

Building a More Resilient Health System after Ebola in Liberia

PROJECT DATA

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SECTOR: Health	AUTHOR: Tristan Dreisbach
COUNTRY: Liberia	EXPERT: Miatta Zenabu Gbanya

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In Brief

- **Development Challenge:** After the 2014 Ebola outbreak, officials in Liberia’s health ministry wanted to build a resilient health system that could help prevent a future crisis and provide necessary care in a public health emergency. The ministry also wished to improve health outcomes and build the confidence of Liberian citizens in the public health system.
- **Project Solution:** The health ministry worked with external partners to create a plan for investing in the public health system. The plan, which set priorities for the period from 2015 to 2021, included investment in training and development of health personnel, re-engineering health infrastructure, and enhancing the disease surveillance and response system.
- **Project Results:** As of 2019, the investment plan contributed to outcomes including the creation of a new cadre of frontline community health personnel, the founding of a new public health institute to advance disease surveillance and response, and infrastructure advancements including improved laboratory facilities, triages, and isolation units.

Executive Summary

In 2014, an Ebola outbreak hit Liberia, a country with a health system that had been severely weakened by two civil wars, economic stagnation, and the loss of many skilled and educated health workers who left the country to escape violence. By the end of the outbreak in 2015, Liberia experienced a total of 10,685 Ebola cases, and 4,809 victims had died. Confidence in public health facilities dropped and demand for public sector health services declined. During the outbreak, many facilities had temporarily closed due to fear of contamination and spread

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of the disease. Collaboration between the Liberian government and its international partners eventually led to the end of the epidemic, but the health ministry's leaders wanted to ensure that the health system would be better prepared for the next public health emergency.

There were several challenges to building up the Liberian health system. The country lacked skilled health workers, particularly specialist doctors and nurses, and those shortages were especially acute in rural areas. Health workers had clashed with the health ministry over complaints including low pay and poor working conditions, and had gone on strike shortly before Ebola arrived in the country. Those tensions were detrimental to the motivation of health workers. Liberia was very dependent on donor support for the functioning of its health system, but that support was often fragmented and it was difficult for the government to track exactly what was being funded and implemented throughout the country. There was also a basic problem of weak health infrastructure, including lack of proper equipment, few triage facilities, and a poorly functioning supply chain.

As Liberia began to bring the Ebola crisis under control in late 2014, health ministry leaders saw an opportunity to transition from the short-term emergency response to a longer-term plan for strengthening the health system. Through consultations with internal and external stakeholders, the ministry created an investment plan for building a resilient health system, to run until 2021. The three highest-priority areas were: building a productive and motivated health workforce that fit the needs of the country, reengineering the health infrastructure, and strengthening the epidemic preparedness, surveillance, and response system. Fully realizing the investments in the plan would cost an estimated total of \$1.7 billion, but the ministry forecasted a \$735 million gap based on existing donor commitments.

This study highlights several aspects of the investment plan. First, the plan provided for the creation of a new cadre of paid community health assistants, a model piloted in cooperation with a local NGO. Second, it included measures to improve the health workforce, such as an emergency hiring and management plan to transform lower-paid contractors into civil servants and academic partnerships to strengthen postgraduate medical education. Third, it provided for the creation of a public health institute to strengthen disease surveillance and response. Fourth, it guided investment in new health infrastructure.

As of 2019, several positive results were apparent. Community health assistants across the country helped connect rural communities to the public health system and the National Public Health Institute of Liberia improved the health system's emergency response capability. More health facilities had isolation units and triages than was the case in 2014, when the Ebola outbreak began. The country's laboratory facilities greatly improved, allowing samples to be tested for at least seven priority infectious diseases within 24 hours. The density of health facilities increased from 1.6 per 10,000 population in 2015 to 1.9 per 10,000 in 2016. Despite progress made, however, the number of trained health workers remained far below the needs of the country and out of pocket health expenditures remained high, evidence that the public health system was still not meeting demands.

Lessons learned from this case study include the importance of incorporating donors and external partners into long-term planning and policymaking after a crisis and the need for donors and implementing partners to invest in permanent infrastructure during a health crisis, not only temporary structures.

Introduction

On July 23, 2014 a man walked into the health ministry's headquarters in Monrovia, the capital of Liberia, and started a fire in a second-floor conference room. Smoke billowed through the hallways and workers fled the building. "We potentially could all have lost our lives," said Miatta Zenabu Gbanya, who managed a pool of donor funds at the health ministry and played a leading role in the Ebola response. The fire service was nowhere to be found, but ministry general services and maintenance workers eventually contained the fire and limited the damage. It was a shock, but Gbanya and her colleagues had no time to collect themselves.¹

The arsonist had lost a family member to Ebola, and he was furious at the government's failure to protect his family (Williams, 2014). The Ebola virus epidemic that had begun in March of that year was rapidly growing, from 39 reported cases in June to 278 in July, and the ministry struggled to combat the outbreak (Centers for Disease Control and Prevention, 2019).

¹ Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

At the time of the fire, the country was in crisis. In August, Liberian security forces clashed with protestors in West Point, a neighborhood in Liberia's capital city, who were upset with the quarantine under which they lived after the looting of an Ebola treatment unit there. When the military opened fire on protesters, a 15-year-old boy was killed and two others injured (Schreiber, 2017). An assistant to Bernice Dahn, at the time the country's chief medical officer, succumbed to the disease in September and Dahn placed herself under 21-day quarantine (BBC News, 2014). Liberia saw 1,049 cases of Ebola in August 2014, 2,080 in September, and a peak of 3,077 in October (Centers for Disease Control and Prevention, 2019).

The outbreak came during a period of post-war rebuilding and recovery. Two civil wars ravaged Liberia from 1989 to 1997 and 1999 to 2003, killing roughly 250,000 people. The government collapsed, per capita gross domestic product fell by 87 percent between 1980 and 2005, and many of the most skilled and educated citizens fled the fighting. The health system was left in tatters, the country had some of the worst health indicators in the world, and more than 90 percent of health services were delivered by external agencies and NGOs. Following elections in 2005, a new health ministry began to rebuild the system and some expatriates returned to assist their homeland, but the country was still one of the poorest in the world, with very limited human and financial resources. Progress had been made by 2014, but Ebola's rapid and deadly spread overwhelmed the system (Wolmarans & Akwataghibe, 2017).

By the end of the outbreak in 2015, Liberia experienced a total of 10,675 Ebola cases. Of those, 4,809 people died (Centers for Disease Control and Prevention, 2019). The disease wreaked havoc on every aspect of Liberian life. International trade plummeted and the economy ground to a halt. Schools closed their doors.

