



# LAST MILE HEALTH



## CONTINENT

Africa



## COUNTRY

Liberia



## HEALTH FOCUS

Primary health care, Maternal and child health



## AREAS OF INTEREST

Community health workers, Digital technology,  
Last mile distribution



## HEALTH SYSTEM FOCUS

Health workforce, Information systems



# LAST MILE HEALTH, LIBERIA

Last Mile Health seeks to strengthen the fragile Liberian health system through modelling a community health worker platform at grass roots level and providing technical assistance to the National Ministry of Health.

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## ABBREVIATIONS

<b>BPHS</b>	Basic Package of Health Services
<b>CEO</b>	Chief Executive Officer
<b>CHW</b>	Community Health Worker
<b>EPHS</b>	Essential Package of Health Services
<b>EVD</b>	Ebola virus disease
<b>LMH</b>	Last Mile Health
<b>MOH</b>	Ministry of Health
<b>NGO</b>	Nongovernmental organization
<b>NCHWP</b>	National Community Health Workforce Program
<b>TB</b>	Tuberculosis
<b>UNICEF</b>	United Nations Children's Emergency Fund
<b>US\$</b>	United States dollar

# CASE INTRODUCTION

Liberia fell into civil war in 1989, which lasted until 1997 and was followed by a second civil war from 1999 to 2003. The civil wars resulted in over 200 000 casualties, disruption of public services and the displacement of an estimated 800 000 people (Ministry of Health & Social Welfare, Republic of Liberia, 2011a). Not only was infrastructure damaged and lost, but safety concerns caused the country's intellectual capital to flee (Challoner and Forget, 2011). The war also left the health system in a fragile state. In terms of human resources for health, as of July 2014 there were an estimated 45 physicians practicing in the public sector, a ratio of 0.01 physicians per 1 000 of the population, well below the WHO recommended threshold of 0.55 per 1 000 (Ministry of Health, Republic of Liberia, 2015a). Outside the capital Monrovia, most of the population has little or no access to health care services (Kruk et al., 2009). Of existing health facilities, 45% are without power and 13% do not have access to safe water (Ministry of Health, Republic of Liberia, 2015a).

Last Mile Health (LMH) is a non-profit organization with a vision to strengthen the Liberian health system at grass roots and policy levels to increase access to care for people living in remote, hard to reach areas. It achieves this through a well-managed community health care worker (CHW) model. LMH recruits CHWs using community consultation, screening, practical assessment and a probation period to identify candidates. CHWs undergo training in four modules, including: 1) community health and surveillance; 2) child health; 3) maternal and neonatal health; and 4) adult health. The training is given intensively for the first 12 months and then supplemented with annual refresher trainings. Modules in the classroom are supplemented by active fieldwork and ongoing clinical and managerial supervision. CHWs are equipped with diagnostic, curative and point-of-care tools and medication. CHWs refer patients to their affiliated health facilities as needed according to established guidelines and provide point-of-care services when possible. Remuneration is performance-based and linked to measures such as accuracy and efficiency. In total, LMH covers a land area of 10 165 km<sup>2</sup> across Rivercess County,

Konobo District, and Gboe-Ploe District. It has deployed 283 CHWs to cover a population of 33 664.

In addition to its programmatic work, LMH supports the National Ministry of Health's Community Health Services Division by providing technical assistance to help develop policy to scale the CHW model nationwide. This is part of a broader government initiative called the National Community Health Workforce Program (NCHWP). LMH works with the individual counties in which it operates to prepare for an eventual transition to a national CHW programme, facilitating scaling of innovations developed locally but also helping ensure uniform compliance nationally. Over the next five years, the Liberian MOH, working with assistance from LMH as its lead technical partner, will train and deploy roughly 4100 professionalized CHWs and 230 supervisors to provide care for approximately 1.2 million individuals living in remote areas.

The LMH case study illustrates how nongovernmental organizations can play a unique role in strengthening health systems by absorbing the experimentation risk for new innovative service delivery models, providing the financial backing and creating data systems to assess impact. It shows how country governments in turn can promote the adoption and scale of innovative models with proven effectiveness and cost-efficiency compared to existing models. CHW programmes have significant potential to improve health care delivery to people living in rural and hard to reach areas if the programme incorporates best practices at each stage, including recruitment and selection; training; equipment and supplies; and performance management.

