

Struggling with Scale: Ebola's Lessons for the Next Pandemic

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Author's Note

This report explores how the US government and United Nations (UN) system dealt with the 2014–15 West Africa Ebola crisis and addresses the operational and policy challenges in building a massive multinational outbreak response. It is not intended to be a full-spectrum history of the outbreak, nor should it be read to suggest that international responders were the only factor in ensuring the eventual success of the response. Ownership of the response by the countries themselves, by governments and community members, was the foundation of success and should be understood as a sine qua non of the effectiveness of the eventual international response effort.

The analysis in this report is informed by a series of not-for-attribution interviews with high-level former

US government and UN policymakers who were closely involved in leading the Ebola response. I am grateful for their input and guidance. Quotes are lightly edited for clarity and are unattributed in keeping with the interview ground rules.

I am indebted to Olivia Nesbit, who provided stellar research support to the project. I am grateful as well to the numerous colleagues who reviewed early drafts of the report and provided important and thoughtful feedback.

Finally, this report would not have been possible without generous financial support from the Open Philanthropy Project, who recognized the importance of exploring the operational and policy dimensions of catastrophic disease risks.

Executive Summary

Overview

The next global pandemic is a matter of when, not if. Preparing for this inevitability requires that policymakers understand not just the science of limiting disease transmission or engineering a drug, but also the practical challenges of expanding a response strategy to a regional or global level. Achieving success at such scales is largely an issue of operational, strategic, and policy choices—areas of pandemic preparedness that remain underexplored.

The response to the 2014–2015 Ebola outbreak in West Africa illuminates these challenges and highlights steps toward better preparedness. Ebola was a known disease whose basic transmission pathways and control strategies were understood. Yet traditional Ebola control strategies were premised on small, non-urban outbreaks, and they rapidly proved inadequate as the disease reached urban environments, forcing policymakers to develop new strategies and operational platforms for containing the outbreak, which generated unique policy challenges and political pressures. Lacking a blueprint for controlling Ebola at scale, response leaders scrambled to catch up as the disease began threatening the wider West African region.

This report explores the lessons of the Ebola outbreak through the lens of the US and UN policymakers who were forced to construct an unprecedented response in real time. It tells the story of their choices around four major policy challenges:

1. Operationalizing the US government response
2. Balancing the politics and the science of travel restrictions
3. Defining the role of a reluctant military
4. Coordinating complex international partnerships

The report draws on interviews with 19 high-level US and UN policymakers, a desk review of after-action reports, and the author's own experiences while leading the response efforts of the US Agency for International Development (USAID).

Summary of Key Findings

Design of the Ebola Response

The process of adjusting the Ebola response operation to a suitable scale was slow and reactive. The United States did not deploy an augmented disaster response team until several months after transmission had started to dramatically accelerate, and it did not deploy military assets until more than another month after that. The UN was similarly slow in classifying the outbreak as a Public Health Emergency of International Concern and in announcing an enhanced response. These delays afforded the disease an enormous head start, greatly complicating the task of containing it. Even when the United States and UN expanded their efforts, there was little understanding of what strategies and structures would prove most useful.

In a future pandemic, the world is unlikely to have the luxury of a protracted real-time planning process. The US government and UN system should invest and engage in advance planning across several major operational elements, including the following:

- **Trigger indicators.** The US and UN should invest in mechanisms for systematically monitoring and assessing the adequacy of an outbreak response operation relative to the trajectory of an outbreak, and tying this to thresholds at which an elevated response would be triggered. Indicators might include factors such as mass infections of health workers, accelerating spread of a disease with no available medical countermeasures, inability to trace and monitor contacts of infected people, severe disruptions to in situ health systems, or major second-order impacts on economic and political stability.
- **Strategic shifts.** There is an urgent need for more rigorous advance planning across different disease scenarios to determine how containment strategies will need to change at different scales of transmission. Some tactics that work on a modest scale may be amenable to rapid expansion, but others will hit bottlenecks as logistical challenges and personnel limitations assert themselves. The Ebola experience suggests strongly that behavior-centered interventions may prove more rapidly scalable than traditional medical interventions, which tend to be more labor-intensive and logistically burdensome.
- **Operational composition.** Different strategies and scales will also require different response actors, including not only public health and medical experts, but also logistics, humanitarian relief, and behavioral mass communications experts, among others. Particularly large or complex responses may require military as well as political and diplomatic involvement. The breadth of these players and their roles remain poorly defined, and their professional communities are siloed. Diverse actors' potential response roles must be

better articulated and tied to training, exercises, and cross-institutional relationship building.

- **Leadership structures and competencies.** As strategy shifts and operational composition expands, the type of leadership required to effectively manage the response changes as well. A complex response operation will entail multiple areas of expertise—medical, logistical, behavioral, political—that no single person will possess. An effective leader will need process management expertise and political savvy, while leaning on and enabling a team that possesses a range of relevant expertise. Given this diversity of players, leaders will need to focus on aligning and enabling the component parts of the response without second-guessing their respective areas of expertise. Structural choices matter as well: constructing a new leadership institution in real time, as the UN attempted to do for Ebola, is likely to be more cumbersome and less effective than the US government's approach of iterating from existing systems and relationships.

Mobilizing the US Government Response

Ebola laid bare the inadequacies in US government preparedness to manage a major global outbreak. The structures for managing the international and domestic elements of a disease threat proved to be disconnected, with inconsistent authorities, inadequate contingency planning, and insufficiently nimble resources.

To enhance US preparedness for a major pandemic emergency, the US government should:

- **Develop an International Response Framework** to outline the leadership systems, authorities, and interagency roles that would be applied in pandemic and other emergency scenarios. Such a framework could play a role analogous to the existing National Response Framework that guides the government's approach to domestic disasters.

- **Maintain a robust outbreak contingency fund** to ensure that the government's response to dangerous outbreaks—domestic or international—is not yoked to the pace of the congressional appropriations process. New reserve funds appropriated by Congress in the years since the outbreak are a step in the right direction but remain insufficient.
- **Harmonize domestic and international engagement** to ensure that international response priorities do not overshadow domestic readiness, or vice versa. Diseases do not recognize borders, and a bifurcated approach to pandemic response and preparedness will impede the impact of US efforts.
- **Invest in relationships.** US effectiveness in a pandemic emergency will depend on strong partnerships between parts of the government that rarely work together. Developing an International Response Framework can help in mapping out those potential partnerships, but making such a plan work in the midst of an emergency will depend on the depth of relationships and trust between those government institutions and between their leaders. Cultivating those relationships will take concerted investment in the form of regular exercises, joint training, staff exchanges, and the like.

Travel Controls

Travel and border restrictions were a major political preoccupation for the US government during the Ebola response and would be the subject of intensive political pressure in a future pandemic. They pose a delicate challenge to policymakers. Controls that are (or are publicly perceived as) inadequate may spark a political backlash and thus fail to protect the homeland, regardless of their actual merit. Controls that are overly onerous may satisfy political pressure but could disrupt response efforts and magnify disruptions to trade and human mobility.

In considering travel control, policymakers should:

- **Keep disruption to a minimum.** Travel and border controls can be seriously disruptive and harm both the country implementing them and the global response effort. Calls to ban the return of Ebola health workers to the US threatened to derail the delicate process of mobilizing the personnel needed to contain the outbreak at source. Travel bans can also discourage at-risk travelers from self-identifying, making it harder to monitor them post-arrival. Policymakers must find points of convergence between measures that satisfy popular political expectations, protect citizens, and minimize disruption to other national priorities.
- **Establish federal solutions early on.** Early inaction by the federal government on travel controls led to growing calls for draconian measures such as banning all travel from the Ebola-affected West African countries. It also spurred individual US states to begin implementing their own policies in an uncoordinated manner that risked undermining the international control effort. Research is needed to explore the protective impact of different travel and border restrictions for varying disease scenarios and to inform effective policymaking. The federal government should use such evidence to construct tailored strategies for managing travel risks early in a major outbreak, to avoid counterproductive state measures.
- **Accept political risk but manage it.** Sensible travel and border measures should balance the imperatives of providing meaningful protection with those of minimizing negative externalities. Maintaining political space for this requires a tolerance of political risk. During the Ebola response, presidential leadership proved critical to enabling a solution that appropriately threaded the needle. Policymakers addressing a pandemic emergency will need to focus as much (if not more) on managing the public and

political messaging around travel restrictions as they do toward identifying the right substantive solution. A solution that has substantive merit but lacks political support is unlikely to prove sustainable.

The Military's Role

The Pentagon's role during the Ebola crisis was robust yet reticent. The uniformed military was uneasy about taking on a mission with such novel force protection risks—a concern strongly reinforced by vocal skepticism from Congress and military families. Concerns about mission creep also loomed large at a moment when the military was simultaneously gearing up for a concerted battle against the Islamic State of Iraq and the Levant (ISIL). The Pentagon sought to manage these concerns by placing clear parameters—or “red lines”—on the military's involvement, but a lack of policy guidance on how to put these red lines into practice, combined with a convoluted decision-making process between troops in the field and Department of Defense (DoD) leaders in Washington, contributed to significant friction and delays. Misunderstandings and differing expectations between DoD, the White House, USAID, and the Centers for Disease Control and Prevention (CDC) further complicated the military's involvement.

To ensure smoother and faster delivery by DoD during future crises, DoD and its interagency partners should:

- ***Proactively catalog relevant functions and develop accompanying contingency plans.*** Relevant response capacities existed in many parts of the DoD, but few people inside or outside of the Pentagon understood them all. Miscommunication aggravated interagency tensions: the National Security Council and CDC sought a menu of functions DoD could provide, but DoD felt it could not provide such a menu without a clearer articulation of what it was being asked to do. DoD should work with interagency partners to

anticipate the functions it might be asked to play in a future pandemic event. It should work from this catalog of functions to initiate earlier internal contingency planning in future events with potential for major transmission.

- ***Develop and enshrine policy guidance.*** Producing new policy guidance on the implementation of DoD's red lines proved cumbersome and limited DoD's agility. Tied to the process of envisioning future DoD roles in pandemic contingencies, DoD should formalize existing policy lessons and address remaining policy gaps related to scoping its involvement in future outbreak responses.
- ***Refrain from putting the military in charge.*** In a major pandemic, there may be a political impulse to place DoD in the lead federal role. This would be a mistake. While DoD has enormous capacity, it lacks the organizational expertise and systems to effectively lead such a mission. Public health is a peripheral capacity for DoD, and its force protection requirements would hamper its ability to effectively lead a disease response operation. Furthermore, militarizing a US outbreak response would bring significant baggage to international engagement efforts.

Effective International Partnership

The UN system struggled mightily to adapt itself to the requirements of the Ebola outbreak. The bifurcation between the World Health Organization (WHO) and the UN's humanitarian coordination structures left much of the UN's capacity on the sidelines as the outbreak grew throughout the summer of 2014. The resultant leadership vacuum prompted the September 2014 creation of the UN Mission for Emergency Ebola Response, or UNMEER, as an attempt to mobilize the full range of UN capabilities. UNMEER served some useful functions but ultimately proved ill suited to its role.

The question of how to configure multilateral operations at scale remains a critical weak point in preparedness for future pandemics. To address this shortcoming, the UN and member states should:

- ***Invest in multilateral response capacity.*** There is no guarantee that wealthy Western countries would again deploy the overseas civilian and military resources they did for Ebola, nor that future source countries would welcome such a deployment. The sweeping emergency reforms at WHO and investments through the Global Health Security Agenda are paying dividends in preventing and managing more modest disease events. But the issue of how to configure a mass-scale international outbreak partnership—one that goes beyond WHO's in-house capacity to lead—remains unaddressed. WHO, its member states, and the new Global Pandemic Monitoring Board should urgently seek to fill this gap.
- ***Construct scale-appropriate leadership structures.*** The decision to construct UNMEER on the command-and-control model of a peacekeeping mission proved cumbersome at a moment when speed and agility were at a premium. But some elements of UNMEER—such as the designation of an empowered leader with the authority to integrate a wide range of relevant UN functions—would prove useful in future events. Instead of a heavy-footprint, command-and-control

approach, the UN could borrow lessons from the United States' Ebola czar structure: construct a light bureaucratic footprint, but with broad leadership authority to facilitate and coordinate across disparate UN agencies and functions.

- ***Develop global interoperability standards.*** A truly global response to a pandemic will need to integrate capabilities from a diverse range of states, multilateral agencies, and nongovernmental organizations. Yet even on the comparatively modest scale of the Ebola response, there were enormous challenges with cohering these capacities into an operationally functional whole. These challenges reflect the absence in outbreak response of the type of standardization and certification processes that exist in other sectors. In the face of similar challenges, the international search-and-rescue community, emergency trauma medical teams, and NATO have all developed models for mobilizing interoperable capacities among diverse international actors. WHO and key member states should apply lessons from these precedents to outbreak response planning. Initial steps should include elaborating common policies, operational standards, deployment mechanisms, and capacity baselines for large-scale outbreak responses that involve national-level civilian and military capacities.

INTRODUCTION



Medical workers at an Ebola treatment unit in Liberia.

The 1918 Spanish flu outbreak infected one-third of the world's population and killed at least 50 million people.¹ One hundred years later, conditions are again ripe for the emergence of new and deadly pathogens. Climate change and deforestation are pushing human settlements closer to animal disease-reservoir populations. Mass livestock production creates ready environments for disease mutation. Widespread global travel means a new disease can circle the world in weeks. And advances in bioengineering are making it ever easier to develop or modify novel pathogens. There is wide agreement among global health experts that another deadly pandemic is inevitable and that the world remains woefully unprepared.

Nothing better underscores our global vulnerability in the face of these threats than the 2014–2015 Ebola outbreak in West Africa. While every outbreak is different, the degree to which this one caught the world flat-footed and strained the limits of global health emergency capacity provides a glimpse of the challenges the world could face in potential future pandemics. Some of Ebola's lessons have been well learned—there has been significant post-Ebola effort toward expediting pharmaceutical countermeasure development, expanding public health preparedness in the developing world, and reforming the World Health Organization.

However, far less attention has been paid to understanding and systematizing the crucial policy and operational dimensions of building a major outbreak response. During the critically important first year of a global pandemic event, when public panic and political pressure will be at a peak, policymakers will have limited public health and pharmaceutical tools available. Restraining or controlling transmission at scale during this phase will require a strategic adjustment that incorporates policy and operational dimensions. Yet our understanding of how to do this remains badly underdeveloped.

1. Centers for Disease Control and Prevention (CDC), "Remembering the 1918 Influenza Pandemic," CDC Features (blog), May 7, 2018, www.cdc.gov/features/1918-flu-pandemic/index.html.

This report aims to begin filling that gap. It explores lessons from how operational and policy challenges were managed during the Ebola outbreak and envisions how these lessons might apply to a future catastrophic biological threat on a global scale.

Why Does This Research Matter?

The limited evidence on the policy and operational aspects of large-scale outbreak response materially impeded the Ebola containment effort and threatens to likewise impede efforts to defeat future pandemics.² The knowledge gap that most constrained the Ebola response was not related to the core science of the disease, nor the basic options for containing it. Rather, it was the lack of any blueprint for taking an Ebola outbreak response to scale, and for navigating the policy and operational obstacles that scale-up would entail. Identifying a strategy that could deliver at scale, and reorienting the response operation accordingly, took a period of difficult and painstaking iteration.

The basic tactics for managing Ebola were well established but were premised on a small-scale outbreak in a predominantly rural area. Prior to the crisis in West Africa, the largest Ebola outbreak had produced 425 cases over the course of three and a half months in Uganda in 2000–2001.³ At its peak in the summer of 2014, the West Africa outbreak was generating twice as many cases as this total—*each week*. Such a pace posed an entirely different type of challenge, because the tools used to contain the disease in a limited rural environment—intensive contact tracing and case finding, painstaking community engagement, and rigorous isolation of identified cases—could not be scaled up quickly enough to keep pace with the explosive spread of the disease. And while experimental pharmaceutical

2. A study by researchers at Johns Hopkins University found that only 3 percent of Ebola-related papers published on the 2014–2015 outbreak focused on operational issues. See Christopher Hurtado et al., "Evaluating the Frequency of Operational Research Conducted during the 2014–2016 West Africa Ebola Epidemic," *International Journal of Infectious Diseases* 77 (2018): 29–33, www.ncbi.nlm.nih.gov/pubmed/30296574.

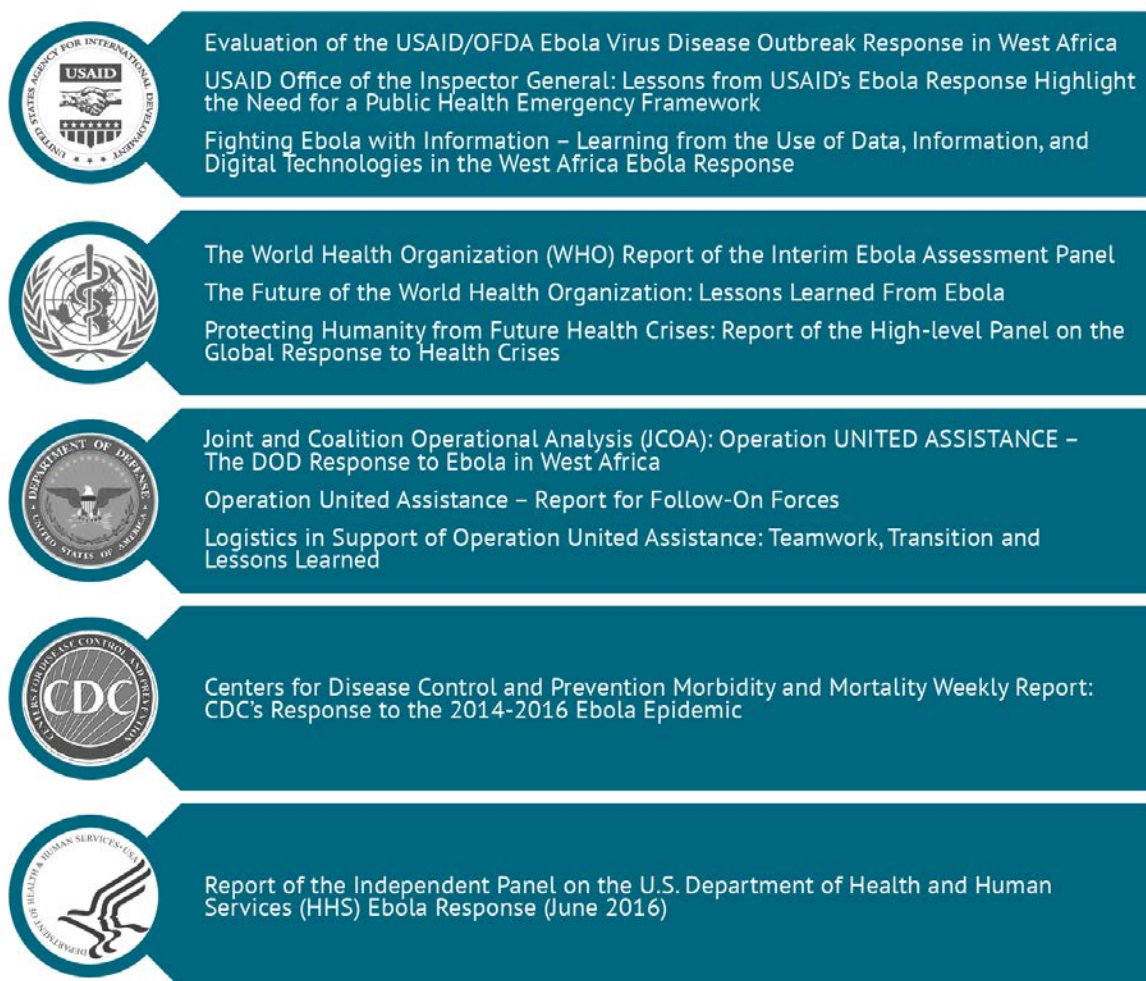
3. Centers for Disease Control and Prevention, "Ebola Virus Disease Distribution Map: Cases of Ebola Virus Disease in Africa Since 1976," last modified December 19, 2018, www.cdc.gov/vhf/ebola/history/distribution-map.html.

countermeasures existed, including vaccine candidates and a seemingly effective therapeutic treatment, these could not be moved through testing and mass production quickly enough to play any near-term role in controlling the outbreak. As the disease reached multiple urban areas and began spreading on a scale that was orders of magnitude greater than that of previous Ebola outbreaks, US and international responders proved slow to recognize that this scale differential would require major adjustments to response strategy and operational composition.

As this report highlights, the lack of a process for triggering an earlier and more robust response, combined with the absence of a clear understanding of or precedent for what a robust response should look like,

hugely hampered the effort. During the critical June to August period, when Ebola transmission was dramatically accelerating, both the US government and the wider international system were slow to wake up to the severity of the crisis. And when they did, they lacked a scale-appropriate strategy and the means to aggressively deploy it. This gap in knowledge and systems was deadly; the early response efforts centered on a linear expansion of the traditional containment approach, and the disease quickly outpaced those efforts. Had a robust international response and a suitable strategy been deployed earlier—and succeeded in bending the curve of disease transmission at an earlier phase—tens of thousands of cases, and thousands of deaths, might have been averted.

Figure 1. After-action reports reviewed for this research



“The standard on common medical countermeasures is [that] it takes 10 years and a billion dollars to create a drug. ... That’s not amenable to outbreak scenarios where you need it in days to weeks versus years.”

These challenges parallel what the world will likely face in a future pandemic. A pandemic’s mode of transmission may be well understood, but taking traditional public health and medical tools to a regional or global scale will encounter enormous operational limitations and create vexing policy dilemmas. And even if pharmaceutical countermeasure candidates exist, testing and validating those candidates and moving them into large-scale production would mean (optimistically) at least 6–12 months before they are relevant on a global scale. Success or failure during this crucial early phase of a pandemic response will rest heavily on how effectively policymakers and disease experts can address the challenges of operational scale.

Research Approach

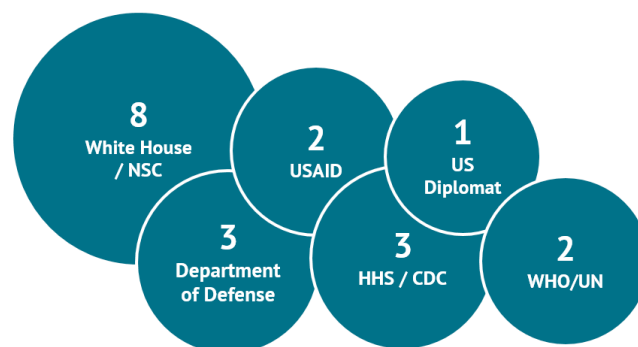
The objective of this research project was to identify lessons for future cataclysmic outbreaks by analyzing the US government’s and the international community’s crisis management approaches during the 2014–2015 Ebola outbreak. The research focused on four key themes: mobilizing the US government response, managing travel risks, the military’s role and risk tolerance, and international leadership and coordination.

The research involved a desk review of relevant documents and after-action reports as well as a series of high-level interviews conducted by the research team at the Center for Global Development. The author’s personal experiences as part of the US government response leadership also informed the report.

Throughout this process, the team reviewed 11 after-action reports from various organizations, including the US Agency for International Development (USAID), the World Health Organization (WHO), the US Department of Defense (DoD), the US Centers for Disease Control and Prevention (CDC), and the US Department of Health and Human Services (HHS) (see Figure 1). These reports provided valuable information about the organizations’ internal assessment of their involvement and activities during the Ebola response.

The research team also conducted 19 high-level interviews with former senior officials, who were selected based on their central involvement with policymaking during the crisis (see Figure 2). The interviewees included eight former White House / National Security Council (NSC) officials, three former DoD officials, two former USAID officials, three former HHS and CDC officials, one former US diplomat, and two former UN officials. The interviews were conducted based on a set of preliminary questions related to the four key themes (the indicative question set used to guide the interviews is included in the appendix). These high-level interviews provided contextual and experiential evidence about the dynamics at play within the US government and the international community throughout the various phases of the response both abroad—in West Africa—and in the United States.

