

# LIBERIA

How reinforced community health structures and capitalizing on lessons learned from the Ebola virus epidemic of 2014–16 helped the country respond to the challenge of its second major disease outbreak in five years

Africa's first and oldest modern republic, Liberia, nestles between Sierra Leone, Guinea, and Côte d'Ivoire on the continent's Atlantic seaboard. More than half of its 5.2 million population live in urban areas, with approximately one-third residing within an 80-kilometer radius of the capital Monrovia, the population of which has been estimated at 1.5 million. Liberia has a pronounced youth cohort, with 60% of the population under age 25 (and barely 3% aged over 65) and a median age of 18. The country is still subject to a high prevalence of infectious food or waterborne diseases (bacterial and protozoal diarrhoea, hepatitis A and typhoid fever) and vectoral diseases (malaria, dengue fever, and yellow fever), although noncommunicable diseases are also beginning to loom large: the adult prevalence of obesity is 9.9% (2016) although underweight in children under age five is also common. Although categorized as a low-income country with half its population living below the poverty line, especially in the rural setting, Liberia has made a significant investment in the health sector following the dramatic advent of Ebola virus disease (EBV): current health expenditure is 7% of GDP (2018)<sup>1</sup>. In 2020, the country's GDP declined owing to reduced services and manufacturing and the effect of public policies designed to halt the spread of COVID-19, a combination of events that brought higher inflation, an increased fiscal deficit, and eroded purchasing power. However, a sharp rebound in growth is expected this year<sup>2</sup>.

## The menace of Ebola virus disease

Liberia is no stranger to epidemics and their disruptive effects on social relations and the economy. Along with the neighbouring states of Guinea and Sierra Leone, Liberia had to cope with the most severe Ebola virus outbreak in recorded history between 2014 and 2016. This outbreak was widespread in the West African region and accompanied by significant urban transmission, resulting in a death toll of 4809 lives in Liberia alone. The World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern in August 2014. A month later, the UN Mission for Ebola Emergency Response (UNMEER) was set up to assist the respective national governments and international partners in bringing the outbreak to an end. By late November, the concerted efforts of local communities, national government, and partners resulted in a significant slowdown in the previous exponential increase in EVD cases. By January 2015, 13 of Liberia's 15 counties reported no ongoing transmission.

Recognizing the gaps and discontinuities in its community health services in 2016, Liberia's Ministry of Health (MoH) launched the National Community Health Assistant (NCHA) programme which, supported by partners

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<sup>1</sup> <https://apps.who.int/nha/database/ViewData/Indicators/en>

<sup>2</sup> <https://www.worldbank.org/en/country/liberia/overview>



including WHO has recruited, trained, and deployed more than 3500 community health workers to 316 primary health clinics serving 800 000 people in rural and remote communities.

The Ebola outbreak put a severe strain on Liberia's health system with disruptions in the delivery of routine services: fears and refusals among health workers (who had a 30-fold higher risk of infection compared to the general population) were compounded by community distrust and fear of contagion at health centres. Coverage of life-saving maternal and child health interventions, in particular, declined dramatically.

## Lessons learned from the Ebola crisis

On a more positive note, it emerged during the Ebola outbreak that those health workers who were embedded in their communities (rather than outsiders) were highly effective in addressing issues of mistrust and stigma attached to the disease. Traditional birth attendants, community leaders, and health groups, and traditional healers also played important roles, despite a lack of formal engagement or support<sup>3</sup>. The health assistant programme has since been extended since it offers the possibility of providing an early warning system for all priority diseases<sup>4</sup>, in line with the Integrated Disease Surveillance and Response System (IDSR), and addressing the core capacity requirements of the 2005 International Health Regulations (IHR)<sup>5</sup>. In 2018, Infection Prevention and Control (IPC) guidelines were developed and rolled out across the country; more than 14 000 healthcare workers have been trained in basic IPC principles since 2015.

A few months before the coronavirus crisis, a midterm self-assessment was carried out in August 2019 using WHO's Joint External Evaluation (JEE) 2.0 tool and National Action Plan for Health Security (NAPHS) indicators: these processes are part of a voluntary whole-of-government approach to identify gaps in health security across 19 technical areas. Both are integral to meeting the requirements set out in the IRH 2005 and are supported by WHO, the US Centres for Disease Control (CDC), and other international partners: they aim to help countries develop intersectoral health security capacities to meet and manage any infectious disease outbreak and to secure funds under the World Bank's REDISSE II scheme.<sup>6</sup> Liberia's JEE score increased from 46 to 48, with improvements in laboratory services, human resources, and surveillance. Improvements were still required in some areas, especially for "response" aspects.