*I think social change gets created in two ways. One is to solve problems that have already been defined, and the other is to define the problem in the first place.... Embracing the consciousness to actually understand the problem in the first place and communicate around it: that remote villages are a distinct issue for health care, period.* (Dr Raj Panjabi, Co-founder and CEO, LMH)

# 1. INNOVATION AT A GLANCE

## Organization Details

Organization name	Last Mile Health
Founding year	2007
Founders' names	Raj Panjabi, Alphonso Mouwon, Weafus Quito, Marcus Kudde, Peter Luckow, Amisha Raja
Current head of organization	Raj Panjabi
Organizational structure	Nongovernmental organization
Size	242 staff total, 218 in Liberia and 24 in the US

## Innovation Value

Value proposition	Last Mile Health seeks to strengthen the fragile Liberian health system through modelling a community-health worker platform at grass roots level and providing technical assistance to the National Ministry of Health
Beneficiaries	<ul style="list-style-type: none"> <li>• People living in remote rural communities</li> <li>• Liberian National and County Ministry of Health (MoH)</li> </ul>
Key components	<ul style="list-style-type: none"> <li>• Remote area service delivery: a professionalized community health worker platform</li> <li>• Technical assistance: institutionalizing CHWs in the Liberian health system</li> <li>• Evidence generation: implementation and operational research</li> </ul>

## Operational Details

Main income streams	Donor grants, Government subsidies
Annual expenditure	US\$ 7 846 762 (1 July 2014 to 30 June 2015)
Cost considerations	US\$ 43 per patient served per year

## Scale and Transferability

Scope of operations	Southeastern Liberia: Grand Gedeh County (Konobo District and Gboe-Ploe) and Rivercess County
Local engagement	Last Mile Health serves as the lead Community Health Technical Advisor to the Liberian Ministry of Health, working on supporting the government to scale a national CHW programme.
Scalability	<p>The contextual considerations for adopting the LMH model are:</p> <ul style="list-style-type: none"> <li>• a working relationship with local and national government structures</li> <li>• a country context with a shortages of health workers</li> <li>• regulatory frameworks permitting community health workers to dispense selected medication and perform certain diagnostic procedures</li> </ul>
Sustainability	<p>To achieve sustainable scale, LMH focuses on:</p> <ul style="list-style-type: none"> <li>• integration of the CHW-model into the national health system. Last Mile Health works closely with the government to support the national health priorities and scale a country-wide CHW strategy</li> <li>• the Liberian Government's National Health Workforce Program aims to deploy 4 100 new CHWs in the next 5 years to serve 1.2 million Liberians</li> <li>• transferring and strengthening the technical capacity of the public sector at national and county level</li> </ul>

## 2. CHALLENGES

Situated in West Africa, Liberia is the continent's oldest republic. Originally a profitable region of rubber export, Liberia fell into civil war in 1989, which lasted until 1997 and was followed by a second civil war from 1999 to 2003. The civil wars resulted in over 200 000 casualties, disruption of public services and the displacement of an estimated 800 000 people (Ministry of Health & Social Welfare, Republic of Liberia, 2011a). In addition, Liberia's Gross Domestic Product (GDP) fell over 80% during the first civil war, and had not recovered by 2010 (World Bank, 2016). In June 2010, Liberia completed the heavily indebted poor countries process and received a total external debt cancellation of US\$ 4.6 billion (equivalent to 800% of GDP) (International Monetary Fund, 2010).

*I went back in '05. What I found was just utter destruction. Just 51 doctors left, all the physical destruction you'd expect from a war. Our capital where I'd grown up in Monrovia had no electricity, had no signal lights, had no running water. So you can imagine trying to rebuild a country that has a lot of odds stacked against it.* (Dr Raj Panjabi, Co-Founder, Last Mile Health)

Liberia's human development index is 0.430, ranked 177<sup>th</sup> in the world (UNDP, 2015). Improved sanitation facilities are accessible to 17% of the total population and 6% of the rural population (World Bank, 2015). Only 9.8% of the population has access to electricity (World Bank, 2015). Of the total population, 63.8% live below the national poverty line (World Bank, 2015). Not only was infrastructure damaged and lost, but safety concerns caused the country's intellectual capital to flee (Challoner and Forget, 2011). The war also left the health system in a fragile state. In terms of human resources for health, as of July 2014 there were an estimated 45 physicians practicing in the public sector, a ratio of 0.01 physicians per 1 000 of the population, well below the WHO recommended threshold of 0.55 per 1 000 (Ministry of Health, Republic of Liberia, 2015a). Outside the capital Monrovia, and other urban areas where public health centers continue to operate on a limited scale, the majority of the

population has little or no access to health care services (Kruk et al., 2009).

The communities most affected are those in remote rural areas, known as "the last mile". To date, 29% of Liberians lack access to a health facility within a five-kilometre (one-hour) walk, while 65% of households need to walk to a health facility. Of existing health facilities, 26% have an unsound structure, 45% are without power, 13% do not have access to safe water and 43% do not have a functional waste management system (Ministry of Health, Republic of Liberia, 2015a). A further barrier to adequate health care in remote areas is the poor road and transport infrastructure, which limits the distribution of potentially life-saving medication and availability of emergency health care (Ministry of Health, Republic of Liberia, 2015a). The impact of the lack of basic health education and services in these specific communities can be devastating. Liberia has among the highest maternal and child mortality rates in the world, while preventable diseases including malaria, lower respiratory infections and diarrheal diseases are the highest ranked causes of premature death (Global Burden of Disease, 2013).