Figure 2. Former officials interviewed for this report



1

AN EBOLA REFRESHER



Members of a trained burial team in Conakry, Guinea, disinfect themselves after handling the body of a woman who died from Ebola.

The West Africa outbreak is believed to have emerged in the small rural village of Meliandou in Guinea's Forest Region in December 2013. From that one remote site, the virus managed to race across Guinea, Sierra Leone, and Liberia; reach three additional countries in West Africa; and touch the United States and Europe. Though Ebola is a comparatively difficult disease to contract (relative to airborne or certain vector-borne diseases), the effort to contain it came perilously close to failure. This near-failure reflected a combination of extremely fragile health systems in the predominantly affected countries; an initially haphazard, sluggish, and overconfident international response; and an international system that found—once it did wake up to the severity of the emergency—that it did not know how to take an outbreak response operation to scale.

The first known victim of the outbreak was a young boy named Emile Ouamouno, who may have become infected after playing in an area frequented by bats (a suspected reservoir population for the virus). He succumbed to the disease two days after he fell ill, but not before spreading it to his mother and father; only his father survived. From that single family, the disease began to spread undetected through populations in the immediate area, and soon onward to adjoining communities in Sierra Leone and Liberia.⁴ Ethnic groups in the region are tightly linked across the three countries, and borders are largely notional. Community members often travel between countries for commerce and major gatherings—in particular, funerals.

The Ebola virus is transmitted to people from wild animals and spreads through human-to-human transmission via direct contact with the bodily fluids—such as blood or vomit—of an infected person. It generally cannot be transmitted until symptoms appear (unlike viruses such as polio and Zika, which a symptom-free host can spread). As the symptoms worsen, the virulence of the infection increases and the risk

of transmission grows. A body is most contagious at death, when the virus' survival depends on transmission to a new host.

These characteristics meant that family caretakers, staff and patients in health facilities, and funeral attendees were most at risk of contracting the virus. An infected person would pose risks at several phases of the infection. When initially manifesting symptoms in a home setting, other family members would provide in-home care with few precautions, and so they frequently became infected. As symptoms worsened, individuals would be transferred to a local health facility for further treatment. Because laboratory diagnostic capacity was sparse and Ebola's early-onset symptoms are easily confused with those of diarrheal diseases or malaria (which are common in West Africa), Ebola patients would be mixed in with other patients exhibiting similar symptoms. The modes of transmission for those other diseases are different from that of Ebola and require far lighter precautions to prevent their spread—meaning that Ebola patients would then spread the disease to attending healthcare workers and other nearby patients.

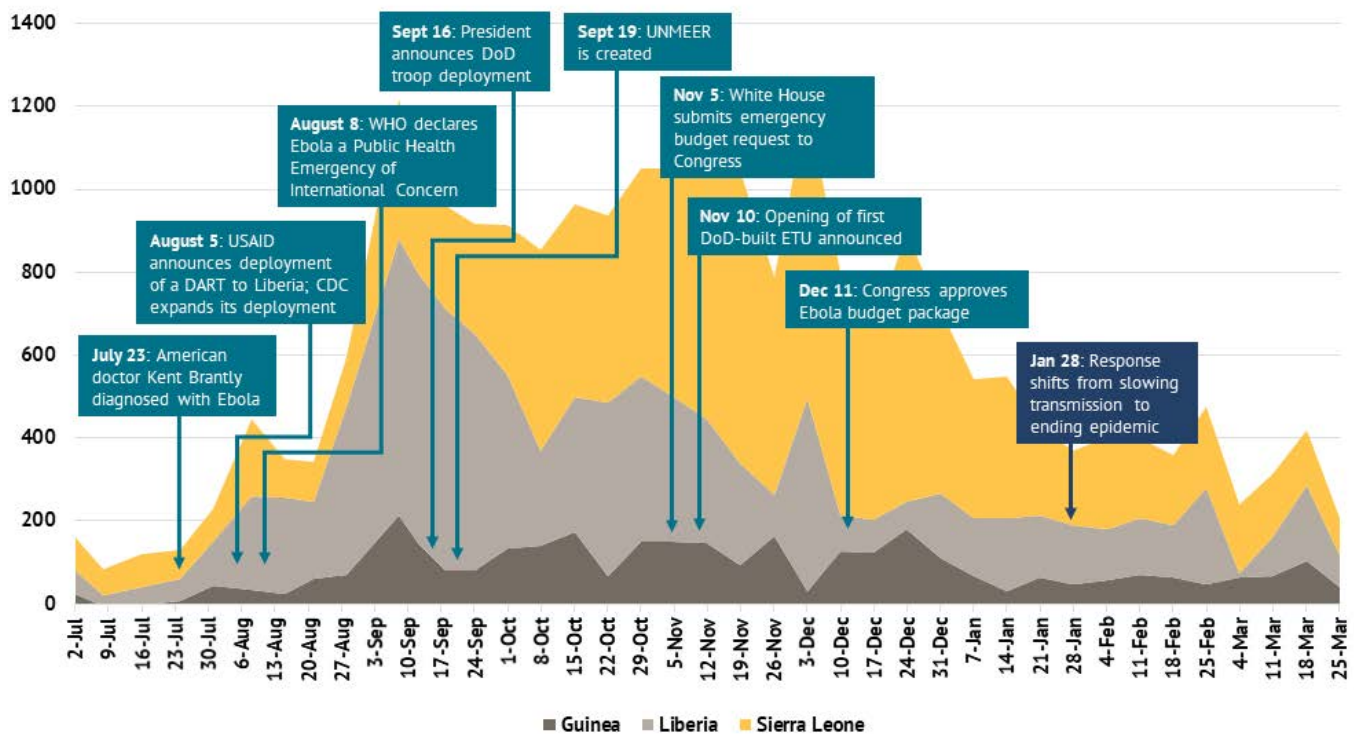
Patients who eventually succumbed to Ebola would be returned to their families for traditional burial. Burial practices in these parts of West Africa are often large, highly ritualized affairs⁵ that frequently involve scrupulously washing the body and having numerous family and friends embrace the corpse before interment. Given the virulence of the virus in the corpse at death, these practices posed extraordinarily high risks of transmission.

Because Ebola can be easily confused with other diseases, and because health surveillance systems in the three countries were quite weak, the virus was able to circulate and spread across West Africa's borders for three months before being identified. When it was finally identified in Guinea, an international

4. World Health Organization, "Ground Zero in Guinea: The Ebola Outbreak Smolders—Undetected—for More Than 3 Months. A Retrospective on the First Cases of the Outbreak," www.who.int/csr/disease/ebola/ebola-6-months/guinea/en/.

5. Angellar Manguvo and Benford Mafuvadze, "The Impact of Traditional and Religious Practices on the Spread of Ebola in West Africa: Time for a Strategic Shift," *Pan African Medical Journal* 22, supp. 1 (2015): 9, www.ncbi.nlm.nih.gov/pmc/articles/PMC4709130/.

Figure 3. US and international responses to Ebola epidemic (2014–2015), reported new cases per week, July–March*



*Note: This chart was developed using official cumulative case count data from the CDC website. Data for the weeks of September 12, October 29, and November 5 contain significant retroactive adjustments to cumulative cases, resulting in weekly counts for those weeks that are excessively high or in some cases negative. For the purposes of clarity in this chart, the data for those weeks has been removed and replaced with estimated weekly levels that are consistent with the trends of the weeks immediately before and after. The full data set is available at <https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/case-counts.html>.

response was initiated but proved inadequate to contain the outbreak. By June, the disease began spreading in major urban centers of Liberia and Sierra Leone, going beyond the predominantly rural environs that had characterized all past Ebola outbreaks. By July and August, the outbreak was completely out of control and spreading at near exponential rates, far faster than the existing response could keep up with.

After a partial scale-up of the international response in August also proved inadequate, the US government, UK government, and UN launched a massive expansion of the control effort in September 2014—six months from the initial detection of the outbreak. This expansion ultimately proved successful in helping the affected countries to control the disease, reversing the rapid

expansion of the disease by the end of 2014. The year 2015 was spent stamping out the lingering brush fires. Figure 3 shows the epidemic curve for the outbreak, annotated with major developments in the response.

While the response proved successful, the bulk of the expanded US operation and military deployment in Liberia was still unfurling as the Liberian outbreak was becoming contained in October and November 2015. This timing suggests that earlier elements of the response played a larger role in limiting disease transmission than was understood at the time, and that the large US military response ultimately played only a limited role in containing the outbreak. Indeed, that was the conclusion of an independent report commissioned by USAID to examine what factors contributed

to success in Liberia.⁶ Noting that disease rates were already declining by the time of the scale-up in Ebola treatment units, or ETUs (the military's main focus), the study found that other factors proved more relevant. Support to the Liberian government's "incident management" structure (through which the Liberian government oversaw the overall response effort), community education and mobilization, and safe dead body management were identified as key factors in limiting transmission. All were underway prior to the military deployment. A 2017 paper by Liberian health ministry experts and Johns Hopkins University researchers likewise found that "the vast majority of the ETU beds was constructed too late and after the epidemic curve had turned."⁷ But poor and unreliable data collection in Liberia meant that the improving case numbers were not visible in real time, nor was apparent progress necessarily taken at face value by operators and policymakers.

In neighboring Sierra Leone and Guinea, matters played out differently. In Sierra Leone, the UK served as the lead international donor and operational supporter, deploying military and civilian personnel and providing extensive financial resources.⁸ The peak of the outbreak in Sierra Leone arrived months later than in Liberia, even though the UK scale-up was heavily informed by the US scale-up next door. The UK coordinated its activities closely with the United States and adopted much of the playbook that the United States had developed in Liberia. Yet while the community mobilization and dead body management efforts in

Liberia curtailed the outbreak there before the large wave of ETUs even came on line, those same initiatives proved less effective in Sierra Leone. Cultural and religious differences produced more community resistance to safe burial practices and reduced the effectiveness of social mobilization efforts. Transmission in Liberia began to decline in September as the population's behavior began to adapt, but in Sierra Leone, cases continued rising until December. This left the Sierra Leone outbreak far more reliant on isolation to contain the disease, and thus on scaled-up ETUs and community-based isolation centers. Had Liberia played out as Sierra Leone did, the United States' ETU operation may well have proved more relevant.

Guinea, in contrast, never saw the kinds of major transmission spikes that its neighbors experienced. While the disease reached a major urban center, the capital of Conakry, it did not spread at the speed or scale that occurred in the other countries. Instead, Guinea's outbreak was a slow burn that ultimately proved harder to stamp out. The government of Guinea struggled with managing the response, with its president more involved in direct operational decision making—and skeptical of international advice—than his regional counterparts. Guinea also lacked the kind of clear international support that the US and UK provided in Liberia and Sierra Leone. The French government proved much slower to mobilize its response than the US and UK, and it lacked the kind of civil-military quick response capabilities that the other lead countries could deploy. In addition, France's historical relationship with Guinea was particularly fraught, further hampering its ability to engage constructively with the Guinean government. These and other factors meant that the outbreak in Guinea lingered well after the disease had been stamped out elsewhere in the region.

The brief Ebola outbreak that occurred in Nigeria shows how close the outbreak came to being a much greater disaster.⁹ A densely populated megacity of 21

6. Swati Sadaphal, Jennifer Leigh, Gayla Cook, Steven Hansch, and Michael Toole, *Evaluation of the USAID/OFDA Ebola Virus Disease Outbreak Response in West Africa 2014–2016* (Washington, DC: USAID, 2018), https://pdf.usaid.gov/pdf_docs/PA00SSC4.pdf.

7. Thomas Kirsch et al., "Impact of Interventions and the Incidence of Ebola Virus Disease in Liberia—Implications for Future Epidemics," *Health Policy and Planning*, 32, issue 2 (March 2017): 205–214, <https://doi.org/10.1093/heapol/czw113>.

8. A January 2015 UK parliamentary inquiry report cited available UK support for Sierra Leone as £230 million (approximately US\$300 million), of which £125 million had been spent by that point. See House of Commons Committee of Public Accounts, *The UK's Response to the Outbreak of Ebola Virus Disease in West Africa* (London: The Stationery Office Limited, 2015), <https://publications.parliament.uk/pa/cm201415/cmselect/cmpubacc/868/868.pdf>. Reported US spending in Sierra Leone at that point was approximately \$65 million. See USAID, "West Africa—Ebola Outbreak Fact Sheet #18 (FY15)," January 30, 2015, www.usaid.gov/ebola/fy15/fs18.

9. Nina Porzucki, "Deontee Sawyer Remembers the Life of Her Husband—the First American Victim of Ebola's Latest Outbreak," *PRI's The World*, August 1, 2014, <https://www.pri.org/stories/2014-08-01/deontee-sawyer-remembers-life-her-husband-first-american-victim-ebolass-latest>.

million people, Lagos is the largest urban center in Africa. Patrick Sawyer, a Liberian civil servant, arrived there by air on July 21, 2015. He had been caring for an Ebola-infected relative in Monrovia, and before flying, he began exhibiting symptoms and sought treatment. Against doctors' advice, he embarked on his flight and, upon arrival, collapsed at the airport and was transported to a private medical clinic. He initially denied having had contact with Ebola victims and claimed to be suffering from malaria. But hospital staff grew skeptical after he failed to respond to malaria treatment. Sawyer was placed in isolation and tested for Ebola. The test came back positive.

Despite the clinic's correct identification of the disease, Sawyer infected several staff, who then infected others. Over the ensuing several weeks, Nigeria mounted a well-coordinated, large-scale Ebola control operation with support from the CDC and WHO, built on an "incident management" architecture Nigeria had originally developed for polio vaccination campaigns. The outbreak was ultimately contained to 19 additional cases, including a cluster in the city of Port Harcourt, and 894 total contacts.¹⁰

Nigeria proved capable, but also fortunate. Sawyer had been due to travel from Lagos to a smaller city in Nigeria, where the health system would have been less capable of properly identifying and managing Ebola transmission. But because he collapsed upon arrival, he did not continue his journey. His referral to a private clinic was a fortunate coincidence; the public hospitals in Lagos were on strike that day¹¹ and the only

treatment option was the comparatively strong private facility. After putting Sawyer in isolation, the clinic was pressured by the Nigerian government to release him to attend his planned conference.¹² A public facility might have bent to government pressure, which would have endangered numerous additional people. Finally, Nigeria's strong incident management capacity was due to the fact that it happens to be one of the few remaining countries in the world where polio has not yet been fully eradicated, meaning it had a capable architecture in place.

Had any of these variables played out differently, the disease might have become entrenched in Nigeria's urban areas just as it had in Monrovia and Freetown. But the risks would have been dramatically different. Lagos' population exceeds that of the Guinea, Sierra Leone, and Liberia combined. It is a hub for travel throughout Nigeria (Africa's most populous country) and throughout West and Central Africa. And it has numerous travel links with Europe and the United States. A major outbreak in Lagos would have turned into an incubator for a dramatically larger and more dangerous outbreak, one that would have threatened the world at large in a much more direct way. The scale of the challenges would have been orders of magnitude greater. And the response effort outlined in this report, however impressive it was, pales in comparison with what might have been required. Given how much the world struggled to mount a full-scale response just in the three frontline countries, it is not evident how a major outbreak in Lagos would have been brought under control.

10. For a thorough overview of the Ebola control effort in Nigeria, see CDC, "Ebola Virus Disease Outbreak—Nigeria, July–September 2014," October 3, 2014, www.cdc.gov/mmwr/preview/mmwrhtml/mm6339a5.htm?s_cid=mm6339a5_w.

11. Agence France Presse, "Nigerian Doctors Suspend Strike Citing Ebola Crisis," *Capital News*, August 7, 2014, www.capitalfm.co.ke/news/2014/08/nigerian-doctors-suspend-strike-citing-ebola-crisis-union/.

12. Monica Mark, "Ebola Crisis: How Health Workers on West African Frontline Are Paying with Their Lives," *The Guardian*, October 8, 2014, www.theguardian.com/world/2014/oct/08/-sp-ebola-west-africa-health-workers.

2

MOBILIZING THE US GOVERNMENT RESPONSE



President Obama speaks at a briefing on Ebola at CDC headquarters in September 2014. He is seated between HHS Secretary Sylvia Mathews Burwell and CDC Director Tom Frieden.

The US government would ultimately become the lead supporter to the countries affected by the Ebola outbreak, mobilizing a government-wide response across multiple departments and agencies, with a price tag of more than \$2.3 billion.¹³ But its initial efforts were far more modest. The US response developed in three phases, each iterating reactively from earlier efforts. At the outset, US contributions were mainly technical in nature, with the CDC as the central player. As the outbreak took off over the summer of 2014, the government shifted to a disaster response footing, bringing in USAID to lead the overseas response in tight partnership with the CDC. And when the disease continued to expand in West Africa and also reached the US homeland, the government's posture shifted again, to deploying the military to augment overseas operations and installing an "Ebola czar" to manage a highly politicized set of domestic and international challenges. The eventual response operation was powerful and well managed—but it also cohered far too late in the trajectory of the epidemic.

Phase 1: Defaulting to Plan A (March–May 2014)

When the outbreak was first identified in Guinea in March 2014, it barely registered with most of the federal institutions that would later become involved. Ebola was simply not seen, initially, as a significant threat. In February 2014, as the outbreak was underway but undetected, the Obama administration happened to be preparing to formally launch the Global Health Security Agenda. This new initiative sought to help vulnerable countries better prevent, detect, and respond to disease outbreaks—that is, to address precisely the sort of capacity gaps that were, at that very moment, allowing Ebola to stay below the radar in West Africa. Staffers at the White House huddled prior to the launch with counterparts from the CDC and DoD to sketch out a communications plan that would convey to the American public why other countries'

public health preparedness mattered to US security. Brainstorming on how to illustrate the kinds of disease risks that this program could help avert, one participant floated including Ebola in the list. The proposal was rapidly nixed—Ebola was seen as such a remote prospect that even mentioning it would smack of exoticism and fearmongering. Just weeks later, the Guinea outbreak was discovered.

“Ebola’s really scary, but the bottom line here is lots of people are dying every day in [Guinea] and I’m not sure how crazy we should be about it.”

At the outset, there was little to suggest that this response would play out any differently than previous Ebola control efforts in Africa. Leadership at the CDC and the US Department of Health and Human Services (HHS), promptly alerted through normal channels, began undertaking customary response steps immediately. CDC moved to deploy expert technical advisors to Guinea, despite initial objections from WHO's country and regional offices. The reasons for their objection appear primarily turf-related but were overcome after CDC leadership reached out to a senior WHO headquarters official to complain.

The HHS preparedness and response division (the Office of the Assistant Secretary for Preparedness and Response) also began engaging, reviewing available vaccine and therapeutic countermeasure candidates. But lacking a firm indication that the outbreak would play out differently than previous Ebola flare-ups, HHS did not move to expedite development of any countermeasure candidates at that time. As one interviewee noted, even early action on medical innovations at this point in the outbreak would not have greatly affected the later response. The timelines for developing new medical countermeasures are measured in years, while an outbreak can explode in a matter of weeks.

13. USAID, “West Africa—Ebola Outbreak Fact Sheet #6,” December 18, 2015, www.usaid.gov/ebola/fy16/fs06.

*“For novel emerging infectious disease—
infectious disease for novel geography—
you’re always going to have this problem [that]
if we don’t have medical countermeasures
currently on the shelf, the development process
is too long and laborious. ... They’re always
behind the eight ball.”*

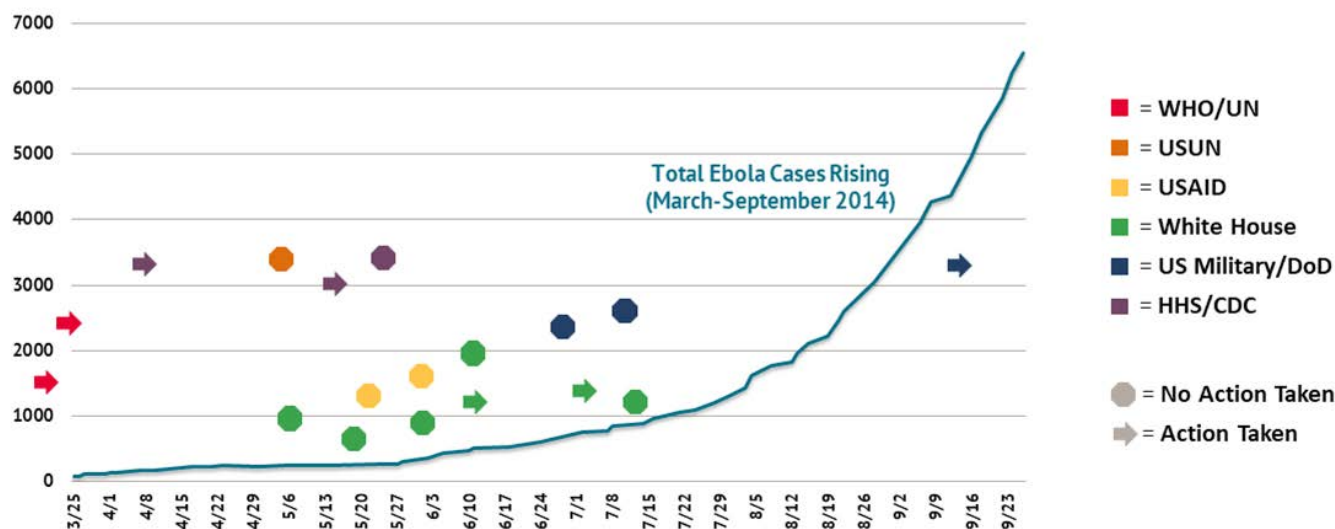
Across other federal institutions, the reaction was far more tepid. Figure 4 shows information from interviewees—all of whom went on to play major roles in the response effort—about when they initially learned of the outbreak, and whether they took immediate action. It clearly shows that leaders outside the public health sector did not initially see the outbreak as something requiring their involvement. To all appearances, the outbreak response led by WHO and the affected countries was bringing the disease under control. Within the White House, concern about overhyping Ebola when the outbreak first began led to internal staff debate on how best to avoid an alarmist tone in briefing materials for the National Security Council. Staff took steps to

contextualize the risk of Ebola by emphasizing that it killed far fewer people than more prevalent diseases, such as malaria. As the spring of 2014 progressed, White House personnel monitored developments but largely left matters to experts at CDC.

At USAID, initial responsibility for the outbreak sat with the agency’s Global Health Bureau. The bureau’s office that focused on infectious disease threats monitored the outbreak and contributed a modest amount of funding to the WHO’s response effort. But USAID did not lean into a major role in the outbreak’s early phases, since Guinea was not a priority country for its outbreak preparedness work, and long-standing turf rivalries with CDC left USAID on the periphery of US government efforts there.

Within USAID’s Office of Foreign Disaster Assistance (OFDA), which would later lead the government’s overseas response to the disease, Ebola was seen as beyond the office’s remit. OFDA’s director (the author of this report) had lived in Guinea for three years a decade earlier, managing nongovernmental organization (NGO) health programs. While familiar with the country and the fragility of its health systems, he saw no obvious role for his office in the response. At the

Figure 4. When did interviewees learn of outbreak, and did they take initial action?



“Historical data on outbreaks in East Africa [suggested that] they were self-limiting ... the risk to the warfighter was negligible because we didn’t come into contact with those [diseases] in any meaningful way that would impact Force Readiness.”

request of OFDA’s West Africa regional team, he authorized a small amount of funding for social outreach and awareness activities, but otherwise the office stayed on the sidelines. While in hindsight this approach was plainly a failure of imagination, it was unclear what other capacities the office might bring to the effort. And with OFDA already struggling to stay abreast of ongoing mega-crises in Syria and South Sudan, there was little appetite to take on a mission so far outside the norm.