During the worst days of the outbreak, many health facilities were temporarily shut down due to fear of the disease's spread and the delivery of regular health care was frozen. Health workers often shunned Ebola patients, who were left unattended. Ebola ultimately claimed the lives of 184 health workers. This experience led to diminished confidence in public health facilities and reduced demand for public sector health services (Liberia Ministry of Health, 2015). Many Liberians turned to traditional or informal health care providers for care, or paid for treatment in the private sector. Even when they did access the public sector health system,

they often found shortages of medicines and personnel, dissuading many from returning to those facilities when they next sought care (Health Systems Global, 2016).

Collaboration between the Liberian government and its international partners eventually led to the end of the epidemic. Key interventions included the establishment of Ebola treatment centers, community engagement campaigns, triage processes, and contact tracing. The World Health Organization declared the country Ebola-free in May 2015. As the crisis drew to an end, Gbanya, Dahn (who became health minister in 2015), and the health ministry's other leaders wanted to ensure that such a public health disaster would never happen again.

The Development Challenge: Creating a Resilient Health System

Officials in Liberia's health ministry had one overriding goal: to create a resilient health system. That meant a system that was not overwhelmed by shocks and continued to provide services at all times. A stronger health system would also improve health outcomes.

The health ministry aimed to turn the response to the crisis into an opportunity to strengthen the system. "During Ebola we realized we had not focused sufficiently on emergency preparedness or response," Dahn said.² This was especially important because of Liberia's location in West Africa, a region disproportionately affected by tuberculosis, malaria, HIV, and other infectious diseases.

The first priority was a health system that would not collapse when faced with a crisis. It could provide health services to all citizens, detect outbreaks before they overwhelmed the system, and quickly contain the spread of a disease. The ministry also wanted to continue progress that had been made prior to the outbreak. "We were making headway rebuilding the health sector when Ebola came in," Dahn said.³ The country had improved health outcomes from the end of the civil war to the time of the Ebola outbreak. Between 2004 and 2014, the health ministry introduced a basic package of health services in more than 80% of health facilities, the number

2 Author Interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018

3 Author Interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018

of facilities providing comprehensive and emergency obstetric and neonatal care quadrupled, and infant mortality dropped significantly. Liberia had achieved a Millennium Development Goal target by reducing its child mortality rate by more than two-thirds compared to a 1990 baseline. The proportion of births attended by a skilled health professional rose from 40 percent in 2007 to 61.6 percent in 2013. The maternal mortality rate remained high, however, at roughly 1,000 maternal deaths per 100,000 live births as of 2013 (Josephson, Rajkotia, Banzon, & Andoh Adjei, 2014). The health ministry encouraged antenatal visits, but the majority of women did not utilize these services. In 2011, only 42 percent of women with a live birth had received at least four antenatal care visits during their pregnancy and only 37 percent of mothers had postnatal consultations (World Health Organization, n.d.).

After the outbreak, indicators showed backsliding in health system usage. The number of outpatient visits in the public sector fell by 61 percent in August through December 2014 compared to the same period the previous year. Usage of antenatal care services fell by 43 percent and institutional deliveries dropped 38 percent. The measles vaccination rate fell by 45 percent and the DTP3 rate by 53 percent (Liberia Ministry of Health, 2015). Investment could counteract this by raising confidence in the government's health facilities and encouraging more people to seek care in the public health system.

Delivery Challenges

Strengthening the health system required the health ministry to overcome several obstacles. The country's health infrastructure was poor, there was a lack of skilled manpower, tensions between government and the health workers affected the workforce's commitment and motivation, and the relationship between the health ministry and numerous donors was complicated and difficult to coordinate.

Basic Health Infrastructure

Liberia's lack of financial resources and history of conflict contributed to an underdeveloped health infrastructure. Around 29 percent of Liberians, and 60 percent of rural Liberians, lived more than five kilometers from the nearest health facility (Wolmarans & Akwataghibe, 2017). Health facilities were poorly designed, often lacked

necessary medical equipment and supplies, and were not equipped to provide the occupational and patient safety needed to handle disease outbreaks. Only 45 percent of 701 health care facilities surveyed by the WHO in 2015 had an improved water source (Abrampah, et al., 2017). Infection prevention and control practices were also very poor at health facilities, contributing to infections and deaths among health workers in the early period of the Ebola outbreak.⁴

Much of the support from international partners during the Ebola response went to temporary infrastructure. Ebola treatment units and community care centers constructed throughout the country were crucial to getting the epidemic under control, but they were decommissioned after the response came to an end. "We usually do not have budget lines for infrastructure," Gbanya said. "Our facilities, or most of them, were not built to deal with these things that are happening now." One notable shortcoming was a dearth of triage facilities, which allowed potential cases of infectious disease to be detected and isolated before encountering other patients in a health facility. "Our health facilities were not ready to receive patients in a way that they were isolated," Gbanya said. "We had a lot of people get infected."⁵

The health ministry also had very limited capacity to test patient specimens and confirm the presence of Ebola or other infectious diseases. Liberia initially sent suspected Ebola specimens to Guinea for testing. The Ebola response included the creation of a national emergency operations center and the Incident Management System to coordinate the response, but the long-term resiliency of the health system required permanent surveillance and response structures that could detect a future disease outbreak in the early stages.

A related issue was poor data collection and management. There were different parallel systems for health information that were not connected or interoperable. The vital statistics system was not well developed, meaning that many births and deaths were not registered. "As a country, investment in data collection and management has been to a large extent not very encouraging," said A. Vaifee Tulay, the deputy minister for planning and research. "We've always had

4 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

5 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

issues with data quality. ... They are not well-managed or well-utilized.”⁶

A serious challenge related to infrastructure was the supply chain, which was dysfunctional and fragmented. Poor road infrastructure, unsuitable storage, limited warehousing capacity, inventory and warehouse management practices, and problems with information sharing led to frequent stockouts of medicines and health supplies. Donors lacked confidence in the government supply chain, choosing to use their own supply chains in programs they managed (Liberia Ministry of Health, 2015).