Prior to the outbreak of Ebola in 2014, Liberia had made progress in addressing some of its key health challenges. While still high, the under-five mortality rate in Liberia dropped from 220 per 1 000 live births in 1986 to 110 per 1 000 live births in 2007 (African Health Observatory, WHO, 2009). Efforts to scale up the fight against malaria saw the country on track to achieve Millennium Development Goal 4 (African Health Observatory, WHO, 2009). In 2007, the Ministry of Health and Social Welfare launched the Basic Package of Health Services (BPHS), a key step in rebuilding Liberia's fledgling health system. The BPHS provided clinics, health centres and hospitals with a set of standard services they were required to provide, and contributed to improvements in service standardization, health human resource development and supply chain management systems. Building on the BPHS, the Ministry of Health and Social Welfare launched the Essential Package of Health Services (EPHS) in 2011, as part of the new National Health Policy and Plan. The



first phase of the new EPHS (2011 to 2013) contains a more comprehensive set of services than the BPHS, and places focus on community health volunteer services to improve maternal and child health services (Ministry of Health & Social Welfare, Republic of Liberia, 2011b; African Health Observatory, WHO, 2016a).

The impact of the Ebola outbreak included a substantial loss of health workers, further health facility closures and the loss of community trust in the public health system (Ministry of Health, Republic of Liberia, 2015a). In addition, countless infectious disease patients, including those living with HIV, tuberculosis (TB), and leprosy, defaulted treatment and many have yet to return to care (Napier et al., 2016). In 2015, the Ministry of Health released the Investment Plan for Building a Resilient Health System in Liberia to complement the National Health Policy and Plan (2011-2021), with the aim to restore the gains lost due to the Ebola virus disease (EVD) crisis, provide health security through a robust Health Emergency Risk Management System, and accelerate progress towards universal health coverage through improving capacity to deliver the Essential Packages of Health Services (Ministry of Health, Republic of Liberia, 2015). The Ministry of Health initiated the design of a Community Health Worker (CHW) programme in early 2015 in parallel with Liberia's national community health policy revision, which mandates investment in an integrated community health structure as a key component in achieving health system functionality (Napier et al., 2016).

The use of CHWs has been a widespread strategy in resource constrained areas to combat the shortage of health workers, especially in rural settings where they become a link between formal health care services and rural communities. There is evidence to suggest that CHW models can be effective in improving health delivery and outcomes, especially for maternal and child health (Lewin et al., 2006). Yet these models face many challenges, including poor coordination, limited supervision and support for CHWs, high attrition rates, unclear role expectations for CHWs, poor incentives, limited communication tools, low motivation, few resources and a lack of knowledge and skills (Oliver et al., 2015; de Sousa et al., 2012). For CHWs to make an effective contribution, they must be carefully selected, appropriately trained and adequately and continuously supported (Lehmann and Sanders, 2007). Lehmann and Sanders (2007) observed that many CHW programmes fail due to unrealistic expectations, poor planning and an underestimation of the effort and input required to make them work. Important elements to improve the functioning and effectiveness of CHW programmes include appropriate selection, continuing education, involvement and reorientation of health service staff and curricula, strong supervision and support, dedicated management and resources. In the case of large-scale CHW systems, substantial increases in support for training, management, supervision and logistics are required (Lehmann and Sanders, 2007).

### 3. INNOVATION IN INTERVENTION

Last Mile Health (LMH) is a non-profit health care organization with a vision to strengthen the Liberian health system at grass roots and policy levels, such that access to care can be enhanced for people living in remote and hard to reach areas.

#### 3.1 COMMUNITY HEALTH CARE SERVICE DELIVERY MODEL

LMH operates at the grass roots level in Liberia to bring much-needed health care services to remote communities. It achieves this through an effective and well-managed community health care worker

model. LMH is currently implementing its CHW programme in 8 districts in Grand Gedeh and Rivercess Counties. In total, LMH covers a land area of 10 165 km<sup>2</sup> across Rivercess County, Konobo District, and Gboe-Ploe District. It has deployed 283 CHWs to cover a population of 33 664. CHWs work full-time and serve their own communities.

LMH has adopted a systematic approach to the implementation of its CHW model to enable best practice management at each stage, including: recruitment and selection; training; equipment and supplies; and performance management.



### Recruitment and selection

LMH recruits CHWs from the communities they are intended to serve using community consultation, screening, practical assessment and a probation period to identify candidates.

### Training

An extensive training and support process is implemented with continuous instruction, rigorous evaluation and on the job mentoring. CHWs undergo training in four modules specially designed for the needs of Liberia's last mile, including: 1) community health and surveillance; 2) child health; 3) maternal and neonatal health; and 4) adult health. The training is given intensively for the first 12-months and then supplemented with annual refresher trainings on key subjects. Modules in the classroom are supplemented by active fieldwork and supervision.