DoD likewise saw no evident role for itself. The department housed extensive capabilities in biomedical research, health surveillance, and biological threat reduction, but those tools were fundamentally oriented toward biological risks that could affect US forces or enable a terrorist attack, not toward the protection of foreign civilian populations. Ebola seemed to pose little risk of affecting US forces and so was treated as more of a novelty than a priority.

Phase 2: From Outbreak to Disaster, from Complacency to Alarm (June–August 2014)

For a brief period in mid- to late May, it appeared that the standard response approach had worked. Case counts were declining significantly, leading the CDC and WHO to conclude that the outbreak was coming under control. Médecins Sans Frontières (MSF), which had publicly fought with WHO earlier in the spring over a perceived downplaying of the outbreak’s danger, had by mid-May begun scaling back its deployment. As case counts appeared to show a marked and seemingly

sustained decline,¹⁴ MSF shifted its Liberia team back to Guinea and began decommissioning its Ebola treatment units (ETUs) in Conakry. CDC began reducing its presence in West Africa, and the departing CDC team leader speculated that the agency’s remaining personnel could wrap up work within the next month. The president of Guinea, keen to portray the situation as under control (in part to avoid deterring foreign commercial investment) argued publicly in late April that the situation was “well in hand” and attended the 2014 World Health Assembly a few weeks later to reinforce that message.

This collective optimism proved short-lived. The disease had been present—but seemingly manageable—in the major urban capital of Conakry, Guinea, for several months. But in June, cases began reaching the Liberian capital of Monrovia and also accelerating in Sierra Leone. Case counts abruptly began rising again, and far more aggressively than before. By late June, MSF was again warning that the outbreak was out of control and began calling for “a massive deployment of resources.”¹⁵ That deployment would not arrive for many more months.

Despite the growing warning signs, during this critical period the US government was slow to adapt to the evolving danger. This was in large part because there was no trigger for reviewing whether an outbreak had gone from a localized public health emergency to a full-blown disaster; nor were there any defined plans for what to put in place in such a case. A declaration of a Public Health Emergency of International Concern by WHO (which ultimately came in August, only *after* the US had already moved its response from a public health to a disaster footing) might have provided

14. In retrospect, this decline may have simply reflected increased case-hiding by families and communities—meaning fewer cases being formally identified—than an actual decrease in cases. Subsequent reporting has indicated that misinformation and conspiracy theories among the affected populations likely played a role (“Guinea Residents ‘Refusing’ Ebola Treatment,” *Al Jazeera*, September 27, 2014, www.aljazeera.com/news/africa/2014/09/guinea-residents-refusing-ebola-treatment-201492751955453636.html). Regardless, it is clear that disease surveillance and case-finding efforts in May had missed a significant number of remaining cases in the region.

15. MSF, “Ebola in West Africa: Epidemic Requires Massive Deployment of Resources,” press release, June 21, 2014, www.msf.org/ebola-west-africa-epidemic-requires-massive-deployment-resources.

“[The] reaction was ‘Oh, we don’t do that. What do you mean, bio-surveillance is a core mission of the DoD? What do you mean, there’s this whole sort of staff that’s left over from our own biological program in the 1950s and the 1960s?’ So among the staff officers in the Joint Staff who for a living fly tanker planes or whatever they do, none of them were remotely comfortable with the idea. They thought, ‘Oh, isn’t this something that CDC does?’”

added impetus. But even an earlier declaration would still have left the US government without a ready plan for elevating its engagement. Lacking both a system for judiciously assessing outbreak risk thresholds and a blueprint for a whole-of-government mobilization for a global health disaster, the US government stumbled reactively through June and July before fully waking up to the scope of the crisis.

In fairness, the United States was far from alone. A senior US official recounted attending a high-level development donor conference in Sierra Leone in mid-June, just as the crisis was sharply turning for the worse. Neither the donors in attendance nor their host-country partners showed much awareness of or concern about the outbreak. An incident that would ultimately prove hugely damaging to Sierra Leone’s development progress barely registered at that stage. A few weeks later, another senior US official (the author of this report) attended a high-level meeting of UN, donor, and NGO emergency directors in London. The group convened semiannually to review ongoing crises and align on strategy and policy. Once again, Ebola barely registered; attention and alarm centered around the ongoing crisis in Syria and fears of potential famine in South Sudan.

DoD meanwhile began taking greater notice but still little action. A senior advisor to the chairman of the Joint Chiefs of Staff, alarmed by reports of the

resurgence in cases, began tentatively exploring what capabilities the Pentagon might bring to bear. National Security Council (NSC) staff also began inquiring about DoD capabilities, albeit to little avail. Among the military leadership, in an institutional culture dominated by officers trained to fly planes or drive tanks, disease response was seen as a CDC mission. And despite the extensive biomedical capabilities that existed in DoD, the predominant view was that its mission remained, in the words of one ex-DoD employee, “to kill people and break things.” There was little appetite to begin planning against a hypothetical mission that fell so far outside of DoD’s traditional responsibilities.

Awakening to the Problem

As case numbers accelerated in July, several developments began elevating attention in US agencies beyond CDC and HHS. OFDA had dispatched a public health technical expert on an assessment mission early that month, and upon his return, he circulated a report that greatly raised concern within USAID. He portrayed a response that was underpowered, under-resourced, and falling behind. The handful of responders lacked a clear and viable strategy, and coordination by host governments and WHO was weak and ineffective. He warned that a significant step-up was needed in order to get on top of the risks. OFDA began more aggressively seeking potential grantees and quickly focused on making a modest grant to support a Samaritan’s Purse-run ETU in Monrovia, which was the only dedicated ETU at a time when cases in Monrovia were beginning to spike.

Another factor contributing to a step-up in government attention during this period was the upcoming African Leaders’ Summit that President Obama would host in Washington on August 4–6. While mid-level and specialist staff at the White House had tracked Ebola closely since the spring, the looming summit and the resurgence of the disease kicked the issue into a higher gear. The leaders from the three affected countries—and their substantial entourages—would be coming to the US capital to meet firsthand with the president and

high-level US officials.¹⁶ What assurance was there that none of them might be carrying Ebola with them? And even apart from that kind of low-probability/high-risk scenario, the presence of a major and worsening outbreak across several African countries was sure to factor into summit discussions. Senior White House officials began requesting detailed briefings on the outbreak trajectory and whether the summit could pose risks to the US homeland.

“On the homeland team we were very delayed in terms of focusing on [Ebola]. ... My first memory of focusing on it was in the context of the African Leaders’ Summit, in July or August.”

If the Leaders’ Summit and the OFDA report laid the kindling for an explosion of US government interest, the infection of Samaritan’s Purse staff in Monrovia and the subsequent shuttering of its Ebola ETU provided the match. The infection of two Americans rapidly elevated the outbreak into a major media story and amplified congressional attention—and sparked immediate public debate over whether to allow the staff members back into the country for treatment. Peace Corps volunteers were pulled out of Liberia as a precaution, a tangible sign to private-sector and development actors of US fears. Just as concerning for USAID and CDC, the ETU’s closure abruptly left the Liberian capital without a dedicated ETU¹⁷ and USAID without a ready option for scaling up its involvement.¹⁸

16. Ultimately the presidents of both Liberia and Sierra Leone bowed out of the summit to stay home and focus on the spiraling outbreak. Paul D. Shinkman, “Ebola, Islamic Extremism Dilute Africa Summit Success Stories,” *US News & World Report*, August 5, 2014, www.usnews.com/news/articles/2014/08/05/ebola-islamic-extremism-dilute-africa-summit-success-stories.

17. As of mid-July 2014, there were only two ETUs—in Foya (Lofa County) and Monrovia (Montserrado County)—then Samaritan’s Purse pulled out. Tolbert G. Nyenswah et al., “Ebola and Its Control in Liberia, 2014–2015,” *Emerging Infectious Diseases*, 22, no. 2 (February 2016): 169–177, wwwnc.cdc.gov/eid/article/22/2/15-1456_article.

18. Armand Sprecher, “The MSF Response to the West African Ebola Outbreak,” Médecins Sans Frontières, March 24, 2015, www.nationalacademies.org/hmd/-/media/Files/Activity%20Files/PublicHealth/MicrobialThreats/2015-MAR-24/March%202015%20Presentations/12_Sprecher.pdf. MSF opened its first Ebola treatment center in Monrovia in mid-August 2014.

The scope of the crisis was now expanding beyond the territory of a straightforward public health emergency. Hospitals and clinics in the affected countries were beginning to close after numerous infections of health staff due to poor infection prevention practices and shortages of protective equipment. Neighboring countries began closing their land borders, imposing a quasi-blockade on trade with the three affected countries. Public order was increasingly in jeopardy; a quarantine effort in Monrovia neighborhoods turned deadly, killing a 15-year-old boy and wounding two other community members.¹⁹ A senior health ministry official in Liberia, Tolbert Nyenswah, referred to the situation as a “humanitarian crisis,” and the Liberian government pleaded for more international support.²⁰

The increased US government-wide attention in mid-to late July began to coalesce around the idea that a step-change in US government and international involvement would be needed. But what would it look like? Until July, HHS had held the US lead on addressing the outbreak and worked principally through CDC to support the response. USAID’s Global Health Bureau had played a modest role as well, providing some technical and budget support. Beyond these traditional roles, there was no obvious playbook for how to manage this sort of multifaceted health event. Prior global outbreak risks, such as SARS, bird flu, and swine flu, had played out in countries with far more capable health systems, and international support had been of a more technical nature. Now a significant support operation was needed—not just technical assistance, but actual boots on the ground.

Constructing Plan B

Who would lead that mission, and what would it look like? No one was quite sure. CDC had the deepest subject matter expertise in Ebola and outbreak

19. Clair MacDougall, “Liberian Government’s Blunders Pile Up in the Grip of Ebola,” *Time*, September 2, 2014, <http://time.com/3247089/liberia-west-point-quarantine-monrovia/>.

20. Fred Barbash, “Sierra Leone Declares State of Emergency in Ebola Crisis,” *Washington Post*, July 31, 2014, www.washingtonpost.com/news/morning-mix/wp/2014/07/31/sierra-leone-declares-state-of-emergency-in-ebola-crisis/?utm_term=.dcc6071e72fa.

management and had been working the crisis from the very beginning. But it had limited experience and authorities for international deployments on this scale as well as few available resources, and it was more a technical than an operational agency. OFDA had robust authorities for international deployment and operations, and long experience in mounting large-scale crisis response; it also had whole-of-government emergency field coordination capacity that existed nowhere else in the government. But it lacked experience and familiarity with infectious disease response outside of traditional humanitarian settings. The Pentagon had a range of relevant, if disparate, tools and, in fact, was already engaging through a lab in Liberia supported by experts from the US Army Medical Research Institute of Infectious Diseases.²¹ But it was resistant to becoming further involved, seeing no compelling reason for a military footprint when relevant civilian agencies could step up instead.

Over the second half of July, US interagency deliberations—at times contentious—churned over how best to accelerate US government engagement. CDC and OFDA haltingly explored how they might cooperate, but discussions were hampered by a deep mutual unfamiliarity and a backdrop of tension between CDC and USAID. Most of the two agencies' prior collaboration had taken place within the PEPFAR (US President's Emergency Plan for AIDS Relief) program, where their relationship was famously combative and competitive. Furthermore, the CDC assigned the lead for Ebola to staff from its Division of High Consequence Pathogens and Pathology,²² which had little prior exposure to disaster relief, rather than to its refugee and humanitarian division, which managed CDC's small institutional partnership with OFDA. While this meant that CDC's Ebola work would be led by infectious disease experts with deep scientific expertise, it also sidelined

CDC's few personnel who had experience with large-scale disaster response operations. From OFDA's side, the unfamiliarity was mutual. The OFDA director was not a health expert, and only a handful of OFDA staff had previously dealt with CDC or worked on infectious disease outbreaks. Relationships between key leaders in the institutions were close to nonexistent.

Initial attempts to map a response structure and divide roles and responsibilities sucked up time but yielded limited progress. OFDA remained ambivalent about taking on a lead role so far outside its traditional comfort zone at a time of other global mega-crises. CDC pressed for a dual-headed arrangement, whereby USAID and CDC would share leadership. OFDA resisted; the principle of unified command (well established in federal disaster response doctrine) was deeply ingrained in its DNA, and it was loath to depart from it. OFDA saw its ability to provide a clear coordinating and leadership structure for US government field engagement as a crucial asset it could bring to the fight and feared that dual-heading the response would muddle its ability to do so effectively. CDC was, in turn, resistant to accepting OFDA as the lead federal coordinator for the crisis, given that Ebola was a different type of event than the traditional disasters for which OFDA's systems were built. And CDC also feared, particularly given the rocky CDC-USAID relationship on PEPFAR, that accepting USAID leadership of the field response would marginalize its own expertise.

The characterization of the crisis, in other words, remained a sticking point. If it remained fundamentally a public health issue, then keeping leadership at CDC made sense. But if it were a full-spectrum disaster, shifting to OFDA through a Disaster Assistance Response Team (DART) would be the better choice. The White House, meanwhile, was growing impatient. The looming African Leaders' Summit had elevated the issue from a working level up to the Suite (the NSC's shorthand for the national security advisor and homeland security advisor). There was growing concern that US involvement—and the international response writ large—lacked a clear command-and-control structure.

21. Han, Carol, "The Fight on Ebola Continues in the Lab," *USAID Impact Blog*, October 7, 2014, <https://blog.usaid.gov/2014/10/the-fight-on-ebola-continues-in-the-lab/>.

22. CDC, "CDC's Disease Detectives Respond to the 2014 Ebola Outbreak: Inger," December 23, 2014, www.cdc.gov/about/24-7/cdcresponders/inger.html; CDC, "More Than 50 CDC Experts Battling Ebola in Africa," press release, August 13, 2014, www.cdc.gov/media/releases/2014/p0813-ebola.html.

NSC personnel reviewed contingency plans for pandemic flu coordination and lessons from the Fukushima nuclear event but found that neither applied well to the present challenge. Flu planning was heavily centered around a vaccine production and distribution strategy—but Ebola had no vaccine and the tools for breaking its transmission were very different from those for flu. Lessons from Fukushima focused on the actions required by US agencies to monitor and advise embassies about the nuclear situation, the creation of a framework for OFDA and DoD to work more closely, and bilateral cooperation between the United States and Japan. There were few lessons or precedents that proved relevant to constructing the type of response Ebola demanded.

Within the NSC as well, the characterization of the crisis mattered. Numerous NSC staff recounted that the bifurcation of homeland security personnel from foreign policy personnel on the NSC created ambiguity about leadership and accountability for this issue within the White House. Health security, homeland security, and international disaster response all sat within different directorates with distinct reporting chains. It was unclear which had the effective lead or the authority to fully drive the interagency process.

“I remember talking about this in terms of the Fukushima protocols [and realizing] there wasn’t one playbook for this.”

Meanwhile, different parts of the NSC had different views, without a clear lead for taking on the response. The Weapons of Mass Destruction Directorate had worked over several years post-Fukushima to develop a framework for US management of a chemical, biological, radiological, or nuclear (CBRN) event, and some in the White House felt that that framework might fit. The NSC’s Development and Democracy Directorate, which oversaw foreign disaster assistance, saw Ebola as clearly evolving into a full-blown disaster, not merely a biological risk event. Its strong preference was to

“We weren’t that well married up between the international team and the homeland team. There’s a bigger issue here, which is relevant to ... pandemic response, which is [that] the differentiation between homeland and foreign policy, [as] I think Ebola made clear, is ... very harmful.”

engage US disaster response capabilities. But there was no clear lead within NSC to bridge the domestic and international response issues for a global outbreak crisis (the NSC eventually created an Ebola Task Force that spanned directorates and included domestic and international equities).²³

Other parts of the government were weighing in as well. CDC had been engaging with DoD throughout July, urging the latter’s increased involvement. This had been a frustrating process for both sides (for reasons discussed later), and DoD wanted a buffer to filter and rationalize the requests it was getting from CDC. DoD was accustomed to collaborating with OFDA in this sort of activity and began conveying to the NSC and USAID that it wanted OFDA to begin playing its customary military liaison role. Meanwhile, the embassies in the region also began to argue to Washington that the situation had gone beyond a standard health emergency. At the beginning of August, the ambassador to Liberia took the unusual step of issuing a disaster declaration for the Ebola crisis, constituting a formal request for support from OFDA.

The logjam within the administration finally broke because Gayle Smith, then senior director for development and democracy on the NSC, began to personally push the envelope. Smith had deep familiarity with OFDA’s disaster response systems from her prior

23. The Obama-era NSC was later reorganized to create a directorate for global health security that spanned both domestic and international issues. This directorate, however, was subsequently eliminated by National Security Advisor John Bolton’s reorganization when he joined the White House in 2018.

“There was this whole CBRN (Chemical, Biological, Radiological, and Nuclear events) response framework that was put together ... [but] wasn’t fully fleshed out, so there was a lot of discussion ... about whether or not we should just use that. [The Development Directorate] said, why don’t we just use a DART and call it a day ... I think in the end, the problem is we didn’t have a socialized way to think about bio on its own.”

service at USAID and experience of overseeing disaster response during the first six years of the Obama White House. She and her team made a convincing case within the White House that the OFDA’s field-based DART and Washington, D.C.-based response management team (or RMT, which backstopped the response out of USAID’s operations center) could bring a degree of coherence and focus that the disjointed US government response had theretofore lacked. As one NSC staffer recounted, “Whatever people say about the DART structure, whether it’s perfect or not perfect, it’s a structure. It gave us an email address to the RMT and you knew that someone would answer.” The preference by DoD and the embassies for an enhanced OFDA role further bolstered Smith’s case. In a Saturday afternoon conference call with USAID, CDC, and other federal stakeholders in late July, Smith laid out the White House’s preference for a DART and tasked USAID and CDC to report to the NSC as soon as possible with a plan for how they intended to make that structure work.

With these marching orders, OFDA and CDC quickly settled on a novel arrangement: OFDA would work as the sole DART lead, preserving the principle of unity of command that was central to its DART doctrine. But the CDC would maintain its own distinct operations center, and the CDC team lead in Liberia would serve as the DART’s principal deputy, with oversight of the

public health and medical aspects of the US government response.

With the organizational and leadership arrangements agreed upon, OFDA formally deployed its DART to Liberia on August 5, 2014,²⁴ and CDC simultaneously began ramping up its staffing levels. But the strategy remained undefined, as did the practical meaning of CDC’s DART “deputy” role. In OFDA’s eyes, it meant that CDC personnel would serve under the oversight of OFDA’s DART team lead. In CDC’s eyes, its new role meant more frequent collaboration with OFDA staff, but its principal reporting line remained to its Atlanta headquarters. As August rolled along with this larger US footprint, the DART and CDC teams worked largely in parallel, maintaining cordial relations but working under their own initiative with no overarching strategy to keep them in sync.

And then, just as the US response was gaining momentum and high-level attention, another curveball emerged. The same week that OFDA and CDC began deploying the new DART structure in West Africa, the Islamic State terrorist group (ISIL) began a new offensive across northern Iraq. In short order, it had massacred ethnic Yazidis in the town of Sinjar and driven thousands to flee up the adjoining mountain, where they were effectively besieged. Other ISIL units took the strategically important Mosul dam and began positioning themselves to threaten the major northern towns of Erbil and Kirkuk. Almost immediately, the weight of the US national security architecture shifted focus away from Ebola and onto Iraq. The president authorized a new military air campaign to stop ISIL’s advance, and the military also began humanitarian air drops to the people stranded on the Sinjar mountain. OFDA deployed another DART to Iraq—its fourth concurrent DART activation on top of Ebola, South Sudan, and Syria—and for the next several weeks, Iraq would dominate the attention of both OFDA and wider USAID

24. US Mission Liberia, “US Medical Experts and Emergency Responders Arrive in Liberia,” US Embassy in Liberia, August 25, 2014, <https://lr.usembassy.gov/u-s-medical-experts-and-emergency-responders-arrive-in-liberia/>.

leadership. The lingering problems in Liberia of an ambiguous strategy and disconnects between OFDA and CDC teams would go unaddressed for an additional month, as the outbreak continued to grow.

Phase 3: Struggling with Scale (September–December 2014)

At the end of August, as the Iraq crisis downshifted from an all-consuming problem to merely a massive one, the CDC director and OFDA director flew together to Liberia to assess the state of the Ebola response. What they found shocked them: nearly a month after the deployment of the enhanced US team, the disease was still badly outpacing all efforts to contain it. The Ministry of Health briefed the delegation on the state of the outbreak, showing a jarring slide in which the growth in new cases was approaching a vertical line.

The directors visited a new MSF ETU—at 120 beds, by far the largest ETU in history—and learned the facility had filled so rapidly upon opening that MSF was turning away new patients on a daily basis. The team also visited Monrovia's flagship John F. Kennedy Hospital. A WHO-run Ebola ward at the hospital was overstretched and poorly run; a CDC doctor witnessed the patients' children resting and playing among the sick, almost certain to become infected themselves. Elsewhere in the hospital, the corridors were eerily quiet because normal patients had stopped using the hospital for fear of contracting Ebola. This mirrored a broader collapse in basic health services across the country. The majority of facilities were reportedly closed due to the Ebola threat; those that remained open received few patients as Liberians nervously stayed away.

It was clear that while the early August activation of the DART structure was a step change in US involvement, it was not enough. The USAID and CDC teams had spent August relying on their habitual approaches: CDC supporting contact tracing and providing technical advice to the government, USAID supporting coordination and logistics. The traditional approach was not turning the tide. Moreover, other nations had not followed

suit, leaving the US as the only country with a significant presence and funding portfolio in the affected countries. Outside of MSF and International Medical Corps, the international NGO community was largely staying on the sidelines, spooked by the Samaritan's Purse incident and fearful of endangering their own staff. The UN system was in disarray, with WHO dropping the ball and other agencies focused elsewhere.

As a further complication, both USAID and CDC lacked resources. At the time of the directors' trip, the US government had put only \$20 million²⁵ toward the response and was struggling to find more. The upsurge in cases began in the final quarter of the US government's fiscal year,²⁶ a period when agency budgets are typically running low. By the time of the DART deployment and CDC expansion in early August, both agencies were running on budgetary fumes.

USAID/OFDA's emergency reserves for the fiscal year had been badly depleted by the November 2013 Super Typhoon Haiyan in the Philippines and the crisis that had erupted in South Sudan in December 2013. By August the emergency reserve was at minimal levels, and OFDA was struggling to balance remaining funds between Ebola and the crisis in Iraq. CDC was, if anything, even more strapped. It had so little funding for overseas response that it had actually received an unorthodox \$3 million intragovernmental grant from OFDA just to keep its West Africa operation afloat.

Prior to the August trip, the OFDA director had been authorized by the White House to announce a new contribution of \$5 million. But by the time of the press conference as the directors departed Liberia, this amount seemed almost laughably modest. After what they had witnessed, it was clear that orders of magnitude more money would be needed.

25. USAID and CDC, "West Africa—Ebola Outbreak Fact Sheet 3, FY 2014," USAID, August 27, 2014, www.usaid.gov/sites/default/files/documents/9276/USG%20West%20Africa%20Ebola%20Outbreak%20Fact%20Sheet%20%233.pdf.

26. The US government operates on an October–September fiscal year.

But resources alone would not be enough: the US government needed a strategy for catching up with the disease and had no blueprint for developing one.

The OFDA and CDC directors began formulating a quick and dirty strategic framework in the back seat of an embassy vehicle as they traveled between field sites in Liberia. The initial draft amounted to a single page, intended to align their field teams and bring focus to the US response. On their final day in the country, they met with President Ellen Johnson Sirleaf. CDC Director Thomas Frieden briefed her on the team's assessment: for the first time ever, Ebola had reached epidemic levels, and combating it would require a new and different approach.