Drugs were stored in seven different warehouses, making them difficult to track and control. When they were dispatched to health facilities around the country, medicine could disappear at every step of the chain. “The drug disappears from the warehouse, on the road to the clinic, in the county depot, in the clinic,” Dahn said. Those same drugs might be found later for sale on the street or in private pharmacies.⁷ The supply chain system had problems with management, procurement, storage, distribution, and quality control and assurance, leading to periodic stockout of medicines. “The way our supply chain system was set up, it was not done in a way that in an emergency you would be able to cope with the influx of additional drugs and medical supplies,” Gbanya said. The already-challenged system was overstretched during the Ebola epidemic and it was not an area prioritized during the early stages of the Ebola response or in the immediate post-Ebola environment.⁸

Shortages of drugs and equipment could dissuade people from returning to the public sector health system. “You are building the trust of the people,” said Francis Kateh, another key figure in the Ebola response who in 2015 became the health ministry’s deputy minister for health services and chief medical officer, in charge of the ministry’s department of health services and the government’s senior advisor on health matters. “If the people get to the facility and there are no drugs and there is not basic equipment, this sends negative feedback. So they may not be inclined to go to the facility. As we build

the public trust, it is incumbent on us to make sure we put in the necessary supplies.”⁹

Skilled Manpower

A major obstacle to building a resilient health system was the limited human resources the health ministry had available. There were insufficient numbers of health workers, and they were not efficiently distributed throughout the country. The number of health workers rose from 6.3 per 10,000 people in 2010 to 8.6 per 10,000 in 2014, a 37 percent increase, but that was not enough to meet the country’s needs. A WHO report suggested that at least 20 per 10,000 was necessary to achieve a basic health system goal: ensure that a minimum threshold of 80 percent of births were attended by a skilled health worker (World Health Organization, 2008). As of 2015, the health ministry estimated that Liberia needed 1,754 additional doctors and 5,889 nurses and midwives (Wolmarans & Akwataghibe, 2017).

“We have an artificial shortage [of workers] in many areas,” Kateh said. The Monrovia area was well-populated with health workers, but “in some of our rural areas there were none.”¹⁰ In the counties outside of the capital, small numbers of health workers were overstretched. In addition, the health workforce did not fit the needs of the country because of shortages in most cadres of health workers, including physicians, specialist physicians, specialist nurses, and laboratory technicians. The only cadre with adequate numbers was non-specialist nurses. Training for health workers in the system was uncoordinated and not linked to any staff development plan based on the system’s needs (Liberia Ministry of Health, 2015).

Lack of Commitment

Motivation was a serious problem affecting the performance of workers in the health system. “When we started the Ebola response, we were dealing with a demotivated workforce,” Gbanya said.¹¹ In February 2014, just before the Ebola outbreak that March, the country’s health workers went on strike. It was the second strike in less than a year. The striking workers, the majority of

6 Author interview with A. Vaifee Tulay, Liberia Ministry of Health, December 10, 2018.

7 Author interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

8 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

9 Author interview with Francis Kateh, Liberia Ministry of Health, December 12, 2018.

10 Author interview with Francis Kateh, Liberia Ministry of Health, December 12, 2018.

11 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

whom were nurses, requested higher salaries, overtime pay and other benefits, timely payment of wages, and full civil servant status for health workers who had spent at least a year working as contractors. Around 40 percent of the health workforce was not on the ministry of health's regular civil servant payroll (Liberia Ministry of Health, 2015), but rather worked as contractors paid by the government or donors. Those contractors earned less than civil servants and lacked benefits such as pensions. The ministry stated that it did not have the funds available to make them all civil servants (Africa News, 2017). (The ministry's funding came from a combination of domestic revenue and external funding.) Health workers also protested poor working conditions, including the lack of protective gear that could reduce the risk they contracted infectious diseases including Ebola (FrontPageAfrica, 2014).

The situation created tension between the health workers, represented by a health workers' association, and the health ministry leadership. The health minister at the time of labor actions in 2013 and 2014 told workers that the health budget was not large enough to meet their demands (Lazuta, 2013). In response to the February 2014 strike, the minister called the workers' actions "illegal" and threatened not to process that month's payroll until the ministry could determine which workers were still on the job (Daily Observer, 2014). Negotiations eventually resolved the strike, but relations between health ministry leadership and the health workers remained fragile due to unresolved issues.¹²

The experience of responding to the Ebola virus further shook these already unhappy workers. "All the hospital and clinic staff were uncomfortable going to work," Gbanya said. "They felt they could get infected, especially with the news of health workers' deaths. We started off with losing a lot of healthcare workers." The association again called for a work slowdown in October 2014,¹³ during the Ebola outbreak, demanding increased risk fees for those dealing with Ebola cases and more protective equipment and insurance for health workers, although the majority of health workers disregarded the call to strike and continued to care for the sick (Sifferlin, 2014). Tensions between the government and health workers calmed to a degree after September 2014 when

the World Bank stepped in to pay health workers' hazard pay and death benefits to workers' families.¹⁴

As the health workforce asked for better pay, benefits, and working conditions, health ministry leaders worried about the effect of poor motivation long after the Ebola outbreak subsided. When people felt their work was not valued, they might not put full effort into their work. "The biggest problem to get to is the attitudes towards the work," Dahn said. "There were times that people were supposed to be on duty, but would not be there."¹⁵

A lack of motivation affected the quality of health service delivery and could yield "poor interaction with patients, showing up late and leaving early," Kateh said. "Unhappy doctors may make the wrong diagnosis."¹⁶

Donor-Governmental Relations

External partners had been an essential part of getting the Ebola outbreak under control, but the presence of many different actors in the health system complicated the government's efforts to set and track progress toward national health policy goals. The health ministry struggled to coordinate with the many international donors and partners working in Liberia. "During the Ebola outbreak, we had an influx of partners unlike before," said Yah Zolia, a former deputy health minister for planning. "Before Ebola, coordination was easier because people understood what they were doing. We had a common 10-year plan. ... All of a sudden we are faced with this huge onslaught of partners. How do you coordinate them? How do you make them align?"¹⁷ It was a challenge for the government to track exactly how much financial support came from outside of Liberia to support the health sector, and what was being funded and implemented throughout the country. The health ministry needed a way to better coordinate the contributions of these many donors.

The problem of coordinating external actors was also apparent in the fragmentation of community health volunteers. Many villages were more than five kilometers from the nearest health facilities, and during the rainy season travel to a clinic could take many hours, even requiring difficult trips by canoe through overflowing rivers.

12 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

13 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

14 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

15 Author interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

16 Author interview with Francis Kateh, Liberia Ministry of Health, December 12, 2018.

17 Author interview with Yah Zolia, formerly of Liberia Ministry of Health, December 7, 2018.

Working in these remote areas were different categories of volunteers trained in family planning, immunization, malaria control, and other skills. There were more than 8,000 such volunteers as of 2013 (Johnson, et al., 2017). Instead of money, volunteers received occasional in-kind payments, for example a 25 kilogram bag of rice. Though not considered part of the formal health workforce, these volunteers were an important tool of the Ebola response. They were vital for connecting people in difficult-to-access communities with the health system and providing them information on Ebola.