### Equipment and supplies

In the field, CHWs are equipped with diagnostic, curative and point of care tools and medication. CHWs refer patients to their affiliated health facilities as needed per established guidelines and provide point-of-care services when possible.

### Performance management

CHWs are expected to work full-time, and LMH believes that incentivizing CHWs with wages minimizes attrition, avoiding the need to retrain volunteer CHWs who may be more prone to high turnover. Remuneration is performance-based and is linked to measures such as accuracy and efficiency. In addition, supervision is a key component of high quality performance management. A health professional, such as a registered nurse, trained in community health services and affiliated with a health facility, provides clinical supervision twice per month. These clinical supervisors also replenish CHWs with essential medication and other supplies each month to prevent stock-out. Non-clinical supervisors visit CHWs on a weekly basis to ensure compliance with non-clinical activities, such as data reporting, which is performed daily. A subset of CHWs are also selected as peer supervisors to visit other CHWs once per week, to provide additional supervision and support. Supervisors

are equipped with motorbikes to cover the substantial distances between remote villages.

*The investment in supervision from that clinical worker, either a nurse or a physician's assistant, is absolutely essential to the success of this. I think it is ultimately the secret sauce, and an area where a lot of community health worker programmes don't make that investment.* (Na'im Merchant, Director of Policy and Public Partnerships, LMH)

## 3.2 TECHNICAL ASSISTANCE TO THE LIBERIAN MINISTRY OF HEALTH

In addition to its programmatic work, LMH supports the National Ministry of Health's (MOH) Community Health Services Division by providing technical assistance at the national level and helping to develop policy to eventually scale the CHW model nationwide. This is part of a broader government initiative called the National Community Health Workforce Program (NCHWP). LMH collaborates with the MOH's other partners and stakeholders – such as the United Nations Children's Emergency Fund (UNICEF), International Rescue Committee, the Clinton Health Access Initiative, United States Agency for International Development (USAID), the World Health Organization and Partners in Health – to help design the new national programme.

LMH is assisting on the costing analysis of the NCHWP and is investigating ways to sustainably finance and scale such a programme. LMH is also assisting in negotiations with potential funders for the NCHWP. Alongside these efforts, LMH works with the individual counties in which it operates to prepare for an eventual transition to a national CHW programme, facilitating scaling of innovations developed locally but also helping ensure uniform compliance nationally.

Over the next five years, the Liberian MOH, working with assistance from LMH as its lead technical partner, will train and deploy roughly 4 100 professionalized CHWs and 230 supervisors to provide care for approximately 1.2 million individuals living in remote areas.

*Recognizing that the end game is a national programme across the entire country that is owned by the government and supported by partners, we are trying to implement our*

*programmes in a way that really closely brings in the expertise and capacity at county level... It's forcing us to accelerate how we partner with government in implementing this programme and*

*make sure we are supporting the MOH to bring partners under the fold of the national programme.* (Na'im Merchant, Director of Policy and Public Partnerships, LMH)

## 4. IMPLEMENTATION

### 4.1 INSTITUTIONALIZING CHWS IN LIBERIA

Beyond being an implementer and providing technical assistance, LMH has been playing an important role in institutionalizing CHWs in the Liberian context. Two key components of its strategy for institutionalizing CHWs on a national scale across Liberia are: 1) professionalizing this cadre of workers; and 2) developing the evidence that will inform policy and practice.

#### *Professionalization of CHWs*

LMH believes that functioning as a CHW should extend beyond volunteerism. It provides CHWs with recognition, standardized training and remuneration.

#### *Evidence generation for policy and practice*

Research is a core component that informs the work of LHM at grass roots and at a policy level. LMH also works closely with the Liberian MOH to develop a research strategy designed to assess the successes, challenges and perceptions of the programme, as well as learn operational lessons for policy decisions. LMH undertakes this work jointly with the MOH Research Division. LHM also conducts a range of operational, implementation and impact research studies. Its research-based staff members have backgrounds in epidemiology, public health, monitoring and evaluation.

These studies are informed by the help of an Electronic Data Collection Tool, which LMH developed. CHWs compile data using a checklist during clinical visits; upon arriving at a clinical diagnosis and finding an appropriate treatment, they fill out a data form. CHWs deliver data electronically to supervisors during weekly visits, while supervisors update any data collection forms or other tools on CHWs' devices. This is submitted to data clerks and integrated into a database named Last Mile Data, providing data on service

provision and CHW activities. LMH also tracks supplementary data on the same platform, such as CHW employment status, number of CHWs, number of supervisors, retention rate, voluntary turnover, etc.