The directors' plan envisioned five core focus areas that would attack different avenues of transmission:

1. Overall response coordination remained woefully weak and would need to be improved through significant investments in the government's incident management architecture.
2. Having witnessed the MSF treatment unit turning away patients and the WHO site at JFK Hospital operating with badly substandard protocols, the US team recognized that a drastic scale-up in rigorous isolation and treatment capacity would be needed.
3. After being briefed on the new mandatory cremation policy that the Liberian government had put in place and visiting the badly overburdened crematorium outside Monrovia, it was clear that a different strategy was needed for dead body management. The team advised that a major improvement and scale-up in safe burial practices was needed.
4. The team had seen firsthand on a visit to JFK Hospital that fear of Ebola transmission was effectively shutting down the rest of the health system. Minimizing a surge in non-Ebola health problems would require improvements in infection prevention and control systems throughout

the mainline health system to prevent infection of healthcare workers and patients.

5. The information environment was very messy, and Ebola messaging had theretofore not effectively engaged or prepared the population at large. A much clearer and better-coordinated approach to communication and social mobilization would be needed.

Activating all these interventions would also require a large-scale logistics operation and personnel deployment, far larger than anything then in the pipeline.

Going Big

Resourcing and implementing a strategy this ambitious would take a much larger US commitment than OFDA and CDC could deliver on their own. Another step change in US involvement was needed, and this one would require substantial political will. The two directors returned to the US and began ringing the alarm bell on all fronts. CDC Director Frieden went on a highly effective media blitz, warning that the outbreak was "spiraling out of control," with its "window of opportunity ... closing"—but that the international community could control it, if it acted quickly.²⁷ Frieden emphasized the severity of the situation, noting, "This is the biggest and most complex Ebola outbreak in history. Far too many lives have been lost already. It will take many months, and it won't be easy, but Ebola can be stopped."²⁸ He echoed these warnings within the government as well, arguing forcefully that a major increase in US involvement was required.

Meanwhile, the OFDA director began intensive outreach to UN and NGO partners to mobilize them into action. Spending hours working the phones with the heads of relief agencies, he made personal entreaties

27. Lauren F. Friedman, "CDC Director: Ebola Outbreak 'Spiraling out of Control,' 'Window of Opportunity Is Closing,'" *Business Insider*, September 2, 2014, www.businessinsider.com/cdc-director-tom-frieden-ebola-update-2014-9.

28. CDC, "As West Africa Ebola Outbreak Worsens, CDC Issues Level 3 Travel Warning," press release, July 31, 2014, www.cdc.gov/media/releases/2014/p0731-ebola.html.

that they scale up their involvement. Many expressed tentative willingness, but also concern: What would happen if their staff got sick? Would medevac be available? Could they be treated locally? Where could an NGO with no prior Ebola experience obtain rapid staff training? Would resources be available? What would happen if flights shut down? Most of these questions lacked ready answers, and the relief groups remained hesitant. USAID concluded that civilian agencies on their own might not be reliably available to take on the full range of roles that would be needed.

The alarm generated by the trip helped to kick the Obama administration's policy machinery into high gear. The White House began convening a steady sequence of high-level Principals Committee and Deputies Committee meetings (colloquially known as PCs and DCs) in which cabinet members and White House leaders grappled with what to do. The president, who had been interested in the response for some time, began paying much closer attention, receiving detailed updates on strategy deliberations and response progress. He also laid out clear guidance to the cabinet that the US would ensure that this response succeeded—and that he expected the US to do whatever needed to be done to make that happen. While the US would urge other countries to step up simultaneously (and the president himself made extensive personal outreach to other leaders to ask their countries to join the fight), the US government also needed to be prepared to step up comprehensively in case other countries did not come through.

When a crisis is on the president's radar, it greatly amplifies White House involvement and the NSC's appetite for information flow. Pressure mounted at the White House for a clear plan to definitively resolve the crisis. This intensive expansion in White House involvement was helpful in many respects. It sent a clear signal throughout the government that Ebola was a top-tier presidential priority, which helped energize response planning and provide the political impetus for the eventual deployment of DoD. But it

also shifted operational response planning away from the teams on the ground and into the White House Situation Room.

“There was just this extraordinary data thirst at the White House. ... I had to say more than once in the Sit Room that we really need to let people do their jobs. We don't have the data and we think we're headed in the right direction, but please let us do our jobs and figure it out.”

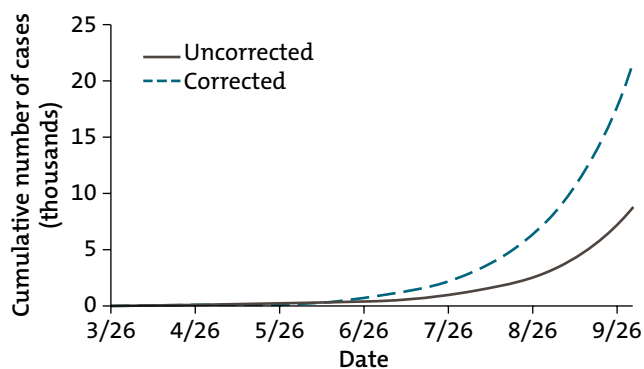
Previously pedestrian aspects of operational planning were suddenly being discussed by the most powerful officials in the government. PC and DC meetings, intended for high-level strategic decision making, at times devolved into operational brainstorming sessions aimed at resolving hurdles to implementation in the field—for example, discussing the minutiae of ETU staffing requirements. This intense top-level attention could prove helpful—particularly in ensuring engagement by the full range of interagency players. It also enabled a tight feedback loop between the president's ambitious expectations and the policy measures needed to deliver on them.

But it proved a major additional burden on already stretched response teams at USAID and CDC, who now needed to satisfy a much larger appetite for information inside the White House. And it de facto centralized operational planning in the Situation Room, moving problem solving away from the field operators who were closest to the crisis and into the hands of agency principals meeting in the White House basement. Some problems are best solved in the Situation Room—those that require a high-level strategic decision, or the application of political will. But many are not; PC and DC meetings are a poor forum for deliberating field tactics, especially among participants with an uneven understanding of realities on the ground.

Into this atmosphere, in mid-September 2014, CDC released a report that would define, but also distort, the US response. CDC’s modeling unit published what came to be called the “hockey stick” model, projecting that at current transmission rates, the continued exponential spread of the disease could infect as many as 1.4 million people across West Africa (see Figure 5). The model also projected an apparent solution: a robust intervention to scale up isolation beds and prevent further transmission could curtail the outbreak by January 2015 and keep numbers dramatically lower.²⁹

These projections proved hugely influential. The jarringly high numbers generated enormous media attention and sparked political will—but this became a double-edged sword. The model’s message that the most dire scenarios could be averted through intensive, early, immediate action did help provide (as CDC Director Frieden had intended) the political impetus needed to expand the US response. But the flip side

Figure 5. Projected increase in Ebola cases, with and without correction for underreporting, Liberia and Sierra Leone combined



Source: Martin I. Meltzer et al., “Estimating the Future Number of Cases in the Ebola Epidemic—Liberia and Sierra Leone, 2014–2015,” *CDC Morbidity and Mortality Weekly Report, Supplement 63*, no. 3, September 26, 2014, www.cdc.gov/mmwr/preview/mmwrhtml/su6303a1.htm?s_cid=su6303a1_w.

29. Martin I. Meltzer et al., “Estimating the Future Number of Cases in the Ebola Epidemic—Liberia and Sierra Leone, 2014–2015,” *CDC Morbidity and Mortality Weekly Report Supplement 63*, no. 3, September 26, 2014, www.cdc.gov/mmwr/preview/mmwrhtml/su6303a1.htm?s_cid=su6303a1_w.

“[CDC] presented the slides showing 1.4 million cases by January, and I’d never been in anything like that. I’d been in meetings with major terrorist threats being briefed by the [intelligence community], chemical weapons attacks; I’ve never had the experience of something like this, just this long, awkward pause where nobody in the room even knew what to say. ... I was very struck by the largeness of the alarm and the modesty of the prescription.”

of sparking political will was that the projections also amplified popular fear of the disease in the United States, driving media hysteria and amplifying calls for a travel ban (discussed below).

The model also distorted an interagency strategy process that was hungry for any possible way out of the crisis. There is a truism in statistics that “all models are wrong, but some are useful.”³⁰ This sensible caution evaporated once the CDC model was presented to top-level policymakers. The model was indeed “useful”—its message on the importance of rapid and robust action helped galvanize political will for a larger US response. But it was also “wrong” in its implicit prescription for how to combat the epidemic—a prescription that senior policymakers unfortunately latched onto. Amid White House deliberations that urgently sought to answer the question, “What do we do?,” the CDC model appeared to present a concrete answer: reach 70 percent rigorous isolation of all cases, and the tide will begin to turn.

This answer proved highly influential in the White House’s decision to go big on ETUs, and it also oriented interagency planning heavily toward the so-called bed gap—the number of ETU beds that would need to be built in order to achieve CDC’s 70 percent target. Yet this target simply reflected which interventions could

30. Generally attributed to statistician George Box (for a quick Wikipedia introduction, see https://en.wikipedia.org/wiki/All_models_are_wrong).

and could not be modeled based on data from past Ebola outbreaks. Other interventions that would come to play a major role—such as community outreach and burial teams—were referenced in the report but fell outside the model’s scope. The model was in essence a math exercise that transposed transmission rates and containment tactics from small rural outbreaks onto a heavily urban outbreak that was evolving along a very different path.

Thus, a model not intended to be operationally prescriptive came to heavily define the focus of the US response plan. The model’s heavy emphasis on isolation simply reflected which interventions could be easily modeled based on smaller prior outbreaks; it was not a comprehensive landscape of which tools would necessarily work in this one. Crucially, it lacked data to factor in the impact of interventions such as social mobilization, safe burials, and behavior change (and in fairness to CDC, the fine print in the publication of the model’s results acknowledged these prescriptive limitations). In the end, case rates in Liberia began dropping in late September, right around the time the model was released, and well before the subsequent surge in US-built ETU beds began coming on line.

As the government struggled to define roles and tactics, another element was also skewing the planning process: money. With USAID and CDC lacking the resources to finance a super-sized response operation, DoD came forward with the stunning news that it had a billion dollars to spare. Congress had appropriated \$85 billion to DoD for “Overseas Contingency Operations” (OCO). But as the end of the fiscal year approached, DoD had enough unspent OCO money that it offered to seek congressional reprogramming of \$1 billion toward the Ebola response. After extensive briefings and assurances, Congress allowed DoD to reprogram \$750 million.³¹

Suddenly DoD, a heretofore peripheral player in the effort, was sitting on an enormous pile of money even

as the lead government response agencies struggled to find resources. Absent an equivalent resource flow anywhere else in the government, this pot of money created enormous pressure to assign roles to DoD, regardless of whether DoD was well suited to take them on (a dynamic explored in more detail later in this report). The signal from the White House was that any mission that DoD could take on, it should—and USAID faced persistent pressure to be as aggressive as possible in using DoD capabilities.

The White House’s intense emphasis on ETU bed numbers, and its push to shoehorn DoD into any function its money could pay for, threatened to derail the focus of the response effort. In an attempt to refocus the high-level strategy deliberations, USAID Administrator Rajiv Shah proposed that USAID and CDC develop a joint strategic dashboard that would track a fuller range of key indicators than those included in CDC’s model. This dashboard would go the president—who was closely following the details of the government response—on a regular basis to give him a real-time overview of the government’s progress. The content of the dashboard was closely negotiated between the highest levels of USAID, CDC, and HHS, with each agency ensuring that its priorities were represented.

The “POTUS dashboard,” as it came to be known, developed into an important touchstone for keeping US government response efforts aligned. It presented a considerably more comprehensive scope than the CDC model, and it ensured rigor in monitoring progress on implementing the strategy. The dashboard covered the principal “levers” that USAID and CDC had determined were central to breaking transmission. These ultimately included traditional public health tools such as isolation, treatment, and contact tracing. But the dashboard also tracked safe burials and community outreach—interventions that would limit behavior-driven transmission—and improvements in infection prevention at non-Ebola health facilities. Underpinning the dashboard were rigorously monitored indicators that were used to gauge progress on each “lever” in each affected country. Based on these indicators, CDC and

31. Susan Epstein et al., “FY2015 Budget Requests to Counter Ebola and the Islamic State (IS),” Congressional Research Service, December 9, 2014. <https://fas.org/sgp/crs/row/R43807.pdf>

USAID would assign a red/yellow/green ranking to each country's performance on each lever, as well as an indication of whether the trajectory showed improvement. Administrator Shah and Director Frieden would personally review the dashboard before each submission to ensure their agencies were aligned in the analysis that would go before the president.

“The conversation going on at the NSC was just nuts. It was like “hair on fire, throw the military in” ... but not ... a coherent strategy to manage a large-scale response ... [The dashboard was] a way to get CDC and the others to be aligned against a common approach to the response. An important part of mobilization of the response [was] developing a coherent strategy and having a dashboard that allowed us to track our progress against implementation of our strategy ... We created a framework that allowed the NSC to be much more effective at this.”

Trouble on the Home Front

But even as the dashboard brought improved focus and strategic coherence to the government's international response, weaknesses in the US domestic response were emerging. On September 30, a Liberian-American named Thomas Eric Duncan was diagnosed with Ebola at Texas Presbyterian Hospital in Dallas. He had first visited a hospital several days earlier, after coming down with symptoms, but had been misdiagnosed and discharged rather than tested and placed in isolation. After his symptoms worsened, he returned to the hospital and was correctly diagnosed and isolated. But weak isolation and infection prevention protocols at the hospital, along with improper use of personal protective equipment (PPE), resulted in two of his attending nurses becoming infected (the first and ultimately only cases of US domestic Ebola transmission during the outbreak).

While both nurses ultimately survived, the fact that a traveler from Liberia could spread the virus within a US health facility sparked hysterical reactions. In an already charged political atmosphere, attention focused on statements by CDC leadership immediately after Duncan's diagnosis that “essentially any hospital in the country can safely take care of Ebola.”³² The Dallas cases made CDC look disconnected from the vulnerabilities in the US health system. Rumors of additional cases, such as two at Washington, D.C., hospitals that were later debunked, fed a further sense of panic. And all these factors added to a widespread impression that the government did not have a comprehensive handle on the domestic components of the response.

This impression was not entirely off base. The government's intensive—and correct—emphasis on containing the disease in West Africa had oriented its policy attention heavily toward the international components of the response. But given the existing disconnect between the international and homeland security elements within the NSC, this focus on the international response meant that domestic policy considerations received less attention. Compounding this situation, the growing counter-ISIL campaign in Iraq and Syria left limited bandwidth for the homeland security team to engage intensively on Ebola. As a result, White House oversight of domestic preparedness had suffered, and critical decisions on policy issues such as travel controls were swirling in mid-level interagency deliberations without being elevated for a decision.

Calls for the appointment of an Ebola “czar” had been bubbling in Congress and the media for several weeks. The White House had initially deflected these calls, pointing to Homeland Security Advisor Lisa Monaco's policy coordination role and USAID's leadership of the international response operation.³³ But with the news of the two infected nurses, the calls for a czar reached a

32. CDC, “CDC Telebriefing: CDC Update on First Ebola Case Diagnosed in the United States, 10-2-2014,” press briefing transcript, *CDC Newsroom*, October 2, 2014, www.cdc.gov/media/releases/2014/t1002-ebola-in-us-update.html.

33. Eric Bradner, “No ‘Ebola Czar’ Is Forthcoming, White House Says,” *CNN*, October 2, 2012, www.cnn.com/2014/10/02/politics/ebola-whos-in-charge/index.html.

fever pitch and the White House brought in Ron Klain, a lawyer and former chief of staff to Vice Presidents Biden and Gore, to fill the role. Klain's lack of infectious disease and emergency management experience drew criticism³⁴ and was even parodied on *Saturday Night Live*.³⁵ And he was now being placed in charge of the largest health emergency the country had faced since the previous decade's pandemic flu scares.

“We had sort of this mushy structure, which was exacerbated by the fact that people were in these specific camps. So for me, the huge value of bringing Ron [Klain] on—what he did really well—was that he wasn't on anybody's team, he saw the problem as a whole.”

What Klain did bring—and what would prove critical to his effectiveness—was a direct and credible line to the Oval Office, political savvy, a deep understanding of how the government worked, and experience orchestrating complex whole-of-government operations. Klain had held senior roles in the Clinton and Obama White Houses and helped to manage the implementation of the American Recovery Act (colloquially known as the “stimulus package”), another politically charged cross-governmental process. Klain also had a sharp political sense and deep relationships with legislators, governors, and key principals across the government.

Klain arrived to find a badly bifurcated operation. The US government's international response was, by October, coming together reasonably well—tousling over operational decisions (particularly at DoD, as discussed in more detail below) but executing well against the strategy. The domestic side was a different story. Basic information on domestic preparedness was missing or outdated. Official records showed capabilities that had

been developed following the Bush-era anthrax scares, but Klain found that in practice these tools existed only on paper. Key decisions on border screening policy had been stuck for months in interagency deliberations, with no move to elevate them to a rapid decision. And meanwhile, congressional leaders and state governors were becoming increasingly critical, at a time when the administration needed cooperation on an Ebola emergency budget and the handling of returning healthcare workers.

It was here that Klain's skills as a policy process guru—but not an Ebola subject matter expert—proved enormously helpful. As the scope and complexity of the response effort grew, it had become increasingly difficult to keep the government's moving parts in alignment while protecting space for operators to get on with the business of the response. Placing a policy generalist in charge helped to keep the peace between different government agencies—because none feared that he would second-guess their own expertise or show bias toward another agency's views. Numerous interviewees observed that Klain's respect for agency expertise and his mastery of high-level policymaking enabled him to serve as a neutral broker, orchestrating a more cohesive government-wide operation.

“On the domestic [preparedness] side, things were kind of in shambles. Every page you turned, something was supposed to be there [post-anthrax] that wasn't there. ... It was like someone telling you that ‘we bought a car’ and you walk out to the garage to see how it's doing and nobody had bothered to start the thing.”

And while his background as a political operator drew criticism when he was first appointed, it in fact proved to be a vital asset. The political furor surrounding Ebola was immense, particularly given the looming midterm elections. On important issues—travel restrictions, the emergency budget, the role of the military—political

34. Julie Davis, “Before Ebola, New Czar Handled Political Crises,” *New York Times*, October 17, 2014, www.nytimes.com/2014/10/18/us/ron-klain-chief-of-staff-to-2-vice-presidents-is-named-ebola-czar.html.

35. *Saturday Night Live*, October 26, 2014, available on YouTube, www.youtube.com/watch?v=iv8Mxw3XBcl.

missteps held potential to derail the response. Rather than being a peripheral priority, managing the politics of the US response was in fact critical to giving front-line response professionals the space to do their jobs.

Klain also shifted the focus of operational problem solving away from the PC and DC process and into a biweekly meeting that he would convene among the key decision makers at the relevant agencies. Klain explicitly structured the meeting to engage the people closest to the issues, irrespective of their seniority. This process stood in contrast to standard NSC practice, which relied on a protocol that all agencies be represented by comparable levels of seniority—agency heads or agency deputies—regardless of those individuals’ personal knowledge of the issue. While those practices were important to high-level strategy setting and ensuring top-level leadership buy-in on policy decisions, they were poorly suited to real-time operational decision making and problem solving.

“We needed to have meetings that broke the protocols... [we] said: ok, we’re going to have the people actually making the decisions show up at the table even if that was a cabinet secretary ... and a bureau chief. ... We were actually going to put people around a table who were operational decision makers, understanding that a problem like this cuts across the [US government] at different levels in different agencies. ... That’s a real challenge, [that] these problems cut across the agencies at different levels of seniority and one seat per agency doesn’t work. Having all the right people around the table was important and contrary to the traditional way that the NSC structure works.”

“The tracking of travelers, we had been trying to do that for months, to take a decision. ... We’re getting torn apart in Congress the longer we don’t address this issue.”

Klain used this approach, along with his direct line to the Oval Office, to focus and streamline policymaking around Ebola. Keeping problem-solving discussions at an operational level freed up the cabinet-level meetings to focus on higher-order policy debates and strategic questions. Among the most important of these was how to approach travel restrictions. Klain took an issue that had been languishing without a decision for months, and within days of his arrival, had elevated it to the president for guidance. As a later section of this report will discuss, he pressed the interagency team to formulate a creative plan, merging capacities across different agencies that the agencies on their own would not have thought to connect. That creative solution was then turned around and presented to the cabinet and then the president, who approved it promptly.

Another of Klain’s key roles was finalizing and pitching an emergency Ebola budget request to Congress. The arrival of the new fiscal year in October had brought some relief to USAID’s and CDC’s budgets, but the distortive impacts of the budget misalignment between these agencies and the DoD remained. Moreover, USAID had placed itself in a precarious position in order to keep abreast of response requirements. To avoid letting budget shortfalls undermine the response effort, USAID Administrator Shah had directed OFDA to direct as much new-fiscal-year money as needed from its regular appropriation toward Ebola. This was a bold gamble that in effect dared Congress not to make OFDA whole again via an emergency appropriation. Shah’s directive depleted the resources available to fund OFDA’s other ongoing programming in crises all around the world, but in turn allowed some much-needed rationalizing of military and civilian funding roles. In particular, it had enabled USAID to

take on responsibility for management of the numerous Ebola treatment units DoD was building, a mission that had initially been assigned to DoD. As it became clear that USAID could cover the requirement more quickly than DoD and at half the cost, the White House shifted the role to USAID. But the process of tasking it to DoD, wrangling between DoD and USAID over how to manage it, and ultimately shifting it to USAID took weeks—and those lost weeks arose directly from the misallocation of resources relative to expertise.

The process of building the emergency request was vital to enabling a full-scale realignment of resources around appropriate roles and expertise. Importantly, the budget was structured to reflect the agency roles and responsibilities outlined in the government's strategy. This stood in distinct contrast to the contentious dynamic between USAID and CDC on PEPFAR, where the two agencies had overlapping responsibilities from country to country, meaning that roles and resources were in play. The tight link between agency roles and budgets ensured that missteps such as tasking DoD with inappropriate missions could be avoided, and it also minimized the space available for turf fighting.

Turning the Corner

By late October, evidence was growing that the tide was turning in Liberia. A visit to West Africa by US Ambassador to the UN Samantha Power (accompanied by this author) in late October found growing optimism among the Liberian government and international responders that cases were declining. The data, however, were murky. CDC had for the previous several months been applying a multiplier of 2.5 to the reported case data to reflect its assumption that many or most cases were not being captured through official disease surveillance. This strategy had in turn influenced the scale of the US response, particularly around bed targets. As new case counts were appearing to decline, it was unclear whether the declines were real and whether CDC's multiplier remained valid.

Clarifying this was fundamental to understanding whether the US interventions were working. Data had been a persistent problem throughout the response, particularly after a CDC-provided software system deployed early in the outbreak collapsed in early September, overwhelmed by the volume of cases.³⁶ The Liberian government was struggling to pull together case data on paper and in Excel spreadsheets, but its efforts were "incomplete, contained duplicates, and could not be analyzed in real time."³⁷ Around this time, renowned health data celebrity Hans Rosling traveled to Liberia to try to untangle the data situation. He found a chaotic data environment. In a later debriefing with the US government (attended by this writer), he recounted how case data could be captured by community leaders, laboratory analysis, treatment clinics, burial teams, and others. An individual case could show up several times in the case counts: first in community monitoring data, later upon referral to a clinic, and again at burial.