These volunteers did not work directly for the health ministry, but instead were attached to various donor-supported vertical programs. This caused coordination problems from the ministry's perspective. The health ministry had no way to ensure that volunteers working on different programs throughout rural Liberia were contributing to national health policy goals. It was difficult to measure their impact on health outcomes. The ministry found that donors and implementing partners were not always prepared to support the government's county health teams working in their areas of operation, and instead set up their own management systems. (Johnson, et al., 2017) "We were not really seeing significant impact because the community health worker program was very fragmented," Dahn said. "Every partner had their own way of doing it."¹⁸

Context

Liberia is classified by the World Bank as a low-income country, with a per capita GDP in 2013 of \$454, one of the lowest in the world. The country was divided into five regions, and within those regions were 15 counties (Liberia Ministry of Health, 2015).

Since 2005, the government of Liberia had created health policies to guide the post-war rebuilding of the health system. Basic health care had officially been free since 2006, when the government abolished user fees in the public sector health system, although informal payments were a common practice and out of pocket expenditure on health was high, measuring 51 percent of total health expenditure, according to the 2012 national health accounts. Liberia's government spent around 10

percent of its annual budget on health, below the target of 15 percent set by African Union countries in 2001, although nearly all African countries failed to meet that target. (Liberia Ministry of Health, 2015)

During the Ebola response, the main health policy document in effect was the National Health and Social Welfare Policy 2011-2021, which expanded the country's existing package of health services. County health teams managed all health ministry-owned facilities, ministry-employed human resources, and ministry-provided material resources in their respective counties. External implementing partners primarily worked with the county-level teams, with different partners active in different geographical areas. The national health policy considered implementing partner NGO facilities to be part of the public sector health system.

There were 725 health facilities in Liberia in 2014, an increase from 618 in 2010. In 2014, there were 35 hospitals, 51 health centers, 639 clinics, and 137 pharmacies. Of those health facilities, 22 percent were private-for-profit, and the vast majority of those private facilities were in Montserrado (the county containing Monrovia, the capital) and neighboring Margibi County. The percentage of the population living within five kilometers of a health facility was 71 percent countrywide. There were 0.8 hospital beds per 1,000 people in 2010, far lower than the global average of 2.7 per 1,000 as of 2011, according to World Bank data. (Liberia Ministry of Health, 2015).

There were many disparities in the distribution of health facilities throughout the country and the ability of residents to easily access those facilities. The density of health facilities varied widely, from a low of 1.0 per 10,000 population in Bong County to 2.9 in Sinoe County. The percentage of people living within five kilometers of a health facility ranged from 32 percent in Gbarpolu county to 96 percent in Montserrado county (Liberia Ministry of Health, 2015). In 2007, only 34 percent of births by women in rural areas were attended by a skilled health professional, compared to 82 percent among urban women (Wright, 2015).

Liberia was very reliant on donor funding for its health system. Around half of the country's total health expenditure was financed by donors. The Government of Liberia appropriated \$63 million for health in 2014/15, more than triple its contribution in 2007/2008. Total per capita health expenditure increased to \$65 in 2011/12, climbing higher than the average for West and Central African countries. (Liberia Ministry of Health, 2015).

¹⁸ Author interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

Tracing the Implementation Process

To create a more resilient health system, health ministry officials pursued multiple strategies. These included putting together an investment plan in cooperation with donors and implementing partners, creating a new cadre of community health workers, strengthening the health workforce through measures including an emergency hiring plan and improved training and education, the inauguration of a new public health institute, and pursuing various infrastructure improvements.

Creating an Investment Plan

In late 2014, as Liberia began to bring the Ebola crisis under control with the help of its international partners, health ministry leaders saw an opportunity to transition from a short-term emergency response to a longer-term plan for strengthening the health system.

The planning process for the health system investment plan began in November 2014. The health ministry organized a national meeting at which stakeholders agreed on the need for a clear strategy to guide the recovery of the health system. The ministry then brought together technical experts from the ministry and development partners and created thematic technical working groups looking at different aspects of the health system. The technical working groups drew on a post-Ebola situational analysis to identify initiatives that required strengthening and developed them into the nine pillars of the new investment plan.¹⁹ They used that analysis to determine what was missing or underemphasized in the 2011-2021 national health plan, and prioritized those gaps into three categories: measures that must be implemented immediately (by December 2015), priorities for the medium-term period ending in 2017, and longer-term priorities to be implemented by 2021 (Liberia Ministry of Health, 2015). Inputs from county health teams, civil society, the private sector, regulators, legislators, other ministries, and partners were used to develop the plan.

The ministry and its partners identified three investment areas as the highest-priority “big ticket” areas: a “fit-for-purpose” (meaning the size and skillsets of different cadres of health workers met the country’s

needs) productive and motivated health workforce; a re-engineered health infrastructure; and an epidemic preparedness, surveillance, and response system. The six other investment areas were: management capacity for medical supplies and diagnostics; enhancement of quality service delivery systems; comprehensive information, research, and communication management; sustainable community engagement; leadership and governance capacity; and efficient health financing systems.

In March 2015, the health ministry held a technical retreat to review and refine the critical investment areas in the plan. In April 2015, a national stakeholder meeting reached consensus on the investment plan. The health ministry, president, and the president’s cabinet then endorsed the “Investment Plan for Building a Resilient Health System, Liberia: 2015 to 2021” (Liberia Ministry of Health, 2015).

The ministry and its development partners carried out an analysis and estimated that the plan would cost a total of \$1.7 billion. The investment plan included the estimated funding available for each priority in the investment plan, breaking down those estimates by donor. The plan estimated that only \$558.6 million was available from existing donor commitments, and predicted a funding gap of \$735 million.

For monitoring and evaluation, the plan included 32 core indicators tracking components of health system surveillance, human resources, the health information system, the supply chain, and service delivery. The indicators were mostly derived from those already included in the 2011-2021 national health policy (Liberia Ministry of Health, 2015).

Soon after the plan was finalized, new developments reiterated the urgency of strengthening the health system. While the initial outbreak had been contained by May 2015, there was a flareup of six new cases in June and July of that year, two of which were fatal. The cause was not clear, but the health system responded quickly and effectively, containing the outbreak with no infections among healthcare workers (World Health Organization, 2015). Liberia was better prepared than at the start of the crisis, but the new outbreak reminded ministry staff that a threat could come at any time.

Creating a New Community Health Worker Cadre

One of the main pillars of the investment plan was strengthening the health workforce. Within that area, the

¹⁹ Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

community health volunteer program was a top priority, and the health ministry began to transform the program's structure and capabilities.