Due to a lack of adequate electricity and mobile/Internet connectivity in Liberia's remote regions, LMH has created a data collection system based on an open data kit platform (CommCare) that is tailored to overcome these challenges. The data collection system operates offline via Bluetooth technology, without any need for mobile coverage, SIM cards and other mobile enablers. Being able to collect and transfer data offline is important as Liberia has severely under-developed infrastructure. Although LMH takes pride in its offline data collection system, it still remains interested in utilizing a mobile system once mobile coverage expands, which would increase data quality by automating the collection process, supporting decision-making and minimizing occurrences of human error.

### 4.2 ORGANIZATION AND PEOPLE

Born and raised in Liberia, Dr Raj Panjabi had a deep desire to serve and help rebuild his home country. At the time of the civil war, Dr Panjabi and his family fled the country and arrived in the United States, where he spent the rest of his childhood. There he graduated from medical school, but his passion for his country remained. Returning to Liberia, he established Tiyatien Health in 2007, a nongovernmental organization, whose name means "justice in health" in a local Liberian language. In support of his dream and this organization, for their wedding, he and his wife asked friends to contribute start-up funds instead of gifts. They raised US\$ 6 000, and started their work in Liberia by launching the first rural HIV programme in the country.

Soon the growing team working for Tiyatien Health realized that access to health care services was an even greater need in the country. People in remote villages struggled to access health care due to the significant distances and difficult terrain. In 2012, the organization started extending its scope to more comprehensive community care programmes. With this new focus, Tiyatien Health became Last Mile Health in 2013 and began piloting its community health worker programme in Konobo District, one of the most remote areas of Liberia.

LHM believes in prioritizing and investing in its staff to promote their own professional development and build a culture of community amongst its employees. Employees characterise LMH as a young, entrepreneurial, grass roots organization, drawing strong motivation from its mission to bring health care to scale for populations previously without access. LMH has used a bottom-up approach to create its organization culture, emphasizing collaboration and inclusiveness, as evidenced by the Culture Code, a document of 10 principles sourced from employees across the organization. Principles include prioritization of patients, boldness in pursuing innovation rather than incremental improvements, collective teaching and learning, humility, openness to criticism, use of data and evidence, and making the impossible possible. *"The only way we are going to do something so transformational as solving a problem is if you have a team where everybody is given an equal level opportunity and everybody has a stake in what is happening and has a stake in the work and stake in each other, and we win our victories together and suffer our defeats together."* (Josh Albert, former Country Director, LMH)

### 4.3 COST CONSIDERATIONS

Since its inception, LMH has managed to draw funds from numerous private donors and position itself as a partner to the government. LMH may take the lead to push these programmes forward,

but ultimately seeks to support the government in taking final ownership and acts accordingly.

*In many ways, I've envisioned the NGO to be a private-public partnership. I mean, one of the very first ideas we had is that we would be one of the innovation engines for the Ministry of Health and that would be our focus. So we would take the lead from, we would listen, we would be actively part of the national planning and strategic discussions of the Ministry of Health.* (Dr Raj Panjabi, Co-founder and CEO, LMH)

LMH prioritizes impact and seeks to create programmes that address the true need of the communities in Liberia. Staff first determine a plan of action, then seek financial support for that plan. Doing so has helped staff avoid the need to focus on donors' specific desires, granting more freedom in pursuing projects that strengthen the overall health system. The organization's development team and co-founder/CEO Dr Raj Panjabi have focused on building long-term relationships to support its work. *"[LMH] has accumulated a great deal of trust and good will with these partners... That's opened up the opportunity to keep these different types of partners on board for taking on new projects and trying new things."* (Na'im Merchant, Director of Policy and Public Partnerships, LMH)

LMH generally ties outcome-specific donor contracts to routine operations and utilizes unrestricted funding for more experimental, innovative programmes. Revenues and expenditures totalled US\$ 9 862 066 and US\$ 7 846 762 respectively in 2015, with the majority of funding coming from foundations, and programme services accounting for the majority of expenses (LMH, 2015). This was up from US\$ 2 306 323 and US\$ 1 948 715 respectively in 2014 (LMH, 2015), in large part due to a funding surge associated with the Ebola crisis response. The programme operates at a cost of approximately US\$ 43 per person served per annum.

## 5. OUTPUTS AND OUTCOMES

### 5.1 IMPACT ON HEALTH CARE DELIVERY

*We are doing something that is very transformative. I think it is going to have a significant impact. We are talking about extending access to over a million people who literally have no access to medical care... People will come up and say, 'I've never seen a health worker in my whole life'. To me, that's amazing that you can bring health care to a place that never had it before.* (Na'im Merchant, Director of Policy and Public Partnerships, LMH)

Staff involved in monitoring and evaluation at LMH are currently trying to quantify the impact of the organization's programmatic interventions on health outcomes. LMH's Programme and Development teams are responsible for communicating stories of the organization's impact to all employees and stakeholders. Advisors from the Division of Global Health Equity at Brigham Women's Hospital and Harvard Medical School are also assisting with impact evaluation.