Rosling and a small team of officials from the Liberian Ministry of Health hunkered down in a small room in the ministry and began cleaning up the data. What emerged was a picture of an outbreak in rapid decline. Around the same time, CDC launched its own investigation into the declines, specifically seeking to verify whether case hiding remained widespread. Its teams talked to funeral home directors, clinics, burial teams, community leaders—anyone who might have indications of Ebola cases that were not being captured in the official figures. The results largely validated the official figures, suggesting that CDC's 2.5 multiplier was no longer needed because the official figures were reflective of the actual transmission trends.

For the first time in months, US officials were able to exhale, at last confident that their efforts were delivering.

36. Hans Rosling, "Understanding Ebola," *BBC*, March 23, 2015, available on YouTube, <https://www.youtube.com/watch?v=60HI2HUAb6M>.

37. Tolbert G. Nyenswah et al., "Ebola and Its Control in Liberia, 2014–2015," *Emerging Infectious Diseases* 22, no. 2 (February 2016): 169–177, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4734504/>.

3

THE TRAVEL RESTRICTIONS DEBATE



A US Coast Guard technician screens a passenger arriving from Sierra Leone at Chicago's O'Hare International Airport.

The question of how to handle travelers from Ebola-affected countries emerged as a controversial subplot of the US response effort. As Ebola dominated US headlines ahead of the 2014 midterm elections, pressure began to mount for a halt to travel from Ebola-affected countries to the US. Donald Trump, then a private citizen, was among the first to advocate for such a ban. When the Obama administration organized the medical evacuation of infected Samaritan's Purse doctor Kent Brantly, Trump argued that infected aid workers should be barred from returning to the US: "The U.S. cannot allow EBOLA infected people back. People that go to far away places to help out are great—but must suffer the consequences!"³⁸ Before long, Trump and other voices in the media and Congress began calling for a ban, not just on medical evacuation but on all travel from affected West African countries.

The Obama administration initially resisted these calls. The risk that the virus might reach the US was thought to be low given scrupulous travel screening procedures that had been instituted in Liberia, Sierra Leone, and Guinea, and the modest volume of travel between those countries and the US. All travelers flying out of those countries were subject to a temperature check and a survey for symptoms. And lists of known in-country contacts were shared with airport authorities for cross-checking against airplane departure manifests.

While the risks from travel were believed to be low, the risks of banning travel were seen as immense. OFDA was in the midst of a delicate courting ritual with reticent UN and NGO partners, imploring them to deploy teams to support the response. But aid groups were understandably nervous, and the first question was inevitably "What will happen if our people get sick?" As the US had found after the DART was deployed in August, a lack of medical evacuation options could be a deal breaker for attracting the sizable workforce that would be needed to mount an effective response operation.

38. Twitter, August 1, 2014, <https://twitter.com/realdonaldtrump/status/495379061972410369?lang=en>.

Over the summer, the refusal of most medevac companies to fly into the affected countries had proved a major constraint on UN and NGO willingness to expand the response. The US State Department had nimbly addressed this constraint by contracting with the only company in the world with planes capable of the task and then allowing partner organizations to access the service.³⁹ But a wider ban on travel from the affected countries would put those organizations back to square one and abruptly halt the growing flow of aid workers heading for the region. Few would agree to take part if the mission were seen as a one-way ticket. There was a palpable belief within the administration that sustaining travel between the US and West Africa was central to successfully containing the disease.

"If we shut down legal travel pathways, people would be less likely to declare contact with Ebola patients, and this would put other people at greater risk."

And then there were the practical hurdles associated with a ban. There were already no direct flights to the US from the affected countries, and any travelers to the US would have to be routed through intermediary airports. A formal ban would be easy to evade for those inclined to do so—simply booking two separate itineraries could allow someone originating in West Africa to slip past a travel restriction. And that in turn could elevate the risk that an infected person likewise could avoid monitoring and detection after arrival in the US.

However, calls for a ban widened considerably after Thomas Eric Duncan, the Liberian-American traveler, died of Ebola in Dallas after infecting two of his nurses. The Texas debacle placed enormous pressure on the administration. Calls began to mount in Congress for a full travel ban. Appearing before Congress in mid-October to defend CDC's response and address

39. USAID, "Information Regarding Care and Evacuation of International Responders," December 12, 2014, www.usaid.gov/ebola/medevac.

concerns about the Texas cases, Tom Frieden faced a barrage of questions about a ban. Speaker John Boehner, then the most powerful Republican in Washington, soon came out in support of a ban, and a bill was introduced to legislatively require one. Dangerously for the White House, Democrats in tight midterm races also began to back a ban,⁴⁰ creating a potential trade-off between harming the Ebola response effort and harming the chances of retaining the Democrats' slim Senate majority.

Further complicating the administration's reluctance to impose additional restrictions was the military's decision to quarantine all troops who had deployed to support the Ebola response. The Pentagon's policy (which no other federal agency adopted, despite USAID and CDC personnel facing much higher risks than DoD personnel) inevitably raised questions as to why troops, at less risk of infection, would be quarantined while returning health workers would not. The politically awkward answer was that the DoD quarantine policy was based more on optics than on science. US troops stayed scrupulously far from any infected persons and so were at negligibly low risk of contracting the disease. But the policy was a concession to the Pentagon's wider hesitance about taking part in the response and was also, frankly, a concession to political pressure from a Congress skeptical of any US military involvement in the response effort. These dynamics are explored in more detail elsewhere in the report.

Meanwhile, the Texas case was also spurring states to begin taking matters into their own hands. Skeptical of federal government assurances after the administration had initially claimed that Ebola posed little risk to US hospitals, numerous governors began to implement their own state-level travel quarantine policies. In New York and New Jersey, governors from both political parties agreed on a joint arrangement to require a mandatory 21-day quarantine for health workers returning from the Ebola-affected countries.

Several other states also rapidly adopted this approach, which almost immediately sparked controversy. New Jersey involuntarily quarantined a returning nurse named Kaci Hickox after a faulty temperature reading by a screener at the Newark airport. Held in an austere tent without so much as a shower, Hickox and her detention became a national news story as she argued that her rights were being violated (she was released within a few days and later successfully challenged her detention in court, prompting New Jersey to settle with her and release a new policy to protect the rights of people under quarantine). Obama administration officials feared that this kind of mandatory quarantine, if widely mirrored in other states, could cause the flow of health workers to dry up, just as surely as a travel ban itself would.

“There were some state-level/local-level people who were saying, ‘Is CDC actually giving us the right information?’ Because you’re trying so hard to deal in facts, at a time when a lot of people [were] risking their lives.”

While no one in the administration felt that a ban was justified on the merits, the political calculus was a different matter. The administration was taking a battering on the Hill over Obamacare, and HHS, in particular, had bigger fish to fry. Spending political capital to defend against a ban could mean less capital left to protect the president's signature health legislation. And while the success of the response hinged on deploying health and aid workers to the affected countries, it also hinged on securing resources for their operations—and in this effort Congress was critical. The administration had been working with Congress to lay the groundwork for an Ebola budget package, which it would submit just after the midterms. A failure to

40. Russell Berman, “Democrats vs. Obama on an Ebola Travel Ban,” *The Atlantic*, October 21, 2014, www.theatlantic.com/politics/archive/2014/10/democrats-defy-obama-in-favor-of-ebola-travel-ban/381712/.

“Everyone in the [Situation] Room was in agreement that if we did not come up with a solution, then Congress would impose a solution, and any solution that Congress imposed was not going to be well tailored to the facts.”

resolve the travel issue could lead to Congress imposing a solution as a condition of a budget deal.

Boxed in by state-level freelancing, congressional pressure, and media hysteria, the administration faced a pivotal decision point. And senior officials recognized that they were not just making policy for the United States: the US approach would likely be mirrored by numerous countries around the world. Views inside the cabinet were mixed. Some principals felt that the political odds were insurmountable and it would be better to simply accept a ban than to suffer the political damage of waging a losing fight against it. Others, particularly the USAID administrator and CDC director, argued forcefully that accepting a ban would critically undermine the response effort just as it was gaining momentum and demonstrating progress. NGO partners were reporting to USAID that quarantine fears were harming their ability to recruit sufficient staff for the response. The stakes were high. As one interviewee observed, “The larger the gap between political incentives and science, the more concrete the evidence has to be.” Yet there was little evidence to go on. Interviewees involved with the decision process observed that

“I may not understand the epidemiology, but I do understand politics, and you’re never going to win the argument by saying, ‘We have to keep travel up so that we can stop the outbreak.’ That’s not going to work. But you can win by saying that this is the only way we can track people—if we keep [travel] open.”

they had few precedents or protocols that would be appropriate in this situation.

Ultimately, as numerous interviewees recounted, the role of the president proved pivotal. He made clear to the cabinet (reinforced in Principals Committee meetings by his national security advisor, Susan Rice) that he wanted this decision made on the merits, and with a focus on protecting the response rather than his own political capital. He asked for options that would enable better monitoring of travelers but not ban them entirely.

“[DHS was initially] recommending that we shut down the air travel from those countries. [Others in the Situation Room] then presented different variables to consider: most of the flights break in Europe, there were all these other issues. To [DHS’] credit, by the time the conversation was over, they agreed that it makes sense [to take a different approach].”

Developing this plan required collaboration between parts of the government that rarely interacted: the CDC and US Customs and Border Protection (CBP). The challenge was substantial. In West Africa, effective monitoring of “contacts” of Ebola patients depended on the goodwill and cooperation of those being monitored. It would be no different with monitoring travelers returning to the US—identifying them and gaining their cooperation was critical to success. An overly harsh or punitive approach would raise the risk that some travelers would try to avoid the monitoring protocol. That would be worse than no screening at all, since it would drive the riskiest cases beyond the view of health authorities. And the logistics of entry screening for every arriving traveler were also onerous. Given the panoply of travel links between different US and European hubs, travelers transiting through Europe might arrive at a huge range of US airports.

“This was right before the midterms, and Obama listened to all of this and he said, ‘We’re not going to be political and we’re going to go by the evidence and the science,’ and based on that, rolled out the decision of how to proceed.... He was very calm and very clear and he told the team, ‘This will not be political.’ It was a very inspiring moment to be in the Situation Room.”

As CBP and CDC began working through options, a potential solution emerged that would draw on the resources of both agencies. CDC had the ability to organize the monitoring of travelers upon their return to the US but lacked a way to ensure that their counterparts in local health departments could be alerted to returnees and comprehensively initiate monitoring. CBP had developed systems after 9/11 to track the origin of travelers coming into the US. While originally built for counter-terror purposes, the system could be repurposed to review how many travelers were coming from the Ebola-affected countries and where in the US they were going. This system could make it possible to link US-based health department monitoring to international travel manifests, ensuring that local health departments could get an alert when a returning traveler arrived. And CBP was also able to use this system to see that the bulk of such travelers were going to only a handful of US airports, meaning that the staff

“We knew we had the capacity to identify travelers by their last point of departure. We do that, sort of, when we have information about known terrorist threats; we’ve used that before. We did the analysis on which airports they were traveling into. But it was CBP who showed us how it all worked and how they’d be able to get airlines to cooperate, etc. CBP can be very innovative.”

bandwidth required to comprehensively screen them on arrival could be kept to a manageable level.

With this analysis in hand, CBP and CDC laid out a proposal to the Principals. The US would require that all incoming travelers from Ebola-affected countries arrive in the country through one of five designated entry points: Atlanta, Newark, New York/JFK, Chicago/O’Hare, and Washington/Dulles. This “funneling” procedure required the cooperation of airlines to ensure that travelers’ itineraries complied with the requirement; CBP and the White House reached out to secure their cooperation. Special screening protocols would be established in these airports to pull aside passengers who had originated in Ebola-affected countries and subject them to a temperature check and secondary interview to assess them for Ebola symptoms. If they showed no symptoms, they would be given a kit containing information on Ebola symptoms, a thermometer, and a simple cell phone.

Upon these travelers’ discharge from screening, their information would be passed to their home health department, which would then put them on a 21-day “active monitoring” protocol. Returned travelers would be required to take their temperature twice daily and report their temperature and symptoms to local health officials. Individuals who were assessed to be at higher risk—such as frontline health workers who had interacted with patients—would be encouraged to hold in-person check-ins with their health department and voluntarily self-quarantine (in practice, to stay at home and minimize proximity to other groups of people) for 21 days.

This arrangement faced some tepid pushback from advocates of a ban. But as no additional Ebola cases emerged in the US beyond October, and the country’s political temperature declined following the midterm elections, opposition deflated. The White House was able to secure congressional agreement on an emergency funding package, which passed the following month without requiring a travel ban. The administration’s approach, in other words, worked.

But it also leaves lingering questions. What might have happened had the president not been willing to buck the tide of political opposition he faced—or if a future president might actually agree with the merits of a travel ban? Had the number of cases reaching the US

been in the triple digits rather than the single digits, would the political pressure for a ban have become insurmountable? Might a less effective interagency process have missed the connection between CDC's and CBP's tool kits that unearthed a solution?

4

“OPERATIONS OUTSTRIPPING POLICY”: THE ROLE OF THE PENTAGON



US service members unload military equipment and supplies from a US Air Force aircraft in Monrovia, Liberia, in October 2014.

Scoping the limits of the military's role would prove to be one of the most contentious pieces of the Ebola policy process, and debates reverberated throughout the military's period of involvement. Like much of the US government, the military initially saw no role for itself in the Ebola response. While some in the Pentagon—particularly the civilian biosecurity experts who worked on issues related to weapons of mass destruction—argued for a more forward-leaning approach, the uniformed military proved far more influential in internal deliberations. The military's reticence about its involvement came to define the Pentagon's posture, even as it took on a high-profile role in the US effort.

“[At the outset] it would never have occurred to us, ever, that the Department of Defense should have had a role in this.”

The military has a long history of partnering with USAID on natural disaster responses in places such as Haiti and the Philippines (and in Nepal during the closing phases of the Ebola outbreak in 2015). OFDA and DoD had honed a well-established model in which OFDA would outline requirements for support (logistics, airport management, airlift, etc.) and the Pentagon would task a regional combatant command with supporting the operation. OFDA would function as the lead (or in DoD parlance “support-ed”) federal entity and DoD would act as the support-ing entity. DoD's regional combatant command would deploy a task force to the field to liaise with OFDA DART staff on the ground and the operation would roll forward smoothly, with operational planning and decision-making delegated largely to the field. However, DoD's Ebola involvement played out very differently.

“[The NSC] spent so much time trying to figure out how to make an ask to DoD.”

“[CDC asked,] ‘What can [DoD] do to help us?’ And I responded, ‘I can send tanks, I can send B-52s,’ and he responded that those wouldn't be helpful, so I said, ‘Tell me what you need,’ and [CDC] says, ‘Well, tell me what you can do,’ and I said, ‘That's not how we function. Tell me what the mission is and I'll tell you the resources we can give you against the mission.’ And it took us weeks and weeks to get the NSC, CDC, State, and USAID aligned on the idea of what they wanted from DoD.”

CDC had begun exploring the potential for military involvement as early as July, before OFDA had become heavily engaged in the response. Initial high-level contacts between CDC and DoD proved frustrating for both sides because they lacked a common vocabulary for assessing operational gaps and articulating how to fill them. CDC defined its needs in terms of specific assets to be provided—beds, clinics, trucks, helicopters. DoD is set up to provide support against capability requirements—such as lift capacity or transport—that leave the specific operational details to DoD to resolve. This meant that CDC and DoD largely talked past each other. Numerous interviewees recounted a dynamic in which CDC, and later White House staff as well, would ask DoD variants of “Tell me what you can provide to the response.” DoD would invariably reply, “Tell us what the requirements are and we'll tell you which we can fill.” Neither approach was wrong per se, but neither aligned well with the other. The mutual frustration around these discussions remained palpable in interviews several years after the fact.

As it became clearer in August that DoD would likely get roped into the response in some form, DoD began pressing for OFDA to act as the intermediary for all Ebola-related requests to DoD. DoD was becoming

frustrated by scattershot requests that were hitting different parts of the department from a variety of federal counterparts, and it badly wanted to centralize the process through OFDA's systems, which DoD was familiar with. DoD also had a comfort level with OFDA based on past joint responses, and more of a common operational language. CDC found this frustrating because in its view, the insertion of OFDA added a mediating layer between itself and DoD. But from DoD's perspective, that layer was precisely the point of the arrangement.

“But [OFDA] understood us [DoD], and the health community [HHS and CDC] may have come to understand us, but they didn't understand us at the outset. You had to understand the [DoD] requirements and let [DoD] figure out what you need. You can't treat us like an inventory/store for shopping around capabilities. The system just won't ever respond very well to that.”

Placing OFDA in that role proved helpful in streamlining and rationalizing the flow of requests to DoD, but it was far from a cure-all. The development of DoD's role remained hampered by a range of internal and external obstacles.

Internally, DoD was deeply conflicted about the force protection risks that Ebola could pose and how to manage them amid a large-scale military deployment to the affected countries. The disease was not well understood among DoD leadership, making it difficult for them to calibrate the degree of practical risk it might pose to the troops. At one point, as the outbreak was expanding in August, Joint Chiefs Chairman Martin Dempsey convened a meeting of outside experts to brief him on the disease. The briefing helped to reduce concerns among Dempsey and his senior leaders but did not allay them. The Pentagon continued to lean toward a conservative posture, taking steps to avoid troop risks even when some of those steps had little scientific basis. When confronted with the fact that USAID and CDC personnel

in West Africa were taking on far more risk than the troops, DoD would point out that the risk profile of their personnel differed as well—USAID and CDC personnel were mostly seasoned international professionals, whereas DoD troops were younger and unfamiliar with the environment of West Africa.

If the nature of the force protection risks was unclear to Pentagon leadership, so too was the scope of what DoD should actually do. There was no existing Pentagon doctrine to inform—or delimit—the nature of the military's role. Faced with a nebulous mission and a White House eager for an ambitious level of military involvement, this doctrinal gap raised the prospect of mission creep. Chairman Dempsey was concerned that the military could become an easy default option for any uncovered roles in the Ebola mission.

He also had to contend with competing demands on the military's bandwidth: a potential Ebola deployment and a new air war in Iraq and Syria against ISIL, the scale of which was uncertain but rapidly growing. Any resources focused toward Liberia would be unavailable for deployment on the core warfighting missions that were a higher priority for the Pentagon. The bandwidth trade-offs on the Ebola mission were particularly acute. One interviewee cited the example of using DoD helicopters to move Ebola patients—an idea the US government considered but ultimately

“And we held a [high-level roundtable] on the question of what the quarantine procedures [would] be for returning US military members. ... [We] saw hyper-concern for control of returned service members, and this view that the last thing that we want is for a military family, for instance, to be exposed to Ebola in the same way that the city of Dallas was exposed. So DoD ... [set] up these crazy quarantine centers, like when the Apollo astronauts came back from the moon.”

“[From Dempsey’s] perspective, it was military families. It was complaints from military families that came up through the [combatant command], the people who would end up doing [the mission]. So to say it was a Hill red line or a DoD red line—it was culturally where [DoD] gravitated to, given all of the pressure coming from all sides.”

discarded in favor of civilian-operated aircraft managed by the UN and NGOs. In a normal relief mission, deploying a military helicopter to transport personnel and supplies would not preclude future use of the airframe. But using a military aircraft to transport patients would do precisely that, taking the aircraft out of rotation until it could be fully decontaminated. DoD was highly skeptical of the idea that it was worth taking a multi-million-dollar aircraft out of operational readiness—and thus unavailable for any global missions—in order to transport individual Ebola patients. And the trade-offs were not limited to material assets. Personnel deployed for Ebola would face longer returns to normal duty because of the Pentagon’s self-imposed quarantine requirement of 21 days for all returning military personnel.

The Pentagon faced external pressures as well. DoD’s own conservatism about force protection was, if anything, exceeded by the concerns of troops’ families, whose understanding of Ebola was shaped by frantic media reporting. The Pentagon and Congress received numerous phone calls from family members alarmed at the prospect that their sons and daughters could be deployed into a hot zone. Congress pressed this issue harder than any other when DoD leadership briefed them on their Ebola efforts. And legislators had leverage in doing so, because the administration was simultaneously requesting that Congress authorize a reprogramming of \$1 billion in unspent contingency funding that DoD would use to finance its Ebola operations. With the closure of the fiscal year looming at the end of September, there was little margin to try to nuance Congress’ concerns about force protection

without also putting the resources at risk. Ultimately DoD was required to provide Congress with a “force health protection” plan in order to secure Congress’ approval on the reprogramming of funds.

These internal and external pressures, and the need for some kind of guiding principles to avoid mission creep in DoD’s role, led Chairman Dempsey to lay down what became known as DoD’s “red lines.” The red lines were an attempt to define parameters around DoD’s appropriate role—not simply to delimit DoD’s engagement but also to ensure that DoD’s involvement did not excuse other federal players from their own obligations to step up.

The first red line was that no military personnel would come into contact with patients. This was seen as critical to satisfy the force protection expectations both within and outside of the Pentagon. It also reflected the reality that DoD doctors were no better suited than civilian doctors to the unique requirement of Ebola treatment. The second was that DoD should not play any role that it was not uniquely suited to; if a civilian actor (government or otherwise) could plausibly do something, then DoD should not. This notion of “unique capability” has been a bedrock guiding principle on most DoD-USAID disaster responses. It was seen within DoD as an important means of avoiding mission creep and preserving as many military assets as possible for higher-priority missions in Iraq and elsewhere.

“Congress also felt very strongly about this. ... The \$1 billion that was reprogrammed at first was not initially released until we provided an adequate force health protection plan [to Congress]. ... Most of the questions were around force health protection, and we were developing measures as we were formulating the response because we hadn’t imagined ourselves deploying in proximity to an Ebola environment prior to that.”

The internal leadership arrangements within the Pentagon mirrored the chairman's guidance. Michael Lumpkin, the assistant secretary of defense for special operations and low-intensity conflict, was designated to coordinate the Ebola efforts within DoD. Lumpkin's division housed DoD's disaster response and humanitarian assistance office and managed DoD's institutional relationship with OFDA. But it had little to no institutional expertise on infectious disease; those capacities rested in DoD's biodefense and health affairs divisions. By placing Lumpkin and his team in charge of DoD's efforts, the Pentagon was clearly signaling that its primary role would be logistical and operational, not medical.

The chairman's red lines proved contentious. The lack of accompanying policy guidance or precedent led to running interagency debates over how to apply the red lines in practice. DoD took an expansive interpretation of the "patient care" restriction, for example, interpreting it to mean that the military should avoid any location where patients were present, or any interaction with materials or personnel that had been in proximity to them. This led to odd situations, such as the DoD's being willing to transport CDC disease detectives out to the field but then refusing to transport them back from the field to Monrovia on the logic that they could have become contaminated while there. So CDC staffers would take alternative transportation back to Monrovia—and then hop back onto DoD aircraft a few days later to head back out to the field.

DoD likewise refused to do the kind of last-mile logistical distribution that it customarily does in other disaster responses. In its 2013 response to the super typhoon in the Philippines, for example, DoD airlifted materials directly to remote villages. But in Liberia, DoD refused to deliver the large volumes of personal protective equipment and other supplies that it had procured directly to the partners running the Ebola treatment units (ETUs), even though doing so would not have involved coming anywhere close to the ETU hot zone. And in a case that greatly irked CDC, DoD refused to allow the transport of blood samples on its

aircraft, despite the fact that these samples were fastidiously prepared for safe transport and posed no conceivable risk of contamination to personnel on the aircraft. Instead, CDC personnel ended up hand-carrying samples on four- to five-hour overland journeys.

“The overall red lines were very clear to us; I think the question always was ‘How will these be implemented, especially in a fast-paced response?’ The moving [of] blood samples was one example of that, and I think on the ground was a fair interpretation of whatever the guidance was. So the red lines were [that] DoD should provide a unique capability, which could be undertaking some capabilities that civilians aren’t yet in a position to take [on] ... and then no direct medical treatment (no direct patient care).”

The frustration for OFDA and CDC was not merely that DoD's red lines led to risk determinations that were sometimes at odds with scientific evidence; it was also that the process for DoD to make those determinations could take weeks of ping-ponging among the DoD field personnel in Liberia, AFRICOM (the regional combatant command for Africa, in Stuttgart, Germany), and the Pentagon. In a normal disaster response, field-based military operators and DART personnel could operate with great agility to set operational priorities and scope support requirements in real time. Both institutions would have the authority to validate or invalidate potential DoD activities in the field, in real time. But under the red lines guidance, numerous instances of these support requests would have to go back up through multiple layers of DoD bureaucracy before a definitive answer could be given (and that answer would quite often turn out to be “no”). This mismatch between the broad authority delegation granted to the DART and the extremely narrow delegation granted to DoD personnel in Liberia led to substantial operational delays by slowing the initial scoping of

the DoD mission and then also slowing DoD's ability to respond to support requests from the DART.

It also complicated OFDA's ability to defend DoD's second red line—the “unique capability” standard. In a normal disaster response, the DART and DoD would work out DoD taskings informally at field level before formally tasking them in an official request. This was a smooth system when it worked: it ensured alignment around the DoD mission scope and avoided bogging down DoD with taskings that it would be unable or unsuited to fulfill. The DART and its DoD counterparts initially attempted to rely on that approach, but it quickly foundered because DoD field personnel were not empowered to give prompt, reliable answers about the scope of their mission. And the traditional approach ran into major friction at the interagency level in Washington, where USAID was under immense pressure from the White House and CDC to make maximal use of DoD.

CDC and White House personnel often exhibited a view of DoD's role that was out of step with a “unique capability” standard. Instead, in the White House's logic, DoD had both capacity and ample resources at a time when the rest of the federal players had neither—so DoD's role should be used as aggressively as possible wherever it had a *relevant*, if not necessarily unique, capability. In high-level interagency deliberations,

“We had to figure out what the policy guidance is because nobody [in DoD] engages without rules of engagement. So I remember being in a large conference room with a bunch of Joint Staff planners working on thought problems like ‘Well, okay, we’re going to send you DoD field crews out to level and construct ETUs, so what if we have a Corps of Engineers [unit] and there’s a person driving a backhoe leveling a field, and they discover a recently buried body?’”

DoD was adept at navigating around these White House expectations—often by placing USAID in the line of fire instead. When operational bottlenecks would arise in high-level deliberations, the White House would ask why DoD wasn't taking care of the issue. DoD would respond, “USAID hasn't asked us to do that”—even on issues for which DoD had already given USAID an informal red light in the field or Washington. This dynamic so frustrated USAID leadership that USAID's front office eventually issued a blanket directive to OFDA that *any* potential DoD support role—however banal or remote—should be formally tasked, and DoD should be forced to give an explicit yes or no answer. This directive badly jammed up DoD's policy processes and created bad blood between USAID and DoD by greatly increasing the volume of issues on which a formal policy determination would be sought from the Pentagon.

This confusion and friction over the definition of and limitations on DoD's role was an outgrowth of DoD's culture and systems, which are heavily grounded in advance planning and guided by top-down policy determinations. This stood in marked contrast to OFDA's culture, which heavily devolved decision making to the field and took a seek-forgiveness-not-permission approach to nontraditional functions. In normal disaster response contexts, the DoD-OFDA partnership could move swiftly because the nature of the DoD role enjoyed ample precedents and existing policy guidance. In the Ebola context, the red lines requirements meant that new case-by-case policy guidance had to be developed by DoD in real time for virtually all support requests.

This requirement greatly hampered DoD's customary speed and agility in other contexts—evidenced by the nearly two-month period from the deployment of DoD's initial scoping mission under General Darryl Williams to the rollout of the full Operation United Assistance under General Gary Volesky. Interviewees noted that the abrupt emergence of an unexpected DoD mission type perhaps made these sorts of delays

“Operations were outstripping policy. We didn’t have a policy on force health protection until later; we didn’t have a policy on the roles/responsibilities of the DoD in what you would call a ‘health-itarian crisis.’ There just wasn’t policy. So policy was really being made by the ‘execute orders’ being made by the Joint Staff. In the world of the Defense Department, policy begets training and education and exercises and doctrine and planning, so I think that there is a gap there.”

and policy bottlenecks unavoidable. But it also, they said, reflected a collective failure of imagination earlier in the outbreak. DoD famously organizes contingency planning for numerous low-probability scenarios in order to lay advance policy groundwork in case of an actual event. Yet it did not have a contingency framework in place for a disease outbreak response (and in fairness, DoD was hardly unique in this regard).

Had DoD taken the initiative to develop such a framework or been tasked by the White House to do so, the framework would have expedited the eventual process of scoping DoD’s role and flagging areas for advance policy development. Another opportunity to kick-start that planning was lost when the DART launched in early August. DoD offered planning personnel to OFDA, but they were not initially accepted because standard OFDA-DoD joint efforts did not involve this kind of staff secondment. OFDA staff did not, at first, see a clear role for the DoD secondees, nor understand how these positions could help to expedite DoD’s own internal planning requirements. While they were accepted by OFDA within a few weeks (after DoD raised the issue with the White House), bringing these personnel into OFDA’s team when they were first offered might have given DoD a head start on conceiving the parameters of its eventual mission.

The slow start-up of the DoD operation did not materially harm the control effort in Liberia—but only because other, more rapid aspects of the response yielded results more quickly. The bulk of DoD’s efforts focused on the mass scale-up of a strategy for clinical isolation—which ultimately proved less relevant in Liberia than did the behavioral interventions led by USAID and CDC. The construction of ETUs, the highest-profile DoD mission and initially the core focus of the US strategy, was completed only after case counts in Liberia had already begun to decline precipitously. Most DoD-built ETUs saw no patients by the time they opened their gates. The Obama administration faced criticism for continuing construction despite the lack of patients but defended its approach on the logic that one builds firehouses wherever fires could break out, not just where they have already broken out. And in any case, empty ETUs were a very good problem to have—far better than the inverse.

“There should be a more flexible way for DoD to put together information. I mean, I understand why they have the process they have. But what it left people [on the NSC] feeling like was that they had no idea, which made me feel like there was no option [but] to get involved.”

Nonetheless, the delays in DoD achieving its mission could have played out very differently. Had the outbreak in Liberia proved less amenable to safe burial and social mobilization interventions, an ETU-heavy approach would have been required, and indeed Sierra Leone’s experience played out more along those lines. Had that scenario applied in Liberia, the months-long process of defining the DoD mission and working through DoD policy development would have more directly weakened the US response effort. Future outbreaks are unlikely to be as forgiving.

The DoD delays also opened the US government to a different line of criticism: that the US military response was wasteful overkill. A New York Times article in the spring of 2015,⁴¹ as the outbreak was drawing to a close across the region, noted that nine of the DoD-built ETUs had seen no patients, and others had seen negligible numbers. And the deployment of thousands of civilian NGO staff across the region ultimately eclipsed the scope of DoD's own efforts, raising questions about whether the large troop deployment had in fact been necessary. But while hindsight is 20/20, such critiques miss two important factors: the assurance and the signaling effects of the DoD deployment.

In August and September 2014, it was far from clear that the international humanitarian community would show up in force to support the response. For USAID and CDC officials struggling to figure out how to turn plans into actual action, a degree of certainty was crucial: who would build the ETUs, run the labs, support the logistical backbone of the operation? NGOs and UN

agencies *could* do all these things in theory, but it was far from clear at that stage that they *would*. Having the fallback option of DoD's taking on these roles enabled the strategy to begin moving forward, even as civilian burden sharing remained an early question mark.

The DoD deployment also had important signaling value. The military presence was tangible proof to the Liberian people that the US was coming through to help, and served to boost morale and confidence that the disease could be defeated. DART staff reported that in one village, spontaneous celebration erupted at the arrival of a military helicopter. To the NGOs and UN agencies fearful about the risks of jumping in, the military deployment signaled a major commitment by the US government that Liberia would remain stable and that international staff could safely deploy in the region. And to other governments whose own involvement remained tepid, it was a clear indication that the United States saw Ebola as a first-order priority—and that they should as well.

41. Norimitsu Onishi, "Empty Ebola Clinics in Liberia Are Seen as Misstep in US Relief Effort," New York Times, April 11, 2015, www.nytimes.com/2015/04/12/world/africa/idle-ebola-clinics-in-liberia-are-seen-as-misstep-in-us-relief-effort.html

5

MOBILIZING THE INTERNATIONAL RESPONSE



Vehicles are unloaded in Freetown, Sierra Leone in November 2014 to be deployed for the UN Mission for Ebola Emergency Response.

Like the US government, the UN system struggled to adapt its systems to the scale and speed of the outbreak. The shortfalls in the multilateral response contain vitally important lessons for future pandemic emergencies—crises that may fall much more squarely on the UN architecture.

While the US and UK governments provided much of the heavy lifting during the Ebola effort—putting in the largest financial contributions and deploying large civilian and military teams—there is no guarantee that the next mega-outbreak will originate in countries that would welcome a large-scale civilian and military deployment by Western governments. And as the 2018 Ebola outbreak in conflict areas of Eastern Congo demonstrates, some settings will be less amenable to a large US and UK staff deployment. A viable multilateral architecture for large-scale outbreak response, one that can be seen as credible and neutral, is vitally important. Yet as Ebola demonstrated, the existing UN and international tools for organizing such an effort were badly insufficient, and the UN's efforts to hastily create a new one in real time fell flat.

“There’s kind of a literacy problem, a generic misunderstanding of what [the World Health Organization] does.... [UN member states] do this thing where we kind of stick a problem that’s well beyond an agency’s capacity in a specific organization. I think WHO sort of became an international alibi that countries used.”

Like the US government's efforts, the UN's response to the outbreak proved halting, reactive, and fraught with internal friction. The UN's experience mirrored the challenge within the US government to recognize and define the expanding scope of the emergency and to determine a corresponding structure and strategy for responding. But where the United States spent July and August 2014 iterating its way (albeit reactively)

toward a new and effective model, the UN was allowing a vacuum to develop.

During the spring, in the early phases of the international response, the UN had engaged principally via the WHO. WHO's failings during the early phases of the response have been well documented elsewhere⁴² and will not be reiterated at length here. From March through May, WHO deployed a standard-issue Ebola response, as did other international partners. In May, it joined CDC and others in assessing that the outbreak was close to containment and began reducing its engagement. For WHO and the UN system, the next several months would prove to be a missed opportunity to avert a disaster.

As the outbreak rebounded and then began exploding in June and July, the UN system watched with growing alarm but did nothing to shift its basic posture. WHO remained in the lead and other UN humanitarian agencies remained peripheral players at best. UNICEF played only a modest role on community outreach and mobilization, while powerhouse operational agencies like the International Organization for Migration and the World Food Programme were largely disengaged, as was the UN's Office for the Coordination of Humanitarian Affairs (OCHA). Interviewees relayed conflicting impressions about this dynamic: some recounted that OCHA actively reached out to WHO to offer its services in organizing and coordinating response efforts and was rebuffed; others sensed that OCHA had seemed reticent to engage. Regardless, it is clear that the UN's core humanitarian response agencies were heavily focused on other burning crises—Syria, South Sudan, and from August onward, Iraq—and were not actively campaigning for a larger role in the Ebola effort. Meanwhile, WHO leadership was actively signaling to the rest of the UN family that this crisis was its domain, and that it was not encouraging their involvement. Absent a clear demand signal from WHO, the rest of the UN family opted to stay on the sidelines.

42. WHO, “Report of the Ebola Interim Assessment Panel,” July 2015, <http://www.who.int/csr/resources/publications/ebola/report-by-panel.pdf>.

“There was a combination of an exaggeration of the extent to which WHO had things under control and a denial that the house was burning down. But the rest of the UN didn’t want to touch it. Really, they were scared.”

An important missed opportunity in this time frame was the delay by WHO in declaring Ebola a Public Health Emergency of International Concern (PHEIC). A PHEIC is a mechanism established under the International Health Regulations (a 2005 international legal instrument governing international public health issues). It is intended to focus international attention and action toward a health emergency, triggering “a coordinated international response.” WHO’s independent assessment panel on Ebola heavily faulted the organization for this delay, noting that it reflected a “reactive, rather than a proactive, approach to emergencies.”⁴³ WHO ultimately issued a declaration on August 8, 2014, by which point the disease was already well out of control and the US was already taking steps to amplify its involvement—the USAID and CDC teams had been mobilized earlier that week. Rather than a prescient alarm bell, the PHEIC declaration served as a retroactive attempt to catch up with events. And even so, it did little to immediately spur further action within WHO or the larger UN system.

Within WHO during this period, a turf battle was playing out that paralleled the US government’s internal debate over how to classify the crisis. WHO’s response was initially led by its health security division (responsible for infectious disease issues), which at the time was separate and distinct from its emergency response division (the two were later merged in WHO’s sweeping post-Ebola reforms). The health security division employed world-class disease experts and technical advisors but was not designed or staffed to manage a multicountry operational response effort. Internal

WHO politics also came into play, as the country offices (which report to WHO’s regional office rather than to its Geneva headquarters) failed to fully appreciate the severity of the outbreak even after its resurgence from June onward. And the country offices resisted external involvement, whether from the WHO’s small emergency response division or even from the CDC. The WHO country offices had objected to deployment of CDC technical advisory staff in the first month of the response, forcing CDC leadership to go over their heads, directly to WHO headquarters. The leadership of these country offices remained shockingly out of touch as late as August, when the CDC and OFDA directors met with WHO’s Liberia representative and found a country operation that still showed no urgency in the face of a crisis that was by then blazing across the country.

Mounting criticism of its response over the course of August—including some pointed messages from USAID and CDC—finally forced WHO’s hand, and in September, the leaders of the three WHO country offices were relieved of their duties and replaced. Meanwhile, within WHO headquarters, ownership of the Ebola response was transferred from the health security unit to the emergency response division.

With this shift in ownership came an accompanying shift in strategy. Despite the exponential rise in cases over the summer months, WHO had continued counseling a traditional approach to Ebola containment—the “3-Cs” approach to breaking transmission. This approach is grounded in sound, tested public health practice; it centers on case finding, contact tracing, and painstaking community engagement. By working closely with communities to identify known cases and rigorously track down and monitor everyone they have had contact with, the 3-Cs approach ensures that anyone infected with Ebola can be isolated as soon as they show symptoms—and before they can spread the disease to others. While this approach is highly effective, it is also highly labor-intensive and thus difficult to scale.

43. Ibid.

Bruce Aylward, then head of WHO's Polio and Emergencies unit, was tapped to take over WHO's Ebola efforts when leadership shifted away from the health security division. He intuitively understood the scalability problem. Cases were rising exponentially, while the 3-Cs strategy could scale only linearly at best. Aylward and his team argued persuasively that the disease was so widespread that focusing on case finding and contact tracing no longer made sense, and granular community engagement needed to give way to mass outreach and education. To limit the spread in bulk, different tactics were needed. WHO shifted its approach to what Aylward called a "3-Bs" strategy, centered on **beds**, **burial**, and **behavior** change through mass communication.

"[Aylward] took a massive gamble, saying, 'We will not use contact tracing in the beginning; we will focus on three things that really matter: beds, burials, and behavior change.'"

The imperative was to effect a rapid, widespread shift in behaviors that would reduce risks of onward transmission. Scaling up beds would enable infected people to be taken out of home care settings where they might infect family caregivers and community members. But full-scale, rigorous Ebola treatment units (ETUs)—the ideal—would take too long to scale up; thousands of personnel had to be identified, hired, and trained. In the meantime, so few ETU isolation beds were in operation in August and September that hundreds of sick patients were being turned away from treatment. Isolation beds in interim community care centers—lower-rigor facilities with a lighter staff footprint and weaker infection prevention procedures—would enable a degree of isolation and get the sickest individuals out of a community setting, rather than sending them back to their communities when they were most contagious.

Focusing on safe burial would address another major driver of transmission: large-scale burial ceremonies that could infect tens of people across multiple communities. Safe, dignified, culturally acceptable burial practices could (and ultimately did) dramatically diminish this avenue of transmission. And both of these tactics in turn rested on effective mass messaging to at-risk populations on how to protect themselves from the disease. It was not enough for risk messaging to be technically accurate; it had to resonate. Striking the right tone and finding credible messengers could make the difference between effective and ineffective interventions. Importantly, the 3-Bs interventions could go to scale more easily and quickly than the traditional 3-Cs approach, meaning the response expansion might be better able to match the spread of the disease.

These strategic shifts were important in refocusing the UN around a viable approach, but they did not address the much larger shortfalls in overall leadership of the global response. WHO's resistance to outside involvement, paired with its own internal dysfunction, had left a major leadership vacuum; WHO had failed to keep pace with the scope of the emergency while at the same time it had kept out other UN agencies that could have brought capacity to the fight. This UN leadership vacuum became even more acute once President Obama announced, in mid-September, that the US would be deploying its military to drive a scaled-up response effort.

"Not everyone agreed with [this] simplification. ... The disease [was] rising exponentially and [Aylward] would draw a line to show that we have passed the point where contact tracing makes sense, partly because we don't know where the disease is and partly because there are just too many cases. So how are we going to try to take the top off the epidemic curve? Do the things that impact the spread."

The UN secretary-general's team was growing increasingly frustrated with WHO and began brainstorming on how to bring the whole UN system into the fight. In early September, UN Special Envoy on Ebola David Nabarro contacted USAID to ask whether the US government's DART platform could be repurposed to serve as a whole-of-response leadership platform, integrating both US government and UN agency operations. USAID leadership, meanwhile, urged the UN to instead activate the humanitarian "cluster" coordination architecture, which could deploy rapidly and which the UN agencies and NGOs were accustomed to working with. But both options were soon discarded as the secretary-general moved in a different direction: creating a stand-alone UN Ebola mission.

“Doing something like UNMEER [would] show everybody that this is going to need a quantum leap in the response.”

The mission represented a creative and novel approach. Just as the US response had broadened beyond what CDC could coordinate, the requisite level of broad-based UN system mobilization would go beyond what WHO could realistically lead. The need for a single leadership structure to encompass all the relevant UN organs was abundantly clear. But rather than mirror the US government approach of adapting an existing, albeit not fully fit for purpose, leadership and coordination platform (the DART within the US government and perhaps the cluster system within the UN), the secretary-general opted to build a bespoke institution.

Billed as the UN's first "health-keeping mission," the UN Mission for Ebola Emergency Response (UNMEER) sought to align different silos of the UN family: WHO's technical expertise, the global depth of the operational humanitarian agencies, the peacekeeping mission in Liberia, and the existing capacities of the UN country teams on the ground. The mission was based on the command-and-control architecture of a UN peacekeeping mission rather than the partnership-of-equals

approach that characterized the UN's humanitarian leadership systems. The head of the mission was granted a uniquely high degree of direct power across entities that were accustomed to running their own fiefdoms.

Though creative, the UNMEER setup did not prove highly effective. Numerous post-Ebola reviews cited a consistent set of shortcomings, which were echoed by interviewees. UNMEER proved slow off the mark, struggling to mobilize sufficient personnel and establish a base of operations. The base it did eventually establish was in Ghana rather than in any of the affected countries, leaving it out of the loop on the day-to-day rhythms of the response effort. While it billed itself as an operational mission, most of its actual work was done by the constituent UN agencies rather than UNMEER itself. The command-and-control model ranked UN agencies and NGOs. This model also annoyed the governments of the affected countries, who rightly expected that control of the response effort should rest with them rather than the UN. This annoyance was multiplied after an UNMEER planning conference in Accra in mid-October convened senior UN and donor officials but involved no one from the governments of affected countries. And the fact that it took UNMEER nearly a full month to convene that strategy session was, in its own right, indicative of the mission's slow development.

Still, UNMEER did move the wider response forward in some important ways. Interviewees noted that the UN had needed a shock to the system to shake it out of the tentative posture that had predominated as the outbreak exploded. UNMEER sent a strong signal across the UN system that the time for business as usual was over, and so proved helpful in mobilizing and aligning agencies around the response. It also demonstrated urgency and priority to the UN member states, helping to spur additional resources and bring wider national-level capacities into the response effort. In the frontline countries, the individual UNMEER country managers were widely praised for improving operational coordination among humanitarian

agencies. In December, following a change of UNMEER leadership, the mission changed footing from a command-and-control approach and shifted toward a more explicitly coordination-focused role.

“UNMEER also highlighted the challenges involved in establishing a new coordination mechanism in the midst of a crisis, and underscores the need to rely on existing or pre-agreed coordination mechanisms, such as the IASC [Inter-Agency Standing Committee] cluster system mechanism, to deal with crises. If needed, such mechanisms should be adapted to the nature of the crises.”

—Report of the High-Level Panel
on the Global Response to Health Crises, 2016

Tellingly, the positive roles that UNMEER played ultimately looked rather like the UN’s traditional value added in international disaster response: aligning and coordinating humanitarian agencies, mobilizing international donor support, and signaling the relative urgency of a crisis. And these all mirrored systems that already existed within the UN’s humanitarian response architecture. The UNMEER country managers played variants of the role traditionally played by UN humanitarian coordinators. The urgency-signaling function already existed in the form of the “Level 3” designation that the UN places on the highest-priority humanitarian crises. UN humanitarian appeals exist to mobilize international donor support. And operational coordination and planning is a core function of OCHA. But the UN’s choice—in part driven by WHO—to view the emergency through a health lens rather than a disaster lens precluded the use of these tools. Instead, the UN, in effect, invented rebranded versions of these same capacities, albeit in a slower, unfamiliar, more cumbersome manner. And the areas in which UNMEER fell flattest were those in which it most diverged from the UN’s traditional roles—its attempt to

play a command-and-control role over the entirety of the response and its effort to reinvent the operational roles that were better played by the UN’s constituent agencies.

Fortunately, UNMEER’s shortcomings did not critically undermine the wider response effort—largely due to the enormous roles played by the US and UK governments. But the UNMEER episode leaves lingering questions about how best the UN should organize for a multicountry crisis that does not fit neatly into any of its existing structures. And that question is particularly important because of the unique geopolitics of West Africa. Many countries in the world would be skeptical, if not outright hostile, toward the deployment of thousands of US or UK military troops within their borders. And the US and UK in turn would be more reluctant to deploy those troops to countries where force security for the mission could not be so easily assured. UNMEER was not the right solution, but it remains unclear what would be.

One interviewee proposed that there may need to be differing tiers of UN response architecture for future disease events, depending on the severity and scope of an outbreak. WHO has made meaningful reforms since 2014 and should be able to handle small- to medium-sized outbreaks (such as the 2018–2019 Ebola flare-ups in Congo, which showcased WHO’s new rapid response capabilities). A larger event that required significant humanitarian response capabilities from a range of UN agencies and NGOs would likely be better coordinated by OCHA and WHO jointly, adapting established disaster response mechanisms. But a true global pandemic would likely go beyond the scope of what OCHA could realistically lead and coordinate, because it would pull in a range of UN tools that fall outside of OCHA’s remit (such as peacekeeping forces, political affairs, etc.) as well national capabilities mobilized by UN member states.

Another interviewee noted the difficulties inherent in coordinating involvement across a large number of UN member states. These difficulties proved a

significant challenge during the West Africa crisis, with many different countries sending aid and personnel in a non-standardized and non-interoperable manner. Cuba, for example, deployed a large number of doctors but provided few means of locally sustaining or managing them, leaving that task to WHO (which was ill-suited to do it). While models exist for this kind of coordination challenge in other sectors, there are few in the infectious disease sphere. NATO provides one

potential template for ensuring standardization and interoperability across a range of countries. Other models exist in the standards for urban search-and-rescue teams or emergency medical trauma teams that deploy following natural disasters—to be accepted into most disaster responses, these teams must be certified as compliant with global standards and willing to plug into a common coordination and prioritization architecture when they arrive in the field.

6

CROSS-CUTTING LESSONS



Motorcycles provided by Global Communities with funding from USAID's Office of US Foreign Disaster Assistance, used for contact tracing in Bong County, Liberia.

This research yields several cross-cutting lessons on managing large-scale disease emergencies. The initial failure, by both the US government and the UN, to recognize how scale could alter response options points toward the need to more proactively shift control strategies, operational composition, and leadership structures as an outbreak grows. Doing so will, in turn, require partnerships between government and international actors who do not customarily work together—and bridging those institutional divides is critical to success. Finally, the importance of the human element—both individual judgment and personal relationships—must not be overlooked.

Proactively Adapting to Scale

Both the US and the international community proved slow to recognize the transformative implications as the outbreak scaled beyond what anyone had ever seen. The more the disease spread, the more the traditional Ebola tool kit lost relevance. But without clear thresholds for triggering a strategy reassessment, and lacking a blueprint for scalable alternative approaches, the US government and international actors continued to rely on their traditional Ebola control strategies even as those hit scalability bottlenecks.

The response posture that eventually proved successful was substantively different—across numerous dimensions—from the traditional tool kit for a modestly sized outbreak. The containment strategy materially shifted from a classical approach centered on rigorous contact tracing and isolation toward a behavior-centered approach focused on en masse alteration of high-risk behaviors by the population (particularly around burial practices) and larger-scale, lower-rigor isolation. These shifts in emphasis were controversial at the time and entailed extensive real-time debate, since an Ebola scenario on this scale had previously been thought wildly implausible.

Notably, this was not an either-or change of strategy, but rather a broadening of emphasis from scale-limited interventions to scale-appropriate interven-

tions. The 3-Cs approach continued to have utility during a large-scale event, but its intense resource and personnel requirements mean that it is most viable in either tamping down an outbreak early on or extinguishing the last embers once explosive transmission rates are reined in. During the explosive middle phase, it was still useful to whatever degree it could be scaled, but it had to be paired with other interventions that could more rapidly and broadly limit transmission.

The 3-Cs approach faced serious bottlenecks around personnel availability and training. Rigorous case finding, contact tracing, and contact monitoring require armies of trained disease detectives. The numbers needed were simply not available on a scale comparable to the numbers of contacts being generated daily at the peak of the crisis. Rigorous clinical isolation, likewise, requires enormous numbers of specially trained medical personnel to properly and safely manage an Ebola treatment unit (ETU). WHO estimates that properly managing a 100-bed ETU requires in excess of 200 staff;⁴⁴ staff burnout and rotation meant that sustaining an ETU at this level required even higher numbers and a sustained pipeline of new staff. Identifying, training, deploying, and sustaining these numbers of personnel was an enormous endeavor and did not materialize quickly, even on a relatively modest three-country scale.

A larger event, comprising millions or more cases distributed on a global scale, would pose even greater challenges to epidemiologically rigorous containment strategies. The staffing pipeline for Ebola depended on local national-level staff recruited away from the countries' national health systems, and international personnel released from their work in their own countries. Even so, sourcing and training sufficient numbers of qualified staff proved challenging. A disease event affecting many of the world's countries simultaneously would both dramatically increase the number of specialized staff needed and reduce the number

44. WHO, "General Process Overview: Setting up an Ebola Treatment Centre (ETC)," https://extranet.who.int/ebolafmt/sites/default/files/ETC_considerations_for_set_up.pdf.

available since staff from a country managing a domestic outbreak would not be released to go fill capacity gaps in other affected countries.

The 3-Bs approach achieved scale by shifting much of the responsibility for limiting transmission away from specialized responders and onto the population at large. Rather than input-heavy strategies for tightly controlling transmission, it made wider use of behavioral and community-driven methods, which communities could deploy on their own initiative with some external training and support. Instead of engaging deeply with communities to bolster their capacity and ownership (a long-term process), it focused on engaging credible voices and equipping them with the basic information and tools to adapt to their own community's setting. This approach enabled a much lighter footprint relative to scale.

A large-scale event—whether applying a 3-Cs or 3-Bs approach—also requires a dramatically larger and broader deployment of actors and competencies. It entails not just a medical operation but large logistics, personnel sustainment, and data management operations; it requires high-level diplomatic and political engagement in concert with ground-level response efforts and concerted efforts to manage second-order impacts (such as economic disruptions or interruption of normal lifesaving health services). It also poses a threat to the rest of the world domestically, forcing governments not just to focus on battling the disease abroad but also to grapple with the policy dilemmas of preparing to battle it at home.

In the Ebola crisis, these shifts had cascading effects on the composition of the response and the architecture and competencies required to lead it effectively. As the outbreak grew, a much wider and more diverse set of actors—beyond the usual suspects from Médecins Sans Frontières (MSF), WHO, CDC, and national ministries of health—became necessary. The bulk of the international responders were mobilized not by specialized health organizations but by mainstream humanitarian aid agencies, which had experience in rapidly setting up large relief interventions and could draw on global

staff reserves to fill out response requirements. USAID estimated, at the peak of the response, that its funds were supporting more than 10,000 responders via its NGO and UN partners. Militaries and peacekeepers were brought in to add logistical reach and operational scale. The African Union mobilized hundreds of doctors and public health experts from across Africa. Diplomats engaged with affected-country governments to steer policy constructively. Governments from around the world mobilized state-level capacities to fill gaps in the response effort.

“Without the president’s leadership, and without someone [Klain] who we knew was talking directly to the president and had credibility in the interagency, we couldn’t have moved our respective agencies to do what they did, and that was absolutely vital.”

This wider set of players created a different class of coordination and leadership challenges. As the US found with the appointment of the Ebola czar, the most critical leadership competency for a crisis of this scale was not subject matter expertise but aptitude for strategy, politics, and process management. This, in turn, affects who has power and influence over the response effort, which can turn contentious. Early in the US Ebola response (pre-czar), USAID and CDC locked horns over just such a question. CDC was reluctant to cede leadership of the overseas effort to USAID for fear that doing so would overshadow its own judgment and expertise in elaborating the response strategy. Pioneering an adapted response leadership structure that explicitly affirmed its institutional expertise was critical. Later, the US Ebola czar’s approach focused on intentionally empowering US agencies without second-guessing their expertise.

These practices stood in contrast to the model that the UN rolled out in its UN Mission for Emergency Ebola Response (UNMEER). Where the US leadership model

in Washington and the field sought to coordinate and enable, the UNMEER model set out to command and control. This created confusion about roles, responsibilities, and accountability. UNMEER sought to be an operational actor, yet the UN's actual operations were being carried out by other UN institutions rather than UNMEER itself. UNMEER sought to define the overall strategy for the international response, yet it marginalized the input of the affected countries and existing responders while bringing little institutional expertise of its own. Operational planning targets determined in Accra, several countries away, were of limited utility to frontline responders (a fact that UNMEER country-level staff openly acknowledged at the time).

UNMEER added the most value when, rather than reinventing existing functions and expertise, it brought things that other actors could not. Its coordination and convening of disparate players—particularly through the roles of the UNMEER Ebola country managers—was widely praised. UNMEER's UN-wide mandate was credited with breaking down intra-UN turf boundaries and bringing greater alignment to previously disparate UN response efforts. Branding UNMEER as an unprecedented “health-keeping” hybrid operation had a useful signaling effect, spurring UN agencies off the sidelines and encouraging international donors to pony up resources and national capabilities for the effort.

On both the strategic and organizational fronts, the nature of the response operation changed significantly—but also haltingly and reactively—as Ebola expanded. In future major outbreaks, policymakers must not wait until the situation is out of control before initiating these scale shifts. A more proactive adaptation to scale will require defined thresholds for triggering elevated approaches—and a more rigorous articulation of what those approaches should entail. The Ebola experience points toward elements of large-scale disease containment—including new coordination and leadership mechanisms, and nonclinical options for limiting disease transmission across different transmission categories. But very little work has

thus far been done to develop new doctrine on either front, raising the prospect that future responses will revert to the same reactive, build-the-plane-while-flying-it modality that characterized the Ebola response. In a faster, less forgiving outbreak scenario, that would be disastrous.

A full elaboration of such a doctrine is beyond the scope of this report, but the Ebola experience suggests several lessons for taking to scale a proactive stance toward an outbreak:

1. Tie risk monitoring to response elevation triggers. Risk criteria that could trigger an elevated response might include:

- Mass infections of healthcare workers and resultant impairment of health systems
- Rapid rate of disease spread, particularly if notably higher than previously observed disease behavior
- Spread of a dangerous disease into areas where it was not previously endemic, particularly if the disease behaves differently in a new cultural or geographic context
- Rapid spread of a disease that has no readily available medical countermeasures
- Spread of a disease that has gone undetected for a significant period prior to detection
- Degree of baseline vulnerability in the affected state and its health system
- Second-order disruptions to the economy, government, and/or basic service infrastructure of an affected state or region
- Inability of contact tracing operations to reach, map, and monitor a significant proportion of contacts

2. Map contingency options across different disease scenarios. A future pandemic outbreak will face the same strategy challenges experienced in fighting Ebola: elements of the known containment

strategies scale up at different speeds and hit different operational bottlenecks as the outbreak grows. Significant research is needed to identify how this growth might play out across different disease or transmission vectors, and how variables such as incubation period, or the ability to transmit without showing symptoms, could affect containment strategies at scale.

- 3. Articulate and exercise leadership models for large-scale pandemic events.** Within both the US government and UN system, there remain major gaps around the appropriate leadership structures and divisions of interagency labor for a future pandemic. The contrast between the US's czar-centered model and the UN's UNMEER model suggests it is better to install an empowered coordinator with a light surrounding infrastructure, who can engage and align the existing system, than to create a new entity from whole cloth in real time. However, these lessons must be captured in policy guidance and exercised in much the same way the US government exercises guidance for other low-probability/high-consequence events, such as nuclear launches or terrorist attacks.

Seeing beyond Institutional Divides

The impulse to fit the crisis into familiar categories inherently presupposed which institutions were relevant to dealing with it—and which were not. This impulse impeded an earlier mobilization of relevant players—and it also prevented a full view of the scope of the response effort.

Within the UN system, the tendency to view Ebola as WHO's issue (not least in WHO's own eyes) meant that other UN players with important capabilities stayed on the sidelines as the crisis grew. And within WHO itself, the artificial internal division between health security and emergency response, and the divisions between the agency's global and regional headquarters, got in the way of a much earlier agency-wide response

mobilization. The US response struggled with a parallel set of challenges, as USAID and DoD stayed on the sidelines for much of the summer of 2014, even as the need for their capabilities grew. On the domestic front, the fraught question of travel controls remained unresolved until the White House facilitated creative problem solving between CDC and US Customs and Border Protection, two institutions deeply unfamiliar with each other.

These institutional divisions, in other words, both obscured a full understanding of a complex crisis and obstructed the generation of creative solutions. Effective institutions specialize in building and iteratively improving solutions for the problems that they can anticipate. Faced with a challenge that falls outside of their habitual scope, institutions will default to those known solutions. As one interviewee observed, “The people with real expertise would have to have a lot of chutzpah to think beyond the remedies they were used to.” In the vast majority of situations that fall within their normal scope, this approach can work extremely well. But the flip side of this sort of specialization is that one of the hardest things for a bureaucracy to do is to manage a challenge that it was not built to handle.

“The crux of addressing this whole crisis boils down to how bottom-up policies meet presidential leadership. ... Obama was sending this demand signal in which he was telling people, ‘Blue-sky this. Don’t tell me what I want to hear. Tell me what I need to hear.’”

Reliance on familiar approaches and systems is not wholly a bad thing. But creating something new out of whole cloth can divert effort needlessly. The amount of time invested in building the UNMEER structure, for example, was much greater—and less productive—than simply repurposing the UN's humanitarian coordination systems might have been. The art of managing a complex and unfamiliar type of crisis lies, in part, in

recalibrating existing systems: relying on known tools and structures without being bound by their inbuilt limitations. Because institutions will inherently struggle with seeing beyond their own limitations, this push to creatively repurpose must come in large part from outside leadership.

The White House, and particularly the president himself, played a crucially important role in pressing US government institutions beyond their comfort zones from August onward. One interviewee with high-level government experience both inside and outside the White House recounted how the interagency process tends to be averse to radical proposals, sometimes resulting in self-censoring of options that fall outside the norm. Effective crisis leadership requires that the president and senior White House staff create a policy environment that welcomes and encourages blue-sky thinking and fosters cross-institutional connections that would not happen organically.

“The people who knew how to respond to a massive epidemiological crisis were likely to be prescriptively humble, doing their best to work within the bounds of what was realistic to ask of their colleagues or the president of the United States.”

But it is not enough simply to foster interagency partnerships and encourage blue-sky options. Different institutions with distinct systems and cultures will still struggle to align efforts even within an enabling policy environment. One major example of such a struggle that came through in the research was the misalignment across USAID, DoD, and CDC of structures for delegating authority and making operational decisions. USAID’s DART model delegated a high degree of operational decision making to field leadership; CDC and DoD both retained more oversight and authority

at their respective headquarters levels in Atlanta and Washington, D.C.

This misalignment meant that an operational decision involving all three—such as determining whether DoD assets in the field could be used for last-mile logistics and personnel transport—had to travel through three different, parallel, and misaligned decision processes. USAID would heavily delegate field operational decision-making to the DART, empowering the DART team leader to make most decisions. The DART would in turn keep the OFDA director abreast of any strategic implications, but otherwise move forward. CDC staff in the field were significantly less empowered, and many operational or tactical decisions would be routed up to CDC headquarters and even the CDC director before a commitment could be confirmed in the field. DoD’s process was even more convoluted, requiring that field-level decisions go through the Africa regional combatant command and up to the Joint Staff at the Pentagon for review to ensure they comported with the chairman’s red lines guidance before being approved. In practical terms, this meant that the same operational decision had to be made at three different levels of seniority and with wildly disparate levels of bureaucratic engagement across different government agencies. This arrangement badly impeded the government’s ability to rapidly make operational decisions in the field and had the tendency to turn minor operational obstacles (such as a perceived shortage of truck transportation) into high-level interagency to-dos that ended up in the Situation Room.

On the international front, these challenges were, if anything, even more acute. On traditional international security matters, leaders rely on well-established relationships with clearly defined counterparts, and NATO provides a common interoperability framework for Western militaries. Health security engagement, in contrast, is all over the map. Disparate government systems and weak or nonexistent personal working relationships hampered the mechanics of mobilizing the international response. At their top leadership levels,

the US and UK both had equivalent homeland security officials whose purview extended to biological threats; but France had no comparable position. White House engagement with France on Ebola ended up being routed somewhat inelegantly through France's senior counterterrorism official. This arrangement extended to the operational level as well. USAID and the UK Department for International Development had clear point people for crisis response, and they coordinated regularly to align response strategy, holding weekly strategy calls throughout the fall and winter of 2014. But US and UK engagement with the French was far more tenuous due to the French lack of an equivalently empowered operational lead.

Interoperability of national support was also a substantial challenge. In mainstream natural hazard response, there are well-established systems for deploying emergency support teams. Both urban search and rescue (USAR) deployments and emergency medical teams (which generally provide trauma care but not public health or outbreak support) are activated based on well-articulated processes and must meet clearly defined quality standards to qualify for deployment. USAR and emergency medical teams are subject to rigorous prequalification review that classifies their capabilities and verifies their ability to plug quickly into a larger coordinating structure. These standards also entail a requirement that deployed teams be able to operate in-country under their own sustainment without drawing support resources from others. There was no equivalent system in place for public health responders—neither a mechanism for deploying and supporting them at scale nor a common set of capacity and interoperability standards.

As a result, the forms of support arriving from contributing countries proved wildly different and plugged in only with significant difficulty. The African Union (AU) established the ASEOWA (AU Support to Ebola Outbreak in West Africa) mission, which deployed hundreds of medical and public health specialists to West Africa but required substantial financial and

administrative support from the US government to manage their deployment and sustainment. The Cuban government sent a large contingent of doctors to work in ETUs but provided minimal administrative and sustainment support, leaving WHO to, in effect, take on the care and maintenance of this team—a task it was ill suited for. Supplying qualified bodies without an accompanying support and management apparatus placed an enormous burden on existing responders.

Preparing for the next crisis requires building and harmonizing these institutional relationships in advance. Major effort is needed, both across the US government and across the international system, to build stronger linkages between institutions that will need to collaborate on future pandemic containment. Building mutual familiarity across public health experts, humanitarian operators, and militaries is an important starting point. Likewise, developing clearer and more consistent standards for clinical care and public health deployments in major outbreak situations (as already exist for other aid sectors, such as search and rescue or trauma care) could help to avoid the deployment of inappropriate or unsupported personnel and resources.

Recognizing the Importance of the Human Element

At numerous critical points, the initiative and preferences of individual players were critical to shaping the direction of the response.

One of the key early decisions in the US response—to categorize the situation as a disaster and thus to trigger OFDA's DART platform as the field-level lead—was pushed heavily by Gayle Smith, then the top relief and development official at the White House. Smith was a seasoned humanitarian, having worked for OFDA earlier in her career and served at USAID in the Clinton administration. This background left her well versed in the strengths of the DART platform, which few others at the White House were. She was able to

make a well-informed case for the DART at the critical moment that National Security Council leaders were grappling with who should lead the US deployment. Most voices in that discussion were inclined to see OFDA as a famines-and-earthquakes outfit, and did not have Smith's intuitive grasp of how its tools could add value in this highly unusual crisis. Had someone with a different background been serving in Smith's role at that moment, it is far from clear that OFDA and the DART would have been tapped to lead the overseas US response.

“[On tough policy choices] you have to figure out where the right middle ground is. When you have those personal relationships—I called [a senior colleague] and said, ‘This needs to happen,’ and she said, ‘That’s not possible.’ But with the personal relationship, she knew I wouldn’t be asking if it really didn’t need to happen, and I knew she wasn’t saying it couldn’t happen if it really could happen. That’s the way interagency problem solving gets done.”

Likewise, the quality of relations between leaders colored the quality of coordination and collaboration between their institutions. One interviewee noted that mutual trust between key individuals was critical to enabling smooth and rapid communication and problem solving. Another noted that collaboration between USAID and DoD became notably smoother after senior leaders took a joint trip to West Africa to assess the situation. The early joint trip by the heads of CDC and

USAID/OFDA similarly helped to establish a constructive relationship where previously USAID and CDC's relations had been legendarily contentious.

The nature of interpersonal relationships across government agencies also played into the degree and depth of White House involvement. When individual leaders have good working relationships, they can more often resolve institutional disagreements or frictions without elevating them to a White House-brokered interagency deliberation. The degree of intensive White House engagement in the details of response planning in September and October reflected, in part, the fact that leadership at USAID, CDC, and DoD were not aligned on strategy and their respective roles—requiring that more issues be elevated to the Situation Room for resolution. As the response began to jell and leadership relationships improved over the subsequent months, more of these friction points could be resolved bilaterally between agencies, and the degree of White House engagement abated accordingly.

The importance of personal working relationships is sufficiently critical to effective response that it should not be left to chance. During “peacetime,” when not managing a complex active response, the government should identify ways to build and maintain relationships among the disparate institutional leaders that may at some point need to collaborate closely. And when a crisis does hit, leaders should prioritize developing close relationships with their key counterparts, through joint travel or other means. Likewise, when selecting senior leaders to manage a response, particularly for a czar-like position, a candidate's existing network and relationships should be seen as an important success factor.

7

GETTING READY FOR THE NEXT CRISIS



An Ebola responder in Bong County, Liberia prepares to enter a home where several members of a single family have died of the virus.

As the US and international systems consider how to manage future pandemic risks, this research affirms that extensive further investment is needed to understand how to manage disease crises at scale, developing the systems and relationships to do so, and building a stronger evidence base on policy and operational response options. Recommendations related to each of the policy challenges considered in this report—mobilizing the US response, managing travel risks, defining the military’s role, and coordinating international partnerships—are set out below, along with recommendations on general pandemic response strategy.

General Strategy

1. Develop scalable operational blueprints for pandemic risks. As Ebola demonstrated, one of the biggest conceptual and operational challenges was designing and implementing a containment strategy that could expand in sync with the growing scope of the outbreak. The lack of prior planning for such a scenario, and the lack of viable medical countermeasures, left the world scrambling to identify and agree on a new strategic and operational approach in real time. This planning gap is not unique to Ebola; few infectious diseases with major outbreak or pandemic potential have actionable, large-scale contingency plans in place should they begin to spread globally. Substantial further work is needed to outline how different diseases or transmission modes could be contained at a global scale, particularly in the absence of immediately available medical countermeasures. The gaps on Ebola spanned three major areas: strategy, operational composition, and leadership structure.

In a future pandemic, the control strategies that would be deployed for smaller-scale outbreaks may have to change dramatically. Traditional epidemiological tactics, such as case finding and contact tracing, are difficult to scale up quickly, as are clinical countermeasures such as rigorous isolation. Even medical countermeasure strategies that could be successfully administered at a moderate scale will rapidly hit bottlenecks as bed space, trained personnel, drugs, and supply chains

approach hard-wired limits. A strategic shift toward behavioral interventions—equipping people with basic knowledge on how to protect themselves and their communities—may instead prove the most rapid way to limit transmission.

As an outbreak grows to large scale, the composition of actors must also change, going beyond public health experts and medical personnel to incorporate logistical and operational support, relief providers who can mitigate second-order impacts, and communications and behavioral experts. In extreme circumstances, military involvement may be needed to extend civilian reach and even, at times, to provide security support. The breadth of potential players and their roles is poorly defined, and the public health, relief operations, and security communities are quite siloed from each other and lack the institutional relationships, systems, and common language necessary to enable effective large-scale partnership.

Finally, as an outbreak grows, the leadership configuration required to contain it also evolves. The structures and competencies required for effective leadership shift beyond technical subject matter expertise and toward operational and complex process management expertise. The management structures and leadership competencies required for larger-scale scenarios remain poorly defined.

2. Invest in integrated data systems. Weak and disparate data plagued the international response. In a highly fluid crisis in which rapid containment could make an enormous difference, data on new case emergence were frequently weeks behind real time. And the data that were available—in addition to being late—were often messy and duplicative, produced by multiple systems that did not interface with each other effectively. This left responders partially blind in defining plans and allocating resources, and made it difficult to tell whether response efforts were delivering or failing. In a developing country context, the process of collecting and cleaning the data proved as important as the analysis itself but received scant investment. Future responses should, from the outset, lay out a data

strategy for the response. The strategy must be appropriate to the local constraints of the response environment, sensitive to the capacities of the people on the ground who must produce and consume the data, and able to account for the operational rhythm on which the data are required.

The creation and use of the “POTUS dashboard” also demonstrate the importance of marshaling data at a macro-strategic level to gauge response progress in as close as possible to real time. The dashboard helped to align disparate US government actors around the underlying strategy, enabling a data-centric platform for ironing out any significant strategic differences.

3. Build on existing systems. The experiences of the US and UN in building their response architectures provide an instructive contrast. Both faced a situation in which the ample capacity of their varied experts and institutions was undermined by organizational silos and weak coordination and alignment. The US approach focused on deploying existing capabilities, repurposing them where necessary (e.g., using a disaster response model for outbreak response and coordination), and facilitating linkages between strange-bedfellow parts of the government. Overarching this strategy was a light-footprint leadership structure headed by the Ebola czar, which focused on empowering and enabling existing expertise and fostering alignment between the different moving parts. The existing capabilities were imperfectly suited to the challenge, but this approach had the important advantages of placing people within readily actionable systems that were already understood. This created a familiar foundation from which to iterate and innovate. The UN approach was to build a much heavier, bespoke structure specifically designed for the task at hand. But purpose-building a new institution required a focus on organizational start-up that delayed the initiation of UNMEER’s actual efforts, and left personnel working within a new and unfamiliar structure that they did not know how to navigate. The command-and-control mission of UNMEER rankled

UN and international partners, as well as the affected country governments.

4. Don’t confuse modeling with strategy. The dominance of the CDC model in the US policy discussion created political momentum but also materially skewed the focus of the response at a critical moment. If a model is intended to inform public policy and strategy beyond a narrow audience of specialists, then it is only as useful as the reactions it elicits from a nonexpert audience. Before modeled scenarios are presented to policymakers or published publicly, modelers should more actively consider the implications that such an audience may impute to a model. It will be important both to ensure that the scenario modeling incorporates a comprehensive range of potential interventions and to be more explicit about the limitations of any models presented. Likewise, senior policymakers should be wary of relying heavily on a single model from a single source and should seek modeling input from experts both inside and outside of the government.

5. Foster health-itarian approaches. In the international Ebola response, the bulk of the technical expertise came from the global public health community, but the bulk of the operational legwork was done by the tens of thousands of responders mobilized by the international humanitarian system. The deep mutual unfamiliarity between these communities—whether OFDA and CDC, WHO and OCHA, or the initial presumption of most humanitarian agencies that Ebola was outside their remit—proved to be a material obstacle to containing the outbreak. In a future pandemic emergency, a similar partnership of public health and humanitarian expertise will be crucial to supporting affected countries. Efforts must be made to deepen institutional partnership between humanitarian and public health institutions, and to ensure that these relationships are not eroded as the memory of Ebola fades away. Enhanced engagement between OFDA and CDC within the US government, and WHO with OCHA, WFP, and other humanitarian agencies within the UN system, has made some progress but must be deepened and sustained.

US Government Response

1. Harmonize domestic and overseas response authorities and oversight. For global infectious disease threats with potential to reach the United States, the government must integrate leadership and coordination of the domestic and international response elements. The initial failure to do so on Ebola meant that US domestic preparedness stayed on the back burner. By the time of the Dallas episode, the government was in catch-up mode. US domestic preparedness received a sudden burst of attention, unearthing just how unprepared the US domestic systems were to manage the challenges. There were also disconnects between the government's response authorities on the domestic and international fronts. OFDA's broad mandate allowed it to address a wide variety of needs, with staffing and funding authorities to match. On the domestic front, CDC was more constrained, and FEMA's more expansive domestic response tool kit was not triggered.

2. Develop a scalable international response framework. The scramble to determine roles and responsibilities within the US government delayed the Ebola response during a critical period. And even after the initial burden sharing was articulated between USAID, CDC, and DoD, interagency coordination remained problematic until the White House appointment—reactively—of an Ebola czar. The ad hoc approach to crisis management meant that the government's structures were constantly struggling to keep pace with the scale and complexity of the event itself. Such scrambling is not unique to Ebola; the large interagency responses to the Japan Fukushima nuclear crisis and the 2010 Haiti earthquake, among others, faced similar challenges. These repeated ad hoc attempts to build the plane while flying it point to the need for a more systematic approach. For US domestic crises, the US government employs the National Response Framework to lay out leadership authorities, coordination systems, and agency roles and responsibilities. But there is no comparable framework for international events.

An international response framework (IRF) could fill this gap and ensure that the institutional divides that characterized the Ebola response do not recur. An IRF would map interagency roles and capacities as well as response leadership options for different scales and types of crisis scenarios. This could guide White House leadership configurations and investments in agency-to-agency partnerships before crises strike. In a future mega-event such as a pandemic—when a few lost weeks can make an enormous difference—an IRF could save valuable time otherwise spent fighting over the response architecture.

3. Establish thresholds for evaluating and elevating response posture. Outlining a large-scale response architecture is not enough; the government also needs a mechanism for triggering it. Much of the lost time in June and July 2014 resulted from the lack of a defined process for assessing the danger posed by Ebola and the adequacy of existing US efforts. The US government should develop a clearly articulated system, perhaps informed by the WHO's outbreak “grading” system, for assessing the current and potential risks of a disease outbreak. This should be paired with threshold indicators for triggering larger-scale government involvement and shifting to enhanced leadership and coordination models as a crisis expands.

4. Hold annual pandemic response exercises to test systems and build relationships. The mutual unfamiliarity of different US government players was a material constraint to the Ebola response. An IRF could help to systematize different agencies' roles but would not on its own build the kind of institutional relationships that are so critical to effective interagency collaboration in a crisis. The US government should develop those relationships and test on-paper systems through a large annual pandemic response exercise akin to US military exercises. Given the importance of the NSC Deputies' Committee meetings as the engine for much Ebola policymaking, these exercises should be held at or near that level of seniority. Such an exercise would test USAID, CDC, DoD, and other interagency partners'

readiness for such an event, and could also test how international response efforts would interface with domestic readiness systems.

5. Maintain a robust outbreak reserve fund. The absence of readily available funds for a comprehensive outbreak response at an appropriate scale, delayed and skewed the US Ebola response. The government needs an outbreak reserve fund that would enable robust early financing for international efforts to contain a disease threat as well as high-priority domestic preparedness costs. To ensure that urgent response funding is not bound to the legislative calendar, such a fund should be a standing pool that an administration could draw on whenever urgently needed. Congress should establish clear parameters on the use of funds to ensure an appropriately high threshold for drawdowns to avoid use toward more modest events.

The Emergency Reserve Fund established by Congress for USAID in fiscal year (FY) 2017 is a good start, but as of this writing, it has been appropriated only \$105 million through FY 2018, which is not sufficient to enable the scale of response that would be required in a future major event. The creation of a corresponding \$50 million fund at the CDC in the FY 2019 appropriations cycle is likewise helpful but inadequate. Given that the collective US government expenditure on Ebola during the first two months following the launch of the DART was over \$150 million,⁴⁵ and that total jumped to over \$750 million by the time Congress passed the emergency funding package for the response a few months later,⁴⁶ a truly sufficient reserve fund would need not less than \$500 million.

6. Avoid the politics of panic. The US Ebola response succeeded, in large measure, because of the personal investment of President Obama and his willingness to

45. USAID, “West Africa—Ebola Outbreak, Fact Sheet #2, FY 2015,” October 8, 2014, www.usaid.gov/sites/default/files/documents/9276/10.08.14%20-%20USG%20West%20Africa%20Ebola%20Outbreak%20Fact%20Sheet%20%232%20FY%2015.pdf.

46. USAID, “West Africa—Ebola Outbreak,” Fact Sheet #11, FY 2015,” December 10, 2014, <https://www.usaid.gov/sites/default/files/documents/1864/12.10.14%20-%20USG%20West%20Africa%20Ebola%20Outbreak%20Fact%20Sheet%20%2311.pdf>.

orient US strategy around technical expertise rather than political pressure. Numerous interviewees noted various ways in which his direct engagement facilitated and protected an ambitious and technically sound US government response, both domestically and internationally. His close attention to the international response effort was crucial in calibrating a sufficiently ambitious whole-of-government mobilization, and to securing the resources for it. His insistence on scientific rigor in domestic policymaking was indispensable to averting draconian travel restrictions that would have handicapped the international operation. And his credible, personal outreach to his counterpart heads of state around the world was crucial to spurring on the wider international system.

“I think the thing with the president was that he was on this every single day, whether it was going to [the UN General Assembly], calling an NSC meeting, wanting a briefing, making a phone call to a head of state.”

The importance of his role, however, also raises obvious questions about how the US government would engage in a pandemic event during an administration that was less respectful of science, expertise, and multilateral engagement. During a mega-event, the political pressures will be much greater, even as the costs of ignoring scientific and operational expertise will be dramatically higher. It may be useful to explore models or norms for formally insulating key pandemic response policy decisions from being skewed by political panic. The US government does this in other sectors in which political interference would be harmful, notably the Federal Reserve’s role in managing monetary policy or the traditional norms around the independence of the Justice Department.

Travel Restrictions

1. Build the evidence base. Policymakers struggling with how to prevent arrival of Ebola in the United States lacked a strong evidence base for determining which border and travel controls would prove most effective. The absence of well-evidenced best practices allowed harmful freelancing at the state level and contributed to policy paralysis at the federal level. A stronger evidence base could have provided a counterweight to the intense political pressure and fear that was otherwise defining the national discussion on travel controls. While the procedures ultimately used by the Obama administration proved effective for Ebola, they would not necessarily be applicable in a future pandemic emergency since their utility was tied to the particular characteristics of Ebola (a disease that, because it cannot be transmitted until symptoms occur, is amenable to border screening and self-monitoring). Additional research is needed to explore how varying policy options—traveler screening and monitoring, quarantines, travel bans and border closures, and so on—would interact with different disease characteristics in potential future pandemics.

2. Establish a federal solution early on. The delays in identifying and disseminating an early federal approach to the travel challenges left the issue open to freelancing by state authorities, resulting in disparate, and often overly restrictive, approaches by different states. Beyond imposing measures that would negatively affect the international response, these varying measures created uncertainty and confusion, and did little to meaningfully protect the homeland. In a future event, particularly a larger one, the federal government should make an early priority of identifying an appropriate approach to travel security that balances the needs of homeland protection with the realities of sustaining an overseas operation to contain the outbreak at source.

3. Minimize disruption, maximize political and scientific defensibility. Border restrictions amid an outbreak create major negative externalities—compromising the international response effort and disrupting travel and trade. In a true pandemic, extreme trade disruptions would compromise global supply chains on which the US health system relies. Given these downsides, the bar for imposing border restrictions should be high by default. As the breadth and disruption of any proposed restrictions expand, the criteria for triggering them should become increasingly stringent.

Policymakers determining border and travel controls must navigate three imperatives: limiting the disruption to normal economic activity and human mobility (including impact on efforts to control the outbreak overseas), ensuring political defensibility, and materially protecting the homeland from risks. The calibration of border controls and travel restrictions must therefore explicitly weigh the collateral damage that any restrictions would have on aspects of the global response, as well as the damage to wider economic security (for example, the border controls imposed between West African countries badly disrupted inter-country trade, in turn harming food security in the Ebola-affected countries). Restrictions should ideally be limited to those that would meaningfully reduce risks in reasonable proportion to the actual risks posed—for example, if active monitoring provides sufficient warning of disease onset, then more restrictive quarantines need not be applied; if screening provides an effective means of identifying potentially risky travelers, then full travel bans are unnecessary.

4. Actively manage political risks. None of these principles for appropriately implementing travel controls can work without political savvy and willingness to accept a degree of political risk. The degree of public panic in the United States during the Ebola outbreak was substantial, despite the limited actual risk of disease transmission on US soil. The perception of risk fed a sense of public panic that was wildly out of

proportion to the actual risk, creating a disconnect between the science and the politics of the issue. In a larger disease event with more direct impacts inside the United States, public panic and the accompanying political pressure will likely be even more extreme. There will be a strong temptation to impose the public health equivalent of “security theater”—a set of disruptive policies that make a show of action regardless of their actual protective merit.

Appropriately addressing public risk perception will play a central role in any decision on this front. A scientifically valid approach that maximizes protective impact but fails to assuage public concern (rational or not) will not succeed. This reality must be baked into government policy and public messaging. Maintaining space for minimally disruptive, scientifically sound travel controls will require proactive political engagement by the president, but also an acceptance of a degree of possible political damage. It will also require deft political management by a “czar” or similar role to manage clear public messaging on risks and to engage with state-level authorities and Congress to defend and build support for scientifically sound policy.

The Pentagon’s Role

1. Initiate early contingency planning. DoD’s readiness to engage on Ebola was slow to develop because planning for its role did not begin in earnest until late summer 2014, when the outbreak was already blazing out of control. Given the deeply entrenched planning culture at DoD, initiating earlier contingency planning for disease events would enable a faster start if and when DoD is enlisted into the effort. DoD should develop, in consultation with USAID and CDC, triggers for initiating such planning while an outbreak is spooling up.

2. Better identify and define relevant DoD roles. Throughout the Ebola response, DoD and civilian partners struggled to effectively identify how DoD could best support the effort. The White House and CDC, in particular, sought to have DoD catalog and propose the

capabilities it could bring to the fight—an expectation that proved unrealistic given DoD’s lack of expertise in this kind of operation. At the same time, DoD’s preferred approach was similarly unrealistic—expecting civilian agencies unfamiliar with the range of capabilities at DoD to somehow intuit which roles DoD might be able to fulfill. The result was one black box talking to another, sparking frustration on both sides but little progress. In preparation for a future larger-scale outbreak, the US government should conduct a collaborative interagency review between DoD, USAID, HHS, and the NSC to address this gap. The review would seek to outline to DoD a range of large-scale outbreak response scenarios, identify operational requirements that these scenarios could entail, and on that basis build a “capabilities matrix” of functions across DoD that could prove relevant.

3. Develop standing policy guidance on DoD red lines. Related to the generation of a DoD capabilities matrix, DoD should in parallel generate standing internal policy guidance around the roles it could potentially play. The dense internal process of generating such guidance during Ebola proved to be a significant hurdle to DoD’s real-time operational agility. Generating requisite policy guidance in advance—on matters such as risk tolerance or the application of force protection requirements in an outbreak context—would greatly streamline the military’s involvement in a future response. The initial set of guidance could be built based on lessons from the Ebola experience and the generation of a capabilities matrix; future iterations would be informed by whole-of-government outbreak response exercises, as called for elsewhere in this paper.

4. Ensure that DoD remains in a support rather than the lead role. In high-profile crises, there is sometimes a strong political temptation to place DoD in the overall lead, even when an issue falls outside its core competencies (such as its lead on governance and reconstruction in postwar Iraq). Interviewees were unanimous that this approach should be avoided in pandemic

disease response. While DoD has enormous capacity, it lacks the organizational expertise and systems to play the lead role on such a mission. Public health is a peripheral capacity for DoD, and its comparative advantages in a pandemic scenario (including logistics and laboratory services) are important complements but not the core pillars of outbreak response. DoD's higher requirements for force protection relative to those of USAID and CDC would also hamper its ability to effectively lead a disease operation. And militarizing a US outbreak response would bring significant perceived baggage to international engagement efforts, complicating the United States' ability to engage with both affected countries and international partners.

5. Delegate greater operational authority to the field.

DoD's agility in the response, and by extension the entire US government effort, was limited by the requirement that operational decisions on applying red line guidance go through policy review at the Pentagon. This requirement significantly delayed decision making on the scope of DoD's role and placed accountability for oversight of operational risk with the people further from the ground. In future outbreak responses with military elements, the Pentagon should elaborate broad guidance and parameters for DoD's mission but then rapidly devolve decision making on applying those parameters to commanders in the field.

The International System

1. Enhance multilateral response capacity. The receptivity of the Ebola-affected countries to Western military and civilian relief was a fortunate coincidence, but not one that will necessarily be repeated in a future pandemic event. Many countries would view a large foreign-flagged military deployment with suspicion, if not outright hostility, and could also be reticent about the appearance of relying on a large Western-government civilian deployment. The member state-driven approach to international leadership on Ebola should be avoided if feasible in future mega-events. Instead, putting a multilateral face on the international

response effort is likely to be crucial to its perceived legitimacy. The ability of WHO, and the UN system more widely, to effectively lead a future pandemic response will be crucial to success—but will require significant further effort if these actors are to be prepared to do so. The sweeping emergency reforms at WHO and investments in preventing major outbreaks through the Global Health Security Agenda are a helpful start. But major questions remain about how a large-scale global response—one that goes beyond WHO's in-house capacity to lead—would be handled. This question is highly pertinent to future pandemic scenarios because such risks could well emerge in countries where large-scale Western-government civilian/military deployments are not welcome. Recommendations below point toward how to begin addressing this question.

2. Develop scale-appropriate leadership structures.

Like the US government, the UN system struggled to switch gears when it needed to elevate and accelerate its response. The UN should clearly articulate a tiered approach to management of major outbreak risks, with the level and breadth of its mobilization synced to the complexity and scale of the event. The first line of defense should be WHO's Health Emergencies Programme, which is demonstrating burgeoning capacity to manage small to midrange disease threats. The program is well placed to manage events like the recent Ebola outbreaks in Congo and to support larger events in countries with strong ministries of health. For larger events that require a significant mobilization of humanitarian actors to complement WHO, the UN's humanitarian cluster system (still in close alignment with WHO) could be adapted to address the planning and coordination requirements of such a response. Both of these levels of activation could use existing UN systems but would require a triggering process.

The missing piece is what to do in the face of a much larger event—one that affects numerous countries, goes well beyond the leadership bandwidth of WHO and humanitarian agencies, and entails complex geopolitics. Such an event will require not just mobilizing

WHO and the UN's humanitarian tools, but also aligning the UN's political, security, and diplomatic elements (all of which fall outside the scope and authority of the humanitarian cluster coordination process).

Given UNMEER's shortcomings, it is clear that a peace-keeping mission model is not the appropriate basis for this kind of operation. But some elements of UNMEER—such as the designation of a special representative of the secretary-general with authority to integrate a wide range of relevant UN functions—would prove useful in future events. There is likely no single right way to approach this, but the UN and its key member states should explore potential configurations that retain effective elements of UNMEER while dispensing with the heavy-footprint, command-and-control approach that proved ineffective. A better approach would be to apply lessons from the United States' czar structure. A senior leader (such as a UN special representative) with a light bureaucratic footprint but broad authority to facilitate and coordinate across disparate UN organs could prove a better approach.

3. Develop global interoperability standards. The Ebola response was plagued by challenges with integrating different member-state capacities into an operationally functional whole. The rapid need for large numbers of health professionals—epidemiologists, doctors, nurses, facility managers, logisticians—to staff up the response forced the creation of rapid pipelines of staff. But the standards and systems to organize and support these deployments proved largely nonexistent. Many of the personnel supporting the response deployed without a wider management and sustainment structure and thus placed a large management burden on other response actors. Some countries deployed numerous doctors but little accompanying administrative support, forcing WHO to expend extensive bandwidth managing and administering the teams. Countries providing support also applied differing standards in Ebola treatment unit construction, personal protective equipment specifications, and other contributions.

The lack of standardized systems for outbreak deployments and donations is a significant obstacle to mounting a coherent large-scale response, especially one that goes beyond WHO and draws on national-level capacities from a range of different countries. Outbreak response systems lack the type of standardization and certification processes that exist in other sectors. NATO, for example, employs an interoperability policy that defines common standards for hardware, doctrine and procedures, and terminology across diverse member state militaries. These standards are tested and refined through regular training and exercises, enabling a diverse set of national militaries to interoperate effectively. The relief community uses similar tools. The urban search and rescue (USAR) sector once faced the kind of operational cooperation problems experienced during Ebola, leading the UN and key member states to establish a network called the International Search and Rescue Advisory Group (INSARAG). INSARAG sets common global standards for USAR deployments, enabling certification of different international teams' capacities and ensuring that those teams can interoperate smoothly. A critical element of USAR success is the expectation that any deployed teams will be self-sustaining, meaning that they can plug in and deliver without placing an administrative burden on other organizations. The medical trauma field applies a similar approach to the deployment of emergency medical teams (EMTs) to address trauma treatment needs after major natural hazards. Some hybrid of the NATO interoperability policy and the USAR and EMT certification standards should be explored for member-state support to global outbreak response.

A comparable approach could be developed for outbreak control deployments. It would go well beyond the small mechanism for deploying individual technical experts—the Global Outbreak Alert and Response Network, or GOARN—that WHO already manages. GOARN added value in the Ebola response but proved inadequate to the growing scale of the challenge and

(as currently constituted) would likewise be well short of the scope that would be required in a major pandemic event. Borrowing from the international precedents, WHO and member states should begin a more ambitious project of developing interoperability standards and deployment mechanisms for large-scale outbreak deployments that involve national-level civilian and military capacities. Informed by the NATO

and INSARAG precedents, WHO could work with key member states to elaborate a set of guidelines to define common policies, operational standards, and capacity baselines for deployment of outbreak response personnel. Candidates for hosting this function could include GOARN or the WHO-led EMT system, though either would need to be significantly reconfigured to take it on.

APPENDIX. I

INTERVIEW QUESTIONS

The question set below was used to guide the interviews that informed this report. Interviews were conversational in nature. They used this question set as a starting point but were not strictly limited by it.

Indicative Question Set

Thank you for your willingness to be interviewed for this project! The research will focus on key policy and operational decisions that underpinned the US Ebola response. It will explore decision-making around four areas in particular:

- Mobilizing the USG's response
- Managing travel risks
- Military roles and risk tolerance
- International leadership and burden-sharing

This interview is on a non-attribution basis; no content will be attributed without the express consent of the interviewee.

The below questions are indicative of the general focus of the research and individual interviews may vary in focus.

General

- When do you recall Ebola first coming onto your radar screen? How?
- What kind of tools would have been useful as the USG planned the outbreak response? What do you wish had been available?
- What lessons of the USG response would you apply to a full-blown global pandemic? What would be different in such a case?

Mobilizing the US government response

- In the absence of established protocols for managing this type of event, how did the government designate agency roles and coordinate effectively across the many federal players involved in the domestic and international efforts?
- What were the key decision points in determining intra-USG division of responsibilities? In retrospect do you feel the USG deployed the right configuration of interagency capabilities?
- What precedents, sources of information, or evidence did you look to in determining the USG response strategy? How did political and media pressure shape the outcome?
- What were the major obstacles?
- How did budget dynamics—particularly the fact that the US Department of Defense (DoD) had available funding while the US Agency for International Development (USAID) and the Center for Disease Control and Prevention (CDC) did not—shape the initial USG response?
- Did the interagency policy process function effectively? How were normal NSC processes adapted for this kind of crisis? Was the designation of an “Ebola Czar” an effective model to adopt for future crises? What worked in this configuration, and what needed improvement?
- The USG, like the international community in general, has been criticized for mobilizing only after the disease was raging out of control. What were the key turning points in ultimately elevating USG engagement? At what point should the USG have elevated its engagement, and how could that have been triggered?
- How did the hybrid international and domestic facets of this crisis affect the policymaking process?

Managing travel risks

- How did the administration manage the intense public and political pressure around travel restrictions, and how did this pressure shape the internal policy dialog?
- What interagency disagreements surfaced during these debates?
- What sources of information, precedents, or tools were important to the ultimate policy outcome (in-region departure and border checks, US domestic channeling of returning travelers to designated airports, and US domestic active monitoring of travelers).
- How did the USG engage with affected countries in West Africa and intermediate destinations to ensure adequate border monitoring in critical non-US locations?
- How did it seek to mitigate potential major disruptions to commercial airline travel?

Military roles and risk tolerance

- How did the administration formulate the military's roles and how did force protection concerns within DoD shape and constrain those roles?
- Who were the main voices shaping the internal debate within DoD? How did different views within DoD shape the parameters of the military's engagement?
- There was a time lag of several months between the President's announcement of Operation United Assistance and the finalization of the parameters of the military roles. What contributed to this time lag within DoD?

- The military engaged under a disaster response arrangement, wherein the military's role is defined as "in support" of USAID. Was this the right setup in retrospect? Would it remain viable in a significantly larger global event?
- In retrospect, could or should the military have done more?

International leadership and burden-sharing

- Did the US engagement help to mobilize concerted global action around Ebola? What were key turning points in amplifying international awareness and engagement?
- Was the de facto division of labor between major donor states effective?
- UNMEER was set up as an operational platform and coordinating body, applying a peacekeeping-based "command and control" approach that was foreign to much of the UN system. It is widely seen in retrospect as a flawed model, as its operational value-add proved quite limited. What is the UN's best value add in this sort of crisis, and how should it structure its involvement?
- Prioritizing and integrating modest-scale support (in-kind aid, medical teams, etc) from a large number of nations was a substantial burden on UNMEER and WHO. What models might work better, and would they be scalable to a global level?