Frontline community health volunteers were important because they could connect people in remote areas with the health system, direct them to health facilities for treatment, share health information with people, and detect evidence of potential disease outbreaks or public health problems at the early stages. But in Liberia, those volunteers worked within various donor-funded programs that had different goals and were not aligned with a standard national policy or training curriculum. Health ministry officials wanted to create a new cadre of health workers with a common set of skills, working to advance national health policy goals. This cadre would work in underserved areas, serving the 29 percent of Liberians who lived at least five kilometers from a health facility (Boima, 2017).

The very notion of volunteerism was in itself problematic given the importance of connecting people around the country to the health system. "When you have people working voluntarily, the issue of quality becomes a problem, the issue of accountability becomes a problem," said Derry S. Duokie, the assistant director of the community health services division at the health ministry. "Those who were volunteering were not paid, so we couldn't hold them accountable for reporting of activities."²⁰

In August 2015, the ministry partnered with Last Mile Health, an NGO that brought health services to rural Liberians, to run a pilot community health worker program with systematic supervision, supply chains, and compensation for workers. The pilot utilized an integrated community case management strategy to extend the reach of public health services by providing treatment of malaria, pneumonia, and diarrhea to populations with limited access to health facilities, and especially to children under five. The WHO and UNICEF had endorsed the strategy in 2012 (World Health Organization, 2016).

Last Mile Health ran the pilot in two counties, including Rivercess County, the poorest in the country. Implementation occurred in phases for programmatic reasons, allowing the NGO to evaluate its effects in a "control" group – the three health districts where the

program was not initially implemented, where the existing community health volunteers continued to work – versus the remaining three districts, which benefited from the intervention. The pilot showed a significant improvement in health indicators in the intervention areas, including the proportion of children receiving care and treatment rates for fever, diarrhea, and acute respiratory infections (White, et al., 2018). In July 2016, encouraged by those results, the health ministry began implementing this incentivized community health worker model around the country in areas at least five kilometers from the nearest health facility.

Health officials went to local communities to tell them about the program, officially named the National Community Health Assistant Program. "We told them this is our vision," Duokie said. "To recruit people beyond the five kilometer radius of a health facility to help provide a package of essential life-saving primary health care services and epidemic surveillance within communities and to households on an equitable basis, at the doorstep, especially to kids under five years old and pregnant women and women of childbearing age." Local leaders, such as heads of citizen groups, districts, chiefdoms, and clans, along with other community members, then chose the community members who became community health assistants.²¹

The assistants "are people within the communities that the community looks up to, and they become the voice for the ministry to use as a conduit in passing our information to them," Kateh said.²² Becoming a community health assistant did not require any specialized education beyond basic literacy and arithmetic skills.

The next step was training. The ministry trained small groups of master trainers, who were health professionals such as clinicians, nurses, and physician assistants, then sent them out to train community health assistants. The first training module focused on registration, mapping the community, and getting to know the local population. The community health assistants completed a mapping exercise after the first training module, then returned for a second module, which included areas such as family planning, health promotion messages, and surveillance and reporting of key diseases. Two other modules addressed child health and special services. They learned

20 Author interview with Derry S. Duokie, Liberia Ministry of Health, December 12, 2018.

21 Author interview with Derry S. Duokie, Liberia Ministry of Health, December 12, 2018.

22 Author interview with Francis Kateh, Liberia Ministry of Health, December 12, 2018.

how to detect signs of diarrhea, pneumonia, malaria, polio, and other diseases that could indicate a community health problem. They also were trained in administering some medications for uncomplicated malaria, diarrhea, and pneumonia for children under five. “Whenever they suspect any case [of a priority disease], they report it to the health facilities, the health facilities report it to the district surveillance officer, and the district surveillance officer follows up and does an investigation,” Duokie said.²³

The ministry enlisted community health service staff, mostly nurses or physician’s assistants working within the public sector health system as community services supervisors, to oversee the community health assistants. Under the old volunteer system, there was no defined supervision. In the community health assistant program, each supervisor oversaw ten community health assistants and was obligated to check with each assistant twice every month. These supervisors also had their normal community health administration responsibilities to attend to, however, which included accounting, program management, and trips to the capital. That limited the time available to work with the community health assistants. For this reason, administrative capacity was an area of weaknesses.²⁴

Each community health assistant received \$70 each month. This amount was not paid by the government, but by the NGO partnering with the county health team in that specific area. The mode of payment varied based on the region. When possible, volunteers were paid using mobile money services. In areas without access to mobile money or banking services, they were paid in cash.²⁵

The stated goals of the program were to provide quality health services, generate increased demand for routine health services, overcome challenges associated with accessing care, develop community engagement, and improve governance and accountability. The ministry decided to refer to the new community health worker cadre as community health *assistants* instead of community health *workers* to make a distinction between these workers and the civil servants working in the public health system. “The cabinet was very strategic about that,”

Dahn said. The ministry intended that the term *assistant* would help manage expectations about the frontline health personnel’s pay and benefits.²⁶

To implement the program, the ministry led a coalition of organizations including the International Rescue Committee, Last Mile Health, Partners in Health, Plan International, CHAI, and funding partners including USAID, UNICEF, the Global Financing Facility, the Global Fund for AIDS, Tuberculosis and Malaria, and philanthropists. (Jallah, Kateh, & Panjabi, 2018) The ministry used a steering committee and technical working group to coordinate the planning, implementation, and evaluation of the project.²⁷

Building Up the Health Workforce

There were other measures to strengthen the Liberian health workforce under the 2015 investment plan. These included an emergency hiring and management plan to place more of the contractors in the government health system on the government payroll, making them civil servants. The percentage of health workers on the national budget payroll increased from 58 percent in 2015 to 68 percent in 2016, accounting for 7,214 out of 10,672 workers employed in public sector health facilities (Kesselly, et al., 2018). In September 2018, the health ministry announced that 2,000 additional health workers would be added to the payroll and that nurses and doctors would receive a pay raise (Foyofayiah, 2018).

At the same time, the ministry tried to remove workers from the payroll who were not at their assigned places of work and had no written evidence of leave or excuse from work. In April 2018, after the Internal Audit Agency identified more than 2,400 health workers on the government payroll whom county health authorities could not account for, the ministry crosschecked and verified that 750 staff could not be located or linked to a particular place of assignment. The finding was made under the administration of President Ellen Johnson Sirleaf, and the names were deleted under her successor, President George Weah, who took office in 2018 (Sieh, 2018).