As of February 2016, LMH has deployed 283 professionalized CHWs, 28 peer supervisors, and 16 Community Clinical Supervisors to serve approximately 53,660 people. LMH has captured the following impact figures from July 2013 to June 2015 (LMH, 2015):

- Treatment of 13 838 childhood cases of fever, diarrhoea, or pneumonia
- Increased access to treatment for diarrhea (by 48%), malaria (by 29%), pneumonia (by 53%) amongst children
- At least one follow-up by a CHW to 98.7% of sick children
- Prenatal care provided to 93.2% of women in Konobo District in 2015
- 82.4% of birth deliveries in a health facility in Konobo District in 2015
- Over 31 000 patient visits
- 1 382 health workers and community members trained in Ebola-specific services
- 11 854 people educated about Ebola
- 10 434 screened for Ebola

- 38 health centres trained to respond to Ebola across two counties
- 22 tonnes of infection prevention/control supplies distributed in partnership with Direct Relief

### 5.2 COMMUNITY AND BENEFICIARIES

LMH receives substantial political support. This support has proven instrumental in pushing forward the national agenda for community health and also boosted the spirits of organization employees. *"We have a really impressive level of political support behind this effort. That's critical in getting this done. The political will from [Minister of Health] Dr Dahn and of the Community Health Services Division and then all the way to President Sirleaf has been really inspiring. I think it is a testament to our work but really recognition of a need. It is great to know we can support that."* (Na'im Merchant, Director of Policy and Public Partnerships, LMH)

Clinical workers and supervisors value being a part of LMH's programmes and witnessing its impact on patients. *"Personally, working as a supervisor in the HIV clinic was quite an experience that I wouldn't forget. I saw people come in diagnosed with the condition and they thought life was over for them. They were very dejected, and had lost hope. And over a short period, I saw these people come back alive again and regain hope."* (Benjamin Grant, Senior Project Manager, LMH)

Co-founder and CEO Dr Raj Panjabi has not only enjoyed seeing care provided to patients through his organization's work, but also watching CHWs be transformed, empowered, and inspired to improve themselves and the conditions of their communities. *"To see a community health worker who has been working with us, been unemployed, 8<sup>th</sup> grade educated... start to believe, not only get the skills and the training, and become a utility to the community in a way that matters so deeply and the respect increases. Just the fact that they believe, I can see them believe in themselves more... And that gives me a lot of joy, seeing that the potential realized."* (Dr Raj Panjabi, Co-founder and CEO, LMH)



### 5.3 ORGANIZATIONAL MILESTONES

LMH reached its current status through a series of milestones, starting with its work in the field in Konobo District in 2012. As the programme progressed, LMH provided results of the pilot to the Liberian MOH, which prompted discussions of how to bring the programme to scale nationally. The first pilot in Konobo was an important starting point: *"I think the first step, the first round of implementation...was more about teaching*

*ourselves the fundamentals on how you achieve a community health worker who can deliver services and be a trusted part of the health system."* (Josh Albert, former Country Director, LMH)

In the wake of the Ebola epidemic, LMH has expanded operations to Rivercess County and considers the transition of its role, partnerships with Community Health Teams at the local level, and adoption by the public sector as further milestones.

## 6. SUSTAINABILITY AND SCALABILITY

Last Mile Health has adopted three core strategies to deliver a sustainable service capable of scaling nationwide across Liberia.

### 6.1 INTEGRATION INTO THE NATIONAL HEALTH SYSTEM

LMH's long-term plan is to transition ownership of direct implementation to the Liberian government as part of the NCHWP. This will require growth of the country's tax base and consistent proportion of the national budget allocated to the health sector. Other innovations, such as community-based health insurance schemes, could also be utilized. Towards the end-goal of government ownership, support from external donors can provide incentives for the government to increase domestic funding. The return on investment for CHW programmes like LMH's is estimated to be as high as ten to one (i.e. for every US\$ 1 invested, there are US\$ 10 of benefits through job creation, economic stimulation, improved health outcomes etc.) when implemented alongside other health systems strengthening efforts (Dahn et al, 2015).

In the short term, catalytic funds from philanthropy – often a mix of foundations, corporations and private donors – and bilateral and multilateral agencies are needed to push forward a health innovation until the source of funding can shift towards the public sector, allowing donor funds to go towards the next innovation. Although LMH aims to expand its coverage and provide care to an increasing number of patients, it eventually intends to evolve its role from health care provider

to capacity builder to technical assistance and quality assurance provider.