From being a small WHO country office (WCO) before the Ebola virus crisis, the WCO in Monrovia expanded its remit during the EBV crisis with internal and external experts' recruitment and became a very active partner at the subnational level via its array of field offices. In 2016, 14 of Liberia's 15 counties had a satellite WHO presence. As well as relaying documentation and strategies from WHO headquarters and the regional office, staff worked with local health authorities to strengthen surveillance, IPC, treatment, and isolation of affected cases and assist in the resumption of routine health services. After the EBV crisis, WCO field offices were reduced to nine, with some local health officers covering several counties. The distribution of its resources across the country gave WHO a significant advantage over other international partners when responding to COVID-19 challenges, and a leadership role was fully assumed.

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<sup>3</sup> Miller NP et al. Community health workers during the Ebola outbreak in Guinea, Liberia, and Sierra Leone. *J Glob Health* 2018;8:020601.pmid:30023054

<sup>4</sup> These include meningitis, acute haemorrhagic fever, malaria, typhoid fever, yellow fever, polio, measles, cholera, influenza-like illness, bloody diarrhoea, SARS, plague, human rabies, Lassa fever, hepatitis, and maternal and neonatal deaths.

<sup>5</sup> Luckow PW et al. Implementation research on community health workers' provision of maternal and child health services in rural Liberia. *Bull World Health Organ* 2017;95:113-20. doi:10.2471/BLT.16.175513 pmid:28250511

<sup>6</sup> <https://www.cdc.gov/globalhealth/healthprotection/resources/fact-sheets/naphs.html>

#### Progress and best practices identified using WHO's JEE 2.0 tool in August 2019

- **One Health Coordination System:** The One Health Governance approach and establishment of technical working groups have catalyzed coordination in antimicrobial resistance and other fields.
- **Strong partnerships:** Partner financial and technical support have allowed Liberia to access funds, including the WB's Second Regional Disease Surveillance Systems Enhancement (REDISSE II) project.
- **Integrated Disease Surveillance and Response (IDSR):** A strong functional reporting system (eIDSR) operates, centered on the National Reference Laboratory (NRL), a division of the National Public Health Institute of Liberia (NPHIL).
- **Points of entry:** All eight designated points of entry have associated health facilities and access to isolation and diagnostic testing.
- **Intermediate Field Epidemiology Training Programme (FETP):** Liberia now has access to all levels of FETP (advanced FETP available in Ghana), and more than 215 fellows have graduated from the programme.
- **Laboratory capacity in human health:** Testing capacity is available for priority pathogens, with an effective "Riders for Health" specimen courier system, which has transported more than 50 000 specimens across Liberia's 15 counties from over 300 relay stations for rapid diagnosis of priority infectious diseases since 2015.
- **Network of national and county emergency operation centres (EOC):** Allows for more rapid response to public health threats.

**Source:** IHR Midterm Self-Assessment and NAPHS Implementation Meeting, 16 August 2019

#### The arrival of SARS-CoV-2

Following the first confirmed positive case of SARS-CoV-2 on 16 March 2020 in a government official returning from abroad, air travel to and from countries with more than 200 cases was suspended; neighbouring countries sealed their borders with Liberia at the end of the month. The Minister of Health, Wilhelmina Jallah, declared a national health emergency on 22 March, based on Liberia's Public Health Law. Following the EBV crisis, Liberia had completely revised its public health laws, adding sections to strengthen emergency operations, biosafety, and biosecurity, reporting, and disease tracking abilities. The application of these revised laws in 2017 allowed the country to fast-track the setting up of the National Public Health Institute of Liberia (NPHIL)<sup>7</sup>, with its associated National Reference Laboratory (NRL). This institution was set up during the EBV crisis with multi-partner support to coordinate the country's public health functions and ensure a more efficient and effective system for rapid response to future infectious disease outbreaks of the kind represented by SARS-CoV-2.

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<sup>7</sup> <https://www.cdc.gov/globalhealth/healthprotection/fieldupdates/fall-2019/public-health-law.html>



*COVID-19 early warning, suspected, confirmed cases investigation, reporting and contacts tracing training for health facility surveillance focal persons in Montserrado County, supported by*

In February 2020, the NRL confirmed that Liberia had sufficient capacity to test for SARS-CoV-2 as part of its national COVID-10 preparedness and response plan. However, it had only one or two functioning PCR devices. WCO, together with the US CDC, USAID, and government offices, sought to acquire additional assay devices. More than 200 laboratory sample collectors were trained at county level to support national sample collection, using the "Riders for Health" courier system developed during the EBV crisis to ensure timely testing. More than 70 national and subnational laboratory staff were trained on biosafety and biosecurity techniques to ensure that those on the frontline had the knowledge and skills to use their equipment safely, and SARS-CoV-2 testing was decentralized to Phebe hospital in Bong and the Jackson F. Doe Hospital in Nimba counties.

