



eHealth AFRICA Sierra Leone

In 2014, eHA joined other International Non-governmental organizations in Sierra Leone in response to the Ebola Virus Disease (EVD) outbreak. With an expertise in providing technology solutions, and logistics and operational support for public health interventions and health systems strengthening programs, eHA partnered with Sierra Leone's Ministry of Health and Sanitation in order to address some of the existing health challenges which worsened the state of emergency preparedness in the country.

This involved the setting up of the Public Health National Emergency Operations Center (EOC) as a Command and Control center for responding to the outbreak, in collaboration with the U.S. Centers for Disease Control and Prevention (CDC) and the CDC Foundation.

By end of 2015, a total of 11,318 fatalities were associated with the Ebola virus in West Africa, with Sierra Leone accounting for 3,956. There was even greater need for improving health systems and data management to ensure that such outbreaks do not occur in the future. eHA stayed on to support the post-Ebola recovery phase in the country, running sustainable programs and ensuring that health care workers' capacities were built. Our work centered around three of our focus areas in: Emergency Management; Disease Surveillance and Health Delivery systems.





Public Health **Emergency Management Systems**

Through our Public Health Emergency Management focus area, we work with stakeholders to prepare for and respond to potential and active public health emergencies in order to eliminate or lessen their negative impact on populations, primarily through the design of context-specific technological tools and smarter operations.

At the height of the EVD outbreak in 2014, the Public Health National Emergency Operations Center (PHNEOC) was established in Freetown, Sierra Leone, to provide a coordination mechanism to manage the full implementation of the emergency and prevention plans in response to disease outbreaks and other key health threats. Through the the CDC Foundation and the U.S. Centers for Disease Control & Prevention funding we delivered support to the PHNEOC and the EOC has continued to play a role in important public health emergencies.

Emergency **Management & Preparedness (EMP)**

The Ebola outbreak in 2014 exposed Sierra Leone’s inability to effectively respond to public health emergencies. The primary challenges were the lack of emergency management coordination at the national level and lack of capacity among the health care workforce in the country to respond to public health threats. The CDC-funded EMP project was implemented to provide operational support for emergency management coordination at the PHNEOC and to train Sierra Leone’s Ministry of Health and Sanitation (MoHS) staff in emergency preparedness and management processes to enhance their capacity to prepare and respond to public health-related threats.

This multi-year project was initially implemented at the PHNEOC in Freetown, and has successfully scaled up to all 14 districts in Sierra Leone, providing combined in-person and hands-on workshops with virtual training elements and simulation exercises.



All districts in Sierra Leone now have trained EOC Focal persons that can readily respond to public health emergencies



87.5%

of targeted healthcare workers trained in disease outbreak response via tabletop simulations



86.7%

key public health personnel trained in emergency management, out of a targeted 381 healthcare workers across the country.

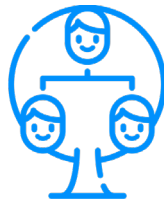


Sierra Leone Ebola Database (SLED)

The Sierra Leone Ebola Database (SLED) project is a consolidated database to store EVD outbreak-related data. Housed and managed at the PHNEOC, eHA implemented the SLED project in close collaboration with the CDC, the Government of Sierra Leone and CONCERN Worldwide. The project, over the past four years, has ensured the development and maintenance of a consolidated database of EVD related records. Access to this database equips researchers with the information needed to better understand risk factors for potential future disease outbreaks. In addition, the SLED project in partnership with CONCERN Worldwide is successfully providing