*If our goal was to become an organization that treated and served 1.2 million people ourselves, it would just be a very inefficient way to do it ... So, to us, the way we think about sustainability at a financial level, we're not trying to raise hundreds of millions of dollars for ourselves, we're trying to raise tens of millions as of this moment and that is to unlock financing from the public sector and then over time shift our role ... You know, we'll always be providing services, but the point is not to grow that part of the work infinitely. It's to help government strengthen its own capacity to do it.* (Dr Raj Panjabi, Co-founder and CEO, LMH)

### 6.2 STRENGTHENING COUNTRY TECHNICAL CAPACITY

LMH's priority is to provide technical assistance to government partners to articulate and operationalize the national CHW strategy, and strengthen the technical capacity of the government. It plans to do this in three ways: 1) embed staff in the MOH to support the creation of policies, curriculum materials, and tools; 2) conduct training and capacity development at national and county levels; and 3) plan for future financial costs, including managing national-level costing analyses to understand required future investment and facilitating relationships between the MOH and prospective donors (LMH, 2016).

This support strategy is important because a national scaling effort requires sufficient

administrative capacity for programme execution, strong transport, logistics and supply chain infrastructure and technical management skills. A challenge for LMH in a changing political environment is to ensure that the national programme it implements with its partners is still relevant and is something that the next administration prioritises, with enough political and financial support.

LMH is extending the CHW model to additional counties by following this capacity strengthening approach. It will start by direct implementation of the CHW model, but through a phased transition transfer ownership to County Health Teams. This would involve expanding existing operations in Grand Gedeh to saturate unreached districts and

launching the CHW programme in at least two new counties (LMH, 2016).

*We started a project to get community health workers in every village in Rivercess by the end of the year [2015], and the thing that is really exciting about it is that this time around, it is really the County Health Team, the ministry in which the health team works, that is leading that work. And our role has been more to provide operational, management, technical support throughout that process to really guide them and train our ministry partners on how to manage community health workers, how to supervise, and do the follow-up if necessary to ensure quality on how to deploy a model like this.* (Josh Albert, former Country Director, LMH)

## 7. KEY LESSONS

### 7.1 IMPLEMENTATION LESSONS

#### Getting started

*There was a big understanding that you go to government and you ask them not just permission, but you ask them for their intellect and their expertise and their innovative ideas and you try to build in to your pilot from the beginning.* (Dr Raj Panjabi, Co-founder and CEO, LMH)

LMH was founded by individuals with experience in government who recognized the value of partnering with government. This required understanding the national priorities and working to support these goals. *“When I think of what we’ve learnt; I think about what we would do if we started in a new country. I would say that getting a very clear vision and direction of what the government goals are in the first place and then being able to invest the time and technical assistance in planning from the very onset is really important.”* (Na’im Merchant, Director of Policy and Public Partnerships, LMH)

LMH staff emphasized the importance of being present in the country, involving local health teams and engaging with the community from the start. This is seen as crucial for gaining support as the intervention moves forward. *“It is just so, so important to be physically present in the country*

*that you’re working in. And really get to know the people you’re serving, getting to know staff and trying things out in the field and doing lots of iteration on any activity that you’re doing.”* (Avi Kenny, Director of Research, Monitoring and Evaluation, LMH)

When starting in a new setting, the following guiding steps were identified:

1. Examine the current state of data and the analysis the government has undertaken, and ask which problems the government has identified and in which you have core expertise to offer.
2. Approach the government and ask them to name the top barriers they are facing.
3. Build these priorities and insights into the model, and work with national and local health teams to operationalize the strategy.
4. Have regular touch points throughout the pilot project with continual monitoring and evaluation.

#### Maintaining efforts

LMH has witnessed the value of having multiple iterations with feedback from the community and other stakeholders. Meeting with and involving high level stakeholders at the outset, gathering

their input and guidance, and continuing to engage them throughout the proof of concept phase was also a key enabler of its success.

Establishing its role in relationship to the MOH was another enabling step. *“Shift your work as an NGO to continually maintain presence as an innovative implementer, because that is the most important primary set of information that should inform the rollout at scale, even if it’s via the government. But then you have to add on stronger technical assistance support at a central level.”* (Dr Raj Panjabi, Co-founder and CEO, LMH) LMH’s approach of seconding staff to the MOH, generating financing for the government scaling efforts and assisting with the execution of the national CHW programme was important elements of technical assistance.

### Overcoming challenges

**Weak national infrastructure:** One of the greatest challenges of working in Liberia is the country’s sheer lack of infrastructure, with few paved roads, lack of reliable Internet and poor penetration of mobile coverage. These challenges are accentuated in the remote, rural areas where LMH works. Thus, LMH has adapted by using alternative, customized tools for collecting and reporting data, notably its in-house offline data system, Last Mile Data. LMH has also trained community health committees to rehabilitate roads and build wooden bridges that increase access to remote communities, helping offset to some extent the problem of transport. LMH also grew rapidly in the wake of the Ebola epidemic, roughly doubling in size. With its increase in size came a shift of the operating team from the Grand Gedeh and Rivercess Counties to the capital, Monrovia. The shift was due to the difficulty of operating logistics, supply, finances, and human resource management in rural settings with weak transportation infrastructure.

**Language barriers:** Although English is spoken in Liberia, locals speak a dialect known as Liberian English, which differs enough from American English that miscommunication can occur. This is especially concerning when conducting health surveys. To combat this problem, LMH has performed “back translation”, by which surveys and the responses are translated from Liberian English to American English by someone fluent in

both. This underscores the importance of understanding local context, specifically nuances in language in this case so that meaningful data is collected.

**Stakeholder alignment:** It has been a challenge to align the interests of all stakeholders in Liberia’s health system and implement a unified programme through government. LMH has attempted to use a costing tool to detail to donors the extra costs associated with transitioning from existing, fragmented programmes to a unified national programme. It is important to create a shared vision – not only with government, but also with other stakeholders. Identifying which problems in the health sector take priority from the outset and determining solutions accordingly helps create a cohesive narrative that can be used later. Conversely, it can be difficult when new partners enter conversations that had already been well under way, upending progress made on aligning partner efforts towards a unified programme. LMH learned this lesson in the wake of the Ebola epidemic, when new partners entered the field of community health during a time of stress and urgency.

**Lack of appropriate metrics:** One of the barriers LMH has faced is the cynicism typically associated with attempts at providing health care to remote, under-served regions. Mainstream public health metrics, such as health worker density and funds per capita, are inherently biased against populations of low density, as they fail to account for the costs associated with providing care to a wide geographic area, such as that of transport. LMH has advocated addressing this issue through creative allocation of resources, such as using a nurse solely to train CHWs rather than provide care his or herself. One example of health policy that is focused on remote communities is from Alaska, where communities are defined not just by population levels but also by distance to care. *“That’s the kind of progressive of policy we need, I think, adapted policy for these remote communities but again getting to that level of nuance and awareness and then transformation is a very challenging thing to do, especially for an innovative NGO.”* (Dr Raj Panjabi, Co-founder and CEO, LMH)

## 7.2 PERSONAL LESSONS

Having co-founded LMH out of personal motivation to serve Liberia, Dr Panjabi has learned several lessons throughout the journey. One of the first is that there are many personal sacrifices when starting a new, social-impact driven organization. Dr Panjabi acknowledges the fundamental trade-off in time spent on LMH and his family, including his two sons. As LMH has grown, he has found ways to adapt. *"I don't think quality of time over quantity of time applies when you're talking about people you love and that need to be nurtured by you. So we found adjustments around that. We've tried to live closer to family. Make it a little bit easier. I've obviously been fortunate that our team has grown quite a lot. There are such incredible leaders at LMH and I don't do all the work that I was doing in the past. But that's definitely the biggest sacrifice, time with family and loved ones."* (Dr Raj Panjabi, Co-founder and CEO, LMH)

Another element of sacrifice is the different roles required from the founder across the life cycle of the organization. Although trained as a physician, as LMH has grown, Dr Panjabi spends less time with patients and more time leading and developing the organization.

Even with the sacrifices and challenges LMH has faced, Dr Panjabi still urges others to strive to take

on what is difficult and create innovative solutions. In doing so, he emphasises the importance of being bold and persistent. *"Don't be afraid to be bold... and be persistent, because if you're truly working on something bold, you're going to have people who will laugh at you or ignore you or even fight you. If you're on the side of persistence and truth and the boldness that inspires your action is needed and the actions are needed, the world will rally behind it. But that takes persistence, because it doesn't materialize in one year, two years, three years, even seven, eight years..."* (Dr Raj Panjabi, Co-founder and CEO, LMH)

One of the challenges LMH has overcome is the advocacy for a problem that previously has not been identified or prioritized for solving. *"I think social change gets created in two ways. One is to solve problems that have already been defined and the other is to define the problem in the first place... Embracing the consciousness to actually understand the problem in the first place and communicate around it, that remote villages are a distinct issue for health care, period... That's a harder thing to wrap your mind and your heart around in particular, and I think the fact that for a lot of our team members, that's imbued in them, is pretty exciting, and I'm proud of that."* (Dr Raj Panjabi, Co-founder and CEO, LMH)

## CASE INSIGHTS

1. Nongovernmental organizations can play a unique role in strengthening health systems by absorbing the experimentation risk for new innovative service delivery models, providing the financial backing and creating data systems to assess impact. Country governments, in turn, can promote the adoption and scale of innovative models with proven effectiveness and cost-efficiency compared to existing models.
2. Community health worker programmes have significant potential to improve health care delivery to people living in rural and hard-to-reach areas if the programme incorporates best practices at each stage, including recruitment and selection; training; equipment and supplies; and performance management.
3. The technical, research and delivery capacity of the Ministry of Health can be strengthened through the collaborative participation of innovative nongovernmental organizations, especially in fragile states affected by disease epidemics.
4. Even in regions without mobile coverage, electronic technologies such as data collection tools with Bluetooth capabilities can be successfully utilized to strengthen monitoring and evaluation efforts and to support programme coordination.



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