On 7 April, President George Weah—who had inherited the EBV "hangover" at the start of his mandate in 2018, when there was an expectation of greater investment and resources in the country—appointed a new National Response Coordinator for the Executive Committee on Coronavirus headed by the former mayor of Monrovia, the Hon. Mary Broh. The COVID-19 response was governed by four separate response structures, each of which had defined roles and responsibilities in the campaign against COVID-19: the Special Presidential Advisory Committee (SPACO), the National Response Committee (NRC), the incident management system (IMS) to coordinate the outbreak response and maintain supply lines, and the subnational incident command system (ICS). Given the increasing number of cases being reported by NPHIL, the President also declared, in concertation with the country's bicameral legislature and, based on its 1986 Constitution, a national state of emergency with the application of lockdown measures for three weeks. Measures included suspension of all non-essential travel, a night-time curfew, closure of schools and all public sites. Mask-wearing in public became obligatory on 21 April.

The state of emergency was lifted on 12 July 2020; it had helped slow the disease's initial spread. Because of sporadic cases, especially amongst travellers, the national authorities instituted measures to prevent human-to-human transmission. These are theoretically still in force and include the use of face masks, early identification, testing and isolation of confirmed cases, basic hygiene, physical distancing, and avoidance of crowded places and close contact settings. Adherence to these prescribed preventive measures is now minimal.

### **The importance of community involvement**

As Dr Peter Clement, WHO Country Representative (WR) in Liberia, pointed out, it has been hard in a country with widespread poverty and a large informal sector as a direct source of income for many people had been exposed to the "vivid threat" of rampant Ebolavirus only a few years beforehand, to maintain the same level of vigilance regarding SARS-CoV-2. Community health workers, specifically volunteers (CHV), assistants (CHA), and service supervisors (CHSS), were crucial in avoiding the breakdown of essential services, which had been a feature of the EBV crisis. Their training on outbreak preparedness, surveillance, and management, with the support of WCO and other partners, enabled access to both COVID-19 and non-COVID-19 health services to be resumed rapidly after an initial interruption. (Malaria, for instance, continues to be the leading cause of morbidity and mortality in Liberia, accounting in 2020 for 46.9% percent of outpatient

consultations and 13.5 percent of deaths<sup>8</sup>, and cases of measles and other infectious diseases increased after the MoH temporarily suspended immunization services in the second quarter of 2020.) Many patients were already familiar with the "no-touch" policy adopted during the EBV crisis and understood why personal protective equipment (PPE) and other measures were essential to contain COVID-19.



*House to House community engagement on COVID-19 preventive measures-Gbarpolu County, August 2020*

Community involvement dating from the EBV period was also instrumental in providing reliable screening information during the early stages of the COVID-19 pandemic and ensuring its containment. Liberia's Ministry of Internal Affairs supervised the process, which interacted directly with community leaders and provided instructions on how to follow preventive measures and mobilize women's and youth groups and NGOs. Messages and jingles were tailored for COVID-19 following the strategy developed during the EBV crisis. In Montserrado country, the epicentre of the epidemic in Liberia, Monrovia City Corporation encouraged young people to work with communities, erect handwashing facilities, take temperatures, and ask visitors about their provenance. Community screening was optimal in June-July 2020 before a degree of lockdown fatigue took hold. The prevalence of COVID-19 cases fell in August with a spike in November, only to fall again in December. According to the WR, the same level of cooperation at the community level is not present now. The perception of the threat posed by SARS-CoV-2 in the general population is quite different from that posed by EBV.

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<sup>8</sup> Raw data from Liberia HMIS for MoH Annual Report 2020

## Community surveillance strategies

Lockdown fatigue notwithstanding, Liberia's community-based enhanced surveillance system provided crucial real-time information about the progression of the SARS-CoV-2 virus from June 2020 in designated "hot-spot" counties; it showed that the test positivity rate was never more than 2%. In the WR's words, this is one of the best and more comprehensive practices introduced since the EBV crisis in the West African region—"a legacy of EBV." The community mortality surveillance strategy, which has the support of the WHO Regional Office for Africa, has also been implemented in Chad<sup>9</sup> and was initially designed for use by humanitarian agencies working in complex emergency settings. Another survey is planned for this month (April 2021) to determine the accuracy of mortality estimates in the pandemic setting. In general, however, current mortality rates in Liberia show minor changes compared to figures for the period 2018–19, with COVID-19 appearing outside the top ten causes of death in the eleventh position.