The plan also included measures to improve the education of health workers, especially the most-needed

23 Author interview with Francis Kateh, Liberia Ministry of Health, December 12, 2018.

24 Author interview with Derry S. Duokie, Liberia Ministry of Health, December 12, 2018.

25 Author interview with Derry S. Duokie, Liberia Ministry of Health, December 12, 2018.

26 Author Interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

27 Author email exchange with Derry S. Duokie, Liberia Ministry of Health, April 4, 2019.

categories, through the Health Workforce Program. “There were virtually no specialized physicians in the country and a lot of people had to go to Ghana” for treatment, said Moses Massaquoi, country director of the Clinton Health Access Initiative in Liberia.²⁸ This was due to a loss of Liberian doctors to opportunities abroad and poor medical training in the country. Medical education had suffered from a lack of faculty and access to training, with many students taking more than eight years to complete a five-year program and half of enrolled students choosing to withdraw from medical school rather than finish their education. To address this, the World Bank and the United States government funded academic partnerships to strengthen the Liberian College of Physicians and Surgeons, an institution established in 2012 to oversee postgraduate medical education and medical accreditation. Through these partnerships, three US hospitals deployed visiting faculty to teach at Liberia’s only medical school in 2017 and 2018. This allowed around 30 specialists in the highest priority areas - pediatrics, internal medicine, general surgery, and OB/GYN - to graduate. In 2018, the medical school added three additional faculties for family medicine, ophthalmology, and psychiatry (A.M. Dogliotti College of Medicine).

The health ministry also constructed additional housing units for health workers in rural areas, an effort to counter the poor housing conditions that contributed to health worker dissatisfaction. In October 2015, the health ministry and the National Housing Authority introduced a program to help 100 health workers in eight counties buy their own homes through a housing subsidy (FrontPageAfrica, 2015).

Strengthening Emergency Preparedness and Response

Another of the three priority areas under the health investment plan was strengthening epidemic preparedness, surveillance, and response. This included the expansion of the established surveillance and early warning and response system to ensure it was able to detect and respond to future health threats.

One problem standing in the way of building a resilient health system was Liberia’s poor disease surveillance

and response system, which had failed to detect and adequately respond to the Ebola epidemic. When Ebola arrived in early 2014, there had only been a small unit working on disease surveillance in the health ministry. “When there was an outbreak in a county, people left from the ministry [in Monrovia] and went to the county to help the county health team address that,” Dahn said. “The system could not address the scale of Ebola that we had.”²⁹

At the time that the investment plan was being developed, health ministry staff had been discussing the possibility of developing a public health institute in Liberia. “The idea was around, but Ebola pushed it faster than we would have done it as a country,” said Tolbert Nyenswah, who had led the Incident Management System during the Ebola response.³⁰ A public health institute would be responsible for emergency health preparedness and response, health research, and environmental and health safety, and would include a reference laboratory to prevent, detect, and respond to public health threats.

At the time of the investment plan there was only a small unit in the health ministry with an emergency response role. The WHO had developed a proposal for a Liberian national public health institute, which led to the investment plan’s endorsement of an autonomous institution that would be called the National Public Health Institute of Liberia.

In 2015, Nyenswah and colleagues went on study tours supported by the WHO and the United States Centers for Disease Control and Prevention to learn from public health institutes in other countries. They visited a mix of higher- and lower-income countries, including Thailand, South Africa, Nigeria, and the United States. A major lesson learned from those study trips was the need for trained field epidemiologists and disease intelligence officers who were trained to investigate potential outbreaks. Another takeaway was the importance of good laboratory facilities capable of testing samples and identifying infectious diseases. The Liberian team also learned about the importance of monitoring environmental health, foodborne diseases, waterborne diseases, and other public health hazards.³¹

²⁸ Author interview with Moses Massaquoi, Clinton Health Access Initiative, December 6, 2018.

²⁹ Author Interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

³⁰ Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

³¹ Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

After the study tours, Nyenswah and his colleagues held stakeholder meetings with public health leaders and health experts in Liberia. These stakeholders included representatives of the World Health Organization's Liberia country office and its Geneva headquarters, the US National Institutes of Health, the US Centers for Disease Control and Prevention, the Liberian Medical and Dental Council, and the health committees in the Liberian parliament. Nyenswah and his team shared the results of the study tours and discussed the public health institute with stakeholders to build broad support. The discussions with stakeholders also helped frame the four critical areas in which the institute would work: disease surveillance and epidemic preparedness and response, a reference laboratory, environmental and public health, and biomedical research. In February and March 2016, Nyenswah and his colleagues released operational and strategic plans for creating the public health institute. They also gathered a team of lawyers to develop a legal framework for the institute.³²

There were some questions that Nyenswah had to answer to ensure that legislators, health ministry officials, and other government leaders would back the plan. "There were two big contentious issues," Nyenswah said. "Why are you creating another institution parallel to the ministry of health? That was a big one." The other question involved how the new institute would affect existing institutions that would be transferred from the health ministry to the public health institute. This included an existing research institution, the emergency operations centers around the country, and three divisions of the health ministry's bureau of preventive services: the national reference laboratory, the division of disease prevention and control, and the division of environmental and occupational health. Working within each of these institutions were civil servants who would be concerned about their roles and job security under a new public health institute.³³

Legislators asked about these issues and Nyenswah wanted to eliminate the possibility that political resistance within the legislature slowed down or stopped the creation of the public health institute. To ensure that the law creating the National Public Health Institute of Liberia went through the legislature easily, Nyenswah sought high-level support. "We made a presentation to

the cabinet because we wanted this to be a presidential bill," he said, referring to legislation that was introduced by the president's office, rather than an individual legislator.³⁴

Nyenswah and his team argued that it was important to move these offices out of the ministry because an autonomous agency with those functions would provide rapid, flexible, and efficient decision making to support the goal of protecting the country against future public health crises. (International Association of National Public Health Institutes, 2017) "The minister of health and myself went to the cabinet twice and presented the concept, the operational plan, and strategic plan for establishing the institute," Nyenswah said. "The cabinet endorsed it and the president submitted the bill to the legislature." The bill, which established the institute as an autonomous government agency accountable to the minister of health, passed into law in December 2016 and was signed by the president the next month. In February 2017, the president appointed the National Public Health Institute of Liberia's executive team, with Nyenswah in the top position, along with a board of directors.³⁵

A key question was how to staff the new institute. Nyenswah recruited people who had worked in the Incident Management System, which coordinated the national emergency response to the Ebola outbreak and which he had led during the crisis. After the crisis, this organization was absorbed into the new public health institute. "Most of the people who worked in the incident management team, who were pillar leads, came together to establish [the public health institute], so we had this institutional memory already on how things should run," Nyenswah said. To make the transition to a new institution more appealing for staff from the health ministry, he arranged for better compensation. "We didn't make them civil servants," he said. "We said you would be corporate employees. There will be a salary difference. Your benefits now will be more than what you had as civil servants."³⁶

