In the last two weeks however, volunteer numbers have increased – with MSF, the International Medical Corps, and Partners in Health reporting that more than 300 professionals have expressed interest in volunteering. Approximately 1,600 health workers have signed up through USAID. Although these increases are positive, no infrastructure exists to support the rapid deployment of these volunteers, and it will take time to process visas, and deliver specialized training required to ensure their safety.

In addition to these practical challenges, the involvement of foreign military in public health emergencies triggers important ethical questions. While MSF welcomed President Obama's pledge to set up isolation units and provide equipment, it does not support the US military providing security support in West Africa. MSF believes military support should be "of medical nature only." The US response appears to be in line with MSF's recommendation; President Obama's announcement does not include provision of security for health workers in the region.

An unprecedented UN Security Council resolution

On September 18th, the UN Security Council convened its first emergency meeting to discuss a public health issue. Initially proposed by the US, 134 UN members co-sponsored a resolution, which declared the West African Ebola epidemic a "threat to international peace and security," and called for member states to provide trained personnel, specialized supplies, and equipment, and to lift travel and border restrictions on affected countries. The resolution passed unanimously. The UN, for the first time in history, has created a mission to tackle a public health emergency. Announcing the establishment of the United Nations Mission for Ebola Emergency Response (UNMEER), Secretary-General Ban Ki-moon stated that "[t]he gravity and scale of the situation now requires a level of international action unprecedented for an emergency."

The UN Security Council has only twice before issued a resolution on a health issue, both times calling for a strengthened coordinated international response to the AIDS pandemic. (The UN General Assembly has also held a special session on non-communicable diseases).

All members of the UN have "agree[d] to accept and carry out the decisions of the Security Council" (UN Charter, Article 25). This legal obligation on member states can be contrasted with the "softer" powers available to WHO to deal with health emergencies. On August 8th, the WHO Director-General declared the outbreak a public health emergency of international concern (PHEIC), under the International Health Regulations (IHR), a legally binding international agreement among the 196 states parties requiring them to put into place systems to detect, prevent, and control the international spread of disease. Under the IHR, the WHO Director-General made temporary recommendations to member states to address the newly declared PHEIC. These recommendations, however, are just that – non-binding advice. There is no provision within the IHR for the international mobilization of health workers, goods (e.g.,



personal protective equipment), or peacekeepers. The IHR grant the WHO no express authority to establish an international system or coordination and control to lead a response to a global health emergency.

Now that the UN Security Council has called for trained medical personnel, supplies, equipment, and for the lifting of travel bans and border restrictions, member states are obliged to comply with these calls to action, setting the stage for the UN to lead a well-coordinated and well-funded international response to the West African Ebola crisis. This sort of leadership has been desperately needed, but absent, from the international response so far. While it is certainly welcome, it is lamentable that calls from WHO proved insufficient to mobilize the necessary response. This illustrates the urgent need for an effective international legal mechanism to facilitate the funding and mobilization of resources to contain health emergencies before they threaten international peace and security.

Global Health Security Agenda

The Ebola epidemic raises the question of how the recently launched Global Health Security Agenda (GHS Agenda), a third multinational approach to containing Ebola, compares to the IHR and the UN's response to the disease. The US-led GHS Agenda seeks to establish concrete national-level commitments, and build capacity to prevent, detect, and respond to infectious disease threats. According to the CDC, "Ebola is precisely the kind of health threat the Global Health Security Agenda could have prevented." Indeed, the Agenda's prevention priorities include "reduced spillover of zoonotic diseases into human populations." At the GHS Agenda summit on September 26, 2014, President Obama challenged global leaders to use the GHS Agenda to spearhead global preparedness, and to put an end to repeating, unnecessary tragedies:

And though this Ebola epidemic is particularly dangerous, we've seen deadly diseases cross borders before. H1N1. SARS. MERS. And each time, the world scrambles to coordinate a response. Each time, it's been harder than it should be to share information and to contain the outbreak. As a result, diseases have spread faster and farther than they should have – which means lives are lost that could have been saved. With all the knowledge, all the medical talent, all the advanced technologies at our disposal, it is unacceptable if, because of lack of preparedness and planning and global coordination, people are dying when they don't have to.

Like the IHR however, the GHS Agenda lacks a legal mandate requiring states to comply with national commitments. It is too early to determine whether this diplomatic collaboration can succeed where the IHR has failed – convincing high-income states to build public health capacity in lower-income countries.

WHY THIS EPIDEMIC NEVER HAD TO HAPPEN

An effective public health response to the initial outbreak could have prevented it from mushrooming into a regional tragedy that continues to worsen. At the root of the problem are weak health systems. Unable to provide even basic health services to all their people, affected



countries are unprepared for the complexities of Ebola, from the disease's technical requirements, such as differentiation from more common diseases such as Cholera and Lassa Fever, laboratory capacity, contact tracing, and isolation units, to the most basic community asset, trust. Hospitals have become places of fear and contagion rather than of healing.

WHO, which should have led the international response, has experienced severe budget deficits and drastically cut its workforce and programs, including its capacity for rapid response to epidemics. In a recent New York Times article, Director-General Margaret Chan said that WHO is not an implementation agency for outbreak response:

First and foremost, people need to understand WHO. WHO is the UN specialized agency in health. And we are not the first responder. You know, the government has first priority to take care of their people and provide health care. WHO is a technical agency. So this is how we provide services. We are not like international NGOs, for example MSF, Red Cross, Red Crescent or local NGOs who are working on the ground to provide, you know, direct services.

But if WHO does not implement a rapid response in a declared PHEIC, who does or should? The Ebola epidemic has exposed a major gap in the international capacity to respond to outbreaks, and in particular to epidemics that could pose a pandemic threat.

Looking ahead, the international community must mobilize to support affected countries and communities in two areas: first, to ensure sufficient funds to build basic health systems and community capacities to respond to pandemics in affected and neighboring countries; and second, to ensure the transparency and guidance for countries, rebuilding trust in government and the international community.

SCARCE AND UNPROVEN DRUGS AND VACCINES

Albert Camus in *The Plague* wrote, "Everybody knows that pestilences have a way of recurring in the world; yet somehow we find it hard to believe in ones that crash down on our heads." Since 1976, more than 20 Ebola outbreaks have erupted in sub-Saharan Africa, yet the world was woefully unprepared for the current tragedy, with no licensed vaccines or treatments.

Finally, more than 5 months after the virus began its spread, greater emphasis was finally placed on the development of vaccines and drug therapies. On August 11th, WHO approved the compassionate use of experimental drugs and, on September 5th, a WHO expert committee considered a list of promising candidates, such as antibody treatments and blood transfusions from Ebola survivors.

Several vaccine candidates are currently being studied. Johnson & Johnson, GlaxoSmithKline (GSK) and NewLink Genetics are among the many companies currently testing potential compounds, but none have yet proven safe and effective in humans (preliminary results from GSK's human trials are expected in November). An experimental drug, ZMapp, has shown considerable promise in primate trials. However, it has neither been proven effective nor tested



for safety in humans. The drug was initially administered to two US aid workers, and reportedly to a Spanish priest. It was later given to a British nurse as well.

In scarce supply, the last remaining doses of ZMapp have now been delivered to West Africa (reportedly on a “first come, first served” basis), but the initial preference given to white foreign workers fueled a sense of deep injustice. The optics of racial preferences is socially divisive. While administering an unproven drug to African patients conjures up images of unconscionable human experimentation, the failure to meaningfully consult local communities and leaders is a moral failure.

The drug’s scarcity raises a fundamental ethical question—who shall live when not everyone can? Although an agonizing choice, priority ought to go to African health workers, who face frightening risks and die in far greater numbers than foreign workers. It is also vital that allocation decisions be made fairly and transparently. African leaders apparently did not approve the use of an investigational drug administered in their territory, which arguably violated Liberian law. The decision was made behind closed doors without transparency and community engagement.

Given the more than 20 outbreaks of such a deadly disease why has so little been done to combat it until now? First, past outbreaks were most often confined to rural areas in some of the world’s least developed countries. Pharmaceutical companies had little incentive to develop a drug for a small group of individuals living in countries unable to afford the patented medications. Second, international donors decided to devote their aid dollars to diseases with larger burdens. It has now become clear that Ebola is no small threat, either to the affected countries or to global security. With the disease infecting and killing exponentially more people, already weak governance and infrastructure risk collapsing.

All doses of ZMapp have now been exhausted, and the results of vaccine trials are still months away, but high-resource countries should act now to expedite clinical trials and ensure that a mass scale-up of drug and vaccine production is possible quickly, once safety and efficacy is established. When supplies of effective vaccines and drugs become available, it is essential that national leaders are integral to the decision on who gets priority. Let’s hope the drugs are given to those most suffering from this epidemic.