*Dr Monday Julius of WHO engaging with Community leaders and traditional on COVID-19 prevention in March 2021*

At the time of writing on 6 April 2020, there have been 2042 confirmed cases of SARS-CoV-2 across Liberia and 82 COVID-19-related deaths: these equate to per million population rates of 397 and 17, respectively. All 15 counties in Liberia have recorded at least one case of COVID-19, with Montserrado and Margibi as counties with the highest burden. This information is presented in a series of daily situation reports published by the MoH, now approaching 400 in number<sup>10</sup>. A total of 79 684 tests have been carried out (equivalent to a per million test rates of 15 494, which is slightly higher than in neighbouring countries), suggesting a positivity rate of under 3%<sup>11</sup>. Liberia has a high number of infections among health workers, reported as 15.5% of confirmed cases.

<sup>9</sup> [https://apps.who.int/iris/bitstream/handle/10665/332312/SITREP\\_COVID-19\\_WHOAFRO\\_20200603-eng.pdf](https://apps.who.int/iris/bitstream/handle/10665/332312/SITREP_COVID-19_WHOAFRO_20200603-eng.pdf)

<sup>10</sup> <http://moh.gov.lr/documents/reports/covid-19-reports/>

<sup>11</sup> <https://www.worldometers.info/coronavirus/>

## The unexpected return of Ebola

The region was put on alert again recently with reports of a score of EBV victims, including several deaths in Guinea: genetic analysis has shown that the new outbreak appears to be to a dormant strain of the same virus associated with the epidemic of five years ago (Makona variant of Zaire ebolavirus) in a survivor of the 2014–16 outbreak<sup>12</sup>. This finding is alarming because EBV had hitherto been introduced into humans from animal reservoirs and was not known to lie dormant in a survivor; this new paradigm of EBV as a relapsing condition raises the issue of how to avoid the cycle of outbreak and response, possibly by more effective immunization. In 2015, Liberia was the chosen site for a Phase III trial with a single dose of the VSV-EBOV—a vesicular stomatitis virus genetically modified to express Zaire Ebola virus surface proteins, which was "highly efficacious and safe."<sup>13</sup> WCO has been advising the government on the best strategy as new information emerges and how to avoid further stigmatization of EBV survivors. Many of whom have suffered long-lasting physical effects and significant social hardships, including exclusion and ostracization<sup>14</sup>.

## Rolling out vaccination

Along with the perception that COVID-19 "isn't as bad as Ebola," there has been a certain degree of vaccine hesitancy in Liberia. WCO, in coordination with UNICEF, assisted the government in the late months of 2020 in finalizing its national vaccine deployment plan, and the World Bank, US CDC, USAID, and GAVI funding was released for vaccine procurement and deployment. On 16 December, an application was made to join the COVAX facility. The Incident Management System (IMS) leadership has agreed on a roadmap with the Minister of Health, but due to media sensitization (and reports of problems with the AstraZeneca vaccine in Europe), stock deployment has been slow to kick off. This is important, owing to the short lifespan of the vaccine: the first consignment of 96 000 doses expires on 10 July, with a second consignment expected in May. Liberia is, therefore, slightly behind in rolling out its vaccination campaign compared to other countries in the West African region. However, the latest Knowledge, Attitudes, and Practices (KAP) survey conducted by WCO suggests that three out of five people, especially those with comorbidities, are keen to get vaccinated. Health care workers will undoubtedly be among them. Available vaccines are now being deployed at eight sites in Montserrado and Margibi counties and will be rolled out to the other counties in the coming days and weeks<sup>15</sup>.

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<sup>12</sup> <https://virological.org/t/release-4-ebov-genomes-from-guinea-2021-outbreak/642>

<sup>13</sup> <https://www.nih.gov/news-events/news-releases/ebola-test-vaccines-appear-safe-phase-2-liberian-clinical-trial>

<sup>14</sup> <https://www.sciencemag.org/news/2021/03/new-ebola-outbreak-likely-sparked-person-infected-5-years-ago>

<sup>15</sup> <https://www.afro.who.int/news/liberia-launches-vaccination-against-covid-19?country=838&name=Liberia>