But he also let go some employees whose skills were not a good fit. To do this in a transparent way, the public health institute hired an independent human resources

32 Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

33 Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

34 Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

35 Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

36 Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

firm to vet all employees and create employee files and personal histories. “Now we’ve submitted to the board to retrench about 60 plus redundant persons who we don’t need,” Nyenswah said in December 2018. These employees would receive severance packages or be entitled to benefits from the civil service agency.³⁷

The institute also created a new field epidemiology program. “They are the foot soldiers in the field,” he said. “We call them the shoe leather epidemiologists.” Nyenswah’s team recruited district and county surveillance officers from people working in the emergency operations centers in each of the counties. These people were already on the ministry of health payroll, and were skilled health workers: physicians, physician’s assistants, nurses, and environmental health technicians. The public health institute teamed with Emory University and the US Centers for Disease Control to offer a three-month basic training program and nine-month intermediate training, where people learned the fundamentals of disease detection, surveillance, and response. “This capacity is [now] over all 93 districts across the country,” Nyenswah said. “They track diseases, pick up specimens, and have a sample transfer program.” The field epidemiologists submitted reports electronically, with data from across the country presented at a weekly meeting in the public health institute that brought together public health institute staff, health ministry staff, and donors and implementing NGO partners. “You will know how many measles cases there are in Liberia, whether there are any road traffic injuries, whether Ebola surfaced anywhere in the country, how many samples were taken to the lab and tested, and the negative or positive results of those samples,” he said. “That’s the work we do here on a daily basis.”³⁸

Re-Engineering Health Infrastructure

The health investment plan included measures to improve many aspects of Liberia’s health infrastructure. This resulted in various projects financed with donor support.

Permanent triage facilities were a great need for the health system. After assessing 45 health facilities across the country, UNOPS built triages at 24 of them and delivered major hospital renovations at two sites,

along with three new isolation units, power, lighting, medical and laboratory equipment, and other assets. By August 2016, the majority of these projects were completed (United Nations in Liberia, n.d.). A USAID-funded project targeted infrastructure improvements at 48 health care facilities in three counties, including triage, incinerators, wells, and latrines (John Snow, Inc., 2018). WHO and UNOPS supplied over 520 pieces of equipment, including x-ray units, infant incubators, and vaccine refrigerators, to health facilities with support from the World Bank (World Bank, 2017). USAID funded the creation of a modern infectious disease outpatient clinic at JFK Medical Center, Liberia’s largest referral hospital. (Kwanue, 2018) The investment plan also called for the Redemption Hospital in Monrovia (which was in a building not originally intended to be a hospital, but rather a market hall) to be replaced by a new facility. The World Bank funded the first phase of that project, contributing \$14 million out of a total project cost of around \$30 million (Ministry of Health - Liberia, 2016). USAID and CDC supported the construction of new laboratories that allowed for testing of more infectious diseases, so that Liberia would not have to outsource that testing to neighboring countries.

There were also projects that strengthened the medical supply chain. For example, USAID assisted the health ministry in financing a new 3,000 square meter warehouse to centralize storage of all health commodities, such as medicines and medical supplies, which could make the supply chain easier to manage. That building was dedicated in December 2017. USAID also partnered with the health ministry to launch a new electronic logistics management information system designed to allow the Liberian government and donors to check the stock of drugs and supplies at all levels of the supply chain (Management Sciences for Health, 2018).

Results

The investment plan provided a clear set of priorities for strengthening the Liberian health system. It allowed the Liberian health ministry to coordinate with donors and partners on agreed-upon priorities. But the health ministry’s 2016/17 to 2019/20 health sector resource mapping report, released in January of 2017, indicated that implementation was slow in some investment areas. The ministry found that many activities that had been

³⁷ Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

³⁸ Author interview with Tolbert Nyenswah, National Public Health Institute of Liberia, December 13, 2018.

costed during the development of the investment plan had changed and responsible parties were not always aware of what had been included in their area of responsibility. There was also a lack of coordination between funding sources and health ministry stakeholders.

The ministry's analysis in the 2017 resource mapping report projected funding gaps in the top two priority investment areas under the investment plan for the 2016/17 to 2019/2020 fiscal years. For the health workforce investment area, the ministry projected a gap in funding of more than \$101 million out of a cost of just under \$297 million. For the health infrastructure investment area, the ministry projected a gap of more than \$164 million out of a cost of roughly \$231 million. But in the third priority investment area, epidemic preparedness and response, the ministry projected a surplus of more than \$30 million over a projected cost of just under \$34 million (Liberian Ministry of Health, 2017).

While funding for the health system did not line up exactly with the priorities in the investment plan, there were notable achievements nonetheless. "Since we established the NPHIL, we have had some outbreaks, like meningitis and yellow fever," Dahn said. "The interventions were swift. They [the outbreaks] did not become overwhelming."³⁹ In the 2018 calendar year, the public health institute detected and responded to 58 outbreaks of infectious disease in 13 counties, including Lassa Fever, measles, meningococcal disease, pertussis, and monkeypox. The health system responded to these within 48 hours of notification. "With all that activity, service delivery was never interrupted," Gbanya said. "To me, that's a test of the system." The laboratory diagnostic capacity was increased to testing for 11 diseases through three decentralized public health laboratories. Previously, Liberian laboratories could only test for three diseases, measles, malaria, and HIV.⁴⁰

"We have built the public health workforce by training about 160 field epidemiologists at the central and county levels to conduct surveillance activities and respond to outbreaks," Gbanya said. "We do still have a lot of work to do but we are not where we started in 2014 when the Ebola outbreak was declared."⁴¹

The investment plan contributed to infrastructure improvements in important areas of the health system. More health facilities were operational and the density of health facilities increased from 1.6 per 10,000 people in 2015 to 1.9 in 2016 (Wolmarans & Akwataghibe, 2017). More facilities had isolation units and triages than was the case when Ebola first hit Liberia in 2014. New maternal waiting homes allowed women far from health facilities to arrive before their pregnancy due dates instead of travelling long distances over difficult terrain when birth was imminent. Laboratory facilities were greatly improved, which allowed the health system to test specimens for the presence of seven priority infectious diseases, and for those samples to be processed within 24 hours. Previously, the system only tested for three infectious diseases, requiring that samples be sent to neighboring countries, where the turnaround time could be as much as one week.

Despite these achievements, the health system was still in need of more investment. The number of trained health workers remained far below the needs of the country. As of 2016, there were 4,434 core health workers, equivalent to 11 per 10,000 people. The WHO recommended a minimum of 23 doctors, nurses, and midwives per 10,000 people (Wolmarans & Akwataghibe, 2017).