ESTABLISHING A ROBUST RESPONSE AT LAST

Plan for the future, not the past

Over the past few weeks, the international community’s response has begun to reflect the enormity of the crisis—funding pledges are beginning to reflect the scope of the threat, the US has pledged military support, and the UN seems finally to be taking leadership of the crisis—even if WHO continues to appear sidelined. While this is encouraging, far more action is needed, both in the immediate and longer term. This begins with recognizing that the September 16th, 2014, UN estimation of the needs and resource requirements for the Ebola response is probably – like all previous estimates – a major understatement. Based on the August 28, 2014, WHO Ebola



response roadmap estimate of 20,000 cases in 6-9 months, the most recent plan is already out-of-date, as many experts now warn of far more cases, possibly into the hundreds of thousands, and the even more dire scenario that the CDC has laid out. Indeed, with more than 6,000 people infected, and earlier WHO warnings that actual infections may be 2 to 4 times the official count, the 20,000 infections mark may already have been reached.

Thus far, at every stage, the international community has underestimated the need, with a commensurately insufficient response. What is needed is a strategy that gets ahead of the pandemic. The UN should issue a new strategy, one that prepares for the worst case, such as the pandemic's expansion to hundreds of thousands of cases, or even more than one million. The costs of over-preparing are far lower than the costs of persistently trying to catch up to the pandemic, both in money and, far more importantly, lives. However, it is vital that new funds not come at the expense of other health and development programs and the response to other humanitarian emergencies. Planning should also encompass robust preparation for further spread into additional countries and such nightmarish scenarios as a widespread outbreak in a megacity or genetic mutations of the Ebola virus that make it more transmissible. And it should include research and development for an effective Ebola vaccine and treatment.

A revised plan should also ensure preparation for the health workers required not only to staff new treatment centers, but also to re-open existing ones. The present UN document includes only the foreign health workers required for Ebola treatment centers and other Ebola-specific needs. But with many health facilities closed, particularly in Liberia, due to health workers being absent, fearing infection, additional foreign health workers may be required as a temporary measure to help staff these facilities. And the plan's \$2.5 million for health worker incentives over six months is remarkably low given the plan's estimate of 11,500 local health workers required in Liberia, Sierra Leone, and Guinea for Ebola-related functions. That comes to an average of only \$36 per worker per month, and even then would exclude health workers in ordinary health facilities who may require – and would deserve – incentives to return to work.

All response plans – current and future - should be accompanied by documentation that explains the basis of estimates and decisions, to allow for informed scrutiny and possible improvement. For example, from the perspective of getting ahead of the pandemic, is \$30.5 million enough to adequately prepare neighboring and other high-risk countries? Which countries are included, and what precisely would preparations entail?

As part of its new plan, outlined by the Security Council, and the establishment of UNMEER, the United Nations should assume unambiguous leadership in coordinating the overall response, including deploying peacekeepers for the region. In assuming its leadership role, the United Nations should work closely with national governments to avoid supplanting their roles and authority. This coordination would span from the international level, helping to organize the activities of all actors and developing a response based on need rather than historic ties (such as colonial history), to the ground level, ensuring that supplies and personnel are quickly distributed to the places they are most needed. Second, building on the US commitment of military personnel to Liberia, and smaller UK and French military deployments to Sierra Leone,



and Guinea, the United Nations should create a West African mission of UN peacekeepers. The number of forces and their role should be based on a needs assessment of which other countries would benefit from the logistical support that military forces can provide, such as assistance with transportation and communications, constructing treatment facilities, and having military health personnel offering health worker training and medical services.

Medical Evacuations

Alongside a scaled-up international response, another immediate action that the United States and other nations could take is offering medical evacuations for individuals infected with Ebola for whom current facilities are inadequate. It will take weeks, at least, before the promised new treatment facilities are constructed. In the meantime, rather than accepting that health facilities will turn away people, sending them back to their communities to possibly spread infection and in many cases to die, countries such as the United States that are well-prepared to handle Ebola patients should airlift such patients back to their countries, providing them the best chance at life and protecting their communities.

Such airlifts should not be limited to foreign health and aid workers. Inexcusably, WHO denied that it could organize the evacuation of a Sierra Leonean doctor infected with Ebola to a hospital in Hamburg, Germany, which was ready to receive her. On September 16th, Dr. Olivet Buck became the fourth doctor from Sierra Leone to die from Ebola. Although groundbreaking in other ways, the UN Security Council Resolution calls on member states to medically evacuate their own health and humanitarian relief workers, but not nationals of affected countries. We recognize that immense political, logistical, and financial barriers exist to implementing evacuations, but from an ethical perspective, the international community ought not to rule it out.

Legacy

The human costs of Ebola – the lives lost, along with the fear, mental trauma, and economic, social, and political upheaval it is causing – is immense. Even as the epidemic continues to worsen, it is not too late to ask whether any positive legacy can come of this tragedy. We propose four.

1) *Emergency contingency response fund*

This outbreak demonstrates the tremendous harm that comes from a response that is slow and inadequate from the onset. To prevent a repeat, countries need to have immediately available the funds and workforce required to respond to an outbreak. Accordingly, the WHO should implement the recommendation from a 2011 review of the implementation of the International Health Regulations to establish an emergency contingency response fund, with money available for immediate use during a public health emergency. The review committee recommended that the fund should be at least \$100 million. To assure that it is fully resourced, with the agreement of the World Health Assembly, the funding could be incorporated into WHO's regular budget or provided by WHO member states based on their WHO budget assessments.



2) *A Global Health Reserve Corps*

Money is not enough if trained professionals are not in place to respond rapidly to the outbreak. Therefore, WHO or the United Nations should establish a Global Health Reserve Corps, a centrally coordinated reserve of health workers who are ready to be called upon and rapidly deployed to help stem an outbreak, like Ebola, or respond to a disaster like the Haitian earthquake of 2010. The health workers who are part of the Corps would be volunteers, receiving initial training in disaster management and outbreak control, with periodic refresher trainings, incorporating lessons learned as the Corps, and the global community, gain increasing experience with such disasters. As a volunteer reserve corps, costs would be low. And by helping stem outbreaks rather than letting them spiral out of control, such a corps would reduce the overall number of foreign health workers required during outbreaks and disasters, likely to save costs overall – and more importantly to save lives. Ban Ki-moon has raised the possibility of such a health reserve corps.

3) *An International Health Systems Fund*

As the public health community and those living in low-income countries have long recognized, effective health services cannot be provided on the back of weak health systems. Along with particular needs for disease control, such as secure laboratories, specialized protective gear, and surveillance and detection capacities, effective outbreak response will be greatly facilitated by ensuring the basics of quality health services, such as sufficient numbers of equitably distributed and well-trained health workers, well-functioning facilities, and drug supply systems keep health facilities supplied with essential medicines.

Yet health systems are chronically underfunded – and we are seeing the result. Accordingly, we call for an International Health Systems Fund to provide the funds required to rebuild shattered health systems, as in Liberia and Sierra Leone, and shore up others in lower-income countries that are not able to ensure effective disease control. And beyond that, the Fund would provide comprehensive, rights-based universal health coverage. Such a Fund could operate much like the Global Fund to Fight AIDS, Tuberculosis and Malaria, with strong civil society participation and based on national health strategies. Indeed, the two could eventually merge to form a Global Fund for Health. Or rather than an intermediary International Health System Fund, the current Global Fund could instead rapidly transition to a Global Fund for Health. States will need to provide a commensurate increase in funding, ensuring that this transition does not weaken the global response to AIDS, tuberculosis, or malaria.

4) *Framework Convention on Global Health*

The Ebola crisis has demonstrated the tremendous harm to health – and to the social, political, and economic lives of entire countries – when there is no effective framework for global health, where there are no minimum standards for health systems and clear allocation of responsibilities to ensure these standards are met, when WHO is unable to provide effective leadership, and where trust between communities and health workers



is lacking. What we need is a binding global health framework – a Framework Convention on Global Health.

This proposed treaty would be based in the right to health and aimed at national and global health equity. Along with establishing health system and service standards, along with well-defined responsibilities now lacking, the measures to increase local health service accountability and community participation in local health services should increase trust between community members and health workers – the absence of which has been one of the significant obstacles in containing the present Ebola outbreak. It would also clarify international responsibilities to respect and protect the right to health. Under such a treaty, there would be no doubt that countries ought not, without compelling reason, close their airports to air traffic from countries experiencing an outbreak, if doing so would hinder the delivery of critically needed health supplies and health workers.

A Framework Convention on Global Health would also ensure that an International Health Systems Fund – or Global Fund for Health – has sufficient funding, as it would include binding targets on domestic and international funding, ensuring that a new fund on health system strengthening does not lead to less funding for AIDS, tuberculosis, or malaria. Concern over global health funding as a zero-sum game has limited civil society support for transforming the Global Fund for AIDS, Tuberculosis and Malaria into a Global Fund for Health.

When the world is in the grip of a devastating health, humanitarian, and security crisis, it is natural to focus on doing everything possible to curb the suffering and death. Yet, this is also a time to think creatively about the future. How did this epidemic spin out of control and what can we do to prevent the next disaster? We must turn this crisis into an opportunity. We know what will work, but the world needs the political leadership and resources to change the future. Planning now for a contingency fund, a reserve corps, a health systems fund, and innovative international law through a FCGH would be the greatest legacy we could offer to those who have suffered so badly and needlessly ●