Out of pocket expenditures remained high, evidence that the public sector health system, which was legally mandated to provide free care to citizens, was not achieving its objective of providing free health services and was not meeting the demands of the population for quality health services. "The out of pocket expenditure should be at most 10 percent to 15 percent," Gbanya said. "But over the last 10 years, out of pocket expenditure has steadily increased from 35 percent to 46 percent, which signifies a lack of financial protection for the poor. Most of the out of pocket payments are incurred due to purchasing medicines from external sources as a result of stockout at public facilities." There were discussions in government about instituting some fees for health services at public sector facilities, but officials saw the matter as politically difficult.⁴²

The investment plan was intended in part to guide donor funds and interventions to the health ministry's policy priorities, but some priorities remained underfunded. "The reality is not all donors subscribe to

39 Author Interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

40 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

41 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

42 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

a common platform,” Flomo said. “Some partners only capitalize on a portion of what is in the investment plan.”⁴³

Finding the money to invest in the health system became even more difficult as domestic revenues shortages increased. Liberia’s economy stumbled in the 2018 fiscal year as the country struggled with the effects of the Ebola outbreak, a collapse of commodity prices, the withdrawal of a UN peacekeeping force, and the perception of risk associated with the transition to a new government in January 2018. The fiscal deficit widened to 5.2 percent of GDP and revenue shortfalls amounted to 20 percent of the national budget (World Bank, 2018). At the same time, donor support was decreasing. “The donor support is already going down, and not all the pledges were actually received,” Dahn said in December 2018. It was unclear how the health financing situation would look over the long term.⁴⁴

“You cannot do what it takes if you do not have the finances,” Kateh said. Liberia is one of the few countries almost meeting the African Union goal of spending 15 percent of the budget on health services, “but the total country budget is about \$500 million. So 15 percent of \$500 million is less than \$17 million. If we put this into the health system, it is not enough. More than 60 percent of that budget is salary payment. What actually goes toward operations, maintenance, and equipment is not much.”⁴⁵

“We have not mobilized all the resources needed to implement” the Investment Plan for Building a Resilient Health System, Gbanya said. But “a lot of what we are implementing, in my view, is aligned with the plan. That’s a big plus.”⁴⁶

Lessons Learned

Liberia’s experience developing a health system investment plan suggested potential lessons that could inform health leaders in other donor-dependent contexts. The country benefitted from keeping donors engaged in health policy after the Ebola outbreak subsided and investing in frontline health workers. Health ministry leaders believed

that more donor resources could have been channeled into permanent infrastructure instead of temporary infrastructure that was not useful after the crisis subsided.

Keep donors engaged after an emergency

Liberia’s investment plan kept donors committed to the building the country’s health system for longer than may have been the case without such a plan. Rather than accepting a short-term temporary rebuilding plan or pushing donors aside in the interest of national sovereignty, Liberia’s health ministry engaged external partners in the development of a longer-term plan that aligned with the country’s existing national health policies. This created an incentive for donors to stay engaged and to work on permanent infrastructure improvements, instead of withdrawing from the country once the health system had contained the immediate epidemic crisis. “Many times after emergencies, you see governments, once they take over, striving for national sovereignty, so they tend to drive away partners who could help them,” Dahn said. “We decided to keep the partners around to help us until we are strong enough.”⁴⁷

The health ministry achieved this cooperation by developing a longer-term investment plan and incorporating external partners into the process of developing the investment plan through stakeholder meetings. Discussions with those partners ensured that everyone had the same goals in mind. Partners could look to the investment plan to align their contributions and activities with agreed-upon goals, reducing the problem of fragmented, uncoordinated health sector assistance.

Although Liberia did not receive enough money to implement everything in that plan, donors supported many priorities and helped strengthen the health system and make it more resilient to future threats. The participatory approach between the health ministry and external health actors, including donors and technical partners, has helped build capacity in the ministry and throughout the health system.

Invest in frontline health workers

Liberia’s health ministry prioritized the development of an effective cadre of frontline health workers, a relatively

43 Author interview with Matthew Flomo, Liberia Ministry of Health, December 10, 2018.

44 Author Interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

45 Author interview with Francis Kateh, Liberia Ministry of Health, December 12, 2018.

46 Author interview with Miatta Zenabu Gbanya, Liberia Ministry of Health, December 12, 2018.

47 Author Interview with Bernice Dahn, A. M. Dogliotti College of Medicine, December 11, 2018.

cost-effective way to increase epidemic preparedness, improve health outcomes and encourage usage of the public sector health system. These workers made their rounds in rural areas, looking for signs of disease outbreaks, bringing basic treatment and health information to families that would not otherwise engage with the health system, and encouraging those in need of care to access government health facilities. While these workers were not a replacement for skilled doctors and nurses, they could be quickly trained and dispatched into the field. Their pay was also lower than more skilled health professionals, helping to contain costs. Liberia's investment in the Community Health Assistant program was an important part of building a more resilient health system.

Liberia's experience suggests that frontline health workers may be more effective with systematic oversight and standardization of training and pay. The Community Health Assistant program was an effort to learn from the shortcomings of the previous volunteer-based model, which was fragmented and largely defined by the donor or implementing partner working with different groups of volunteers. Although these volunteers were helpful in the Ebola response, the health ministry struggled to track what was happening across the country, especially because the external partners overseeing the different groups of volunteers did not always work closely with the government's county health teams. The Community Health Assistant program created a new cadre of health workers with clear supervision from country health teams, a unified training curriculum, and standardized wages. The health ministry could more clearly track and understand how these workers were contributing to national health policy goals, and the outcomes on the ground suggested that they were more effective than the fragmented volunteer model.

Flexibility and funding for the long-term

One problem in achieving long-term resiliency in the health system was donors' investment in temporary infrastructure during the Ebola crisis, instead of building permanent infrastructure that would benefit Liberia after the epidemic subsided. Donor restrictions limited most NGOs to temporary infrastructure and other assistance that could be delivered quickly. Similarly, while health workers received training in infection prevention to help with immediate needs during the Ebola crisis, there was little investment in nursing and medical education to improve the health workforce over the long term (Ling, et al., 2017). This was frustrating for leaders in the health ministry. "A country that does not have good infrastructure, which led to some of the problems we had during Ebola, I think some of the investment would have been looking at permanent structures, instead of just temporary structures," Kateh said. "There was so much money that went into temporary things that now we cannot use, and this funding is already gone."⁴⁸ An alternative approach would have been for donors to include some more permanent infrastructure and health worker training support along with temporary assistance.

⁴⁸ Author interview with Francis Kateh, Liberia Ministry of Health, December 12, 2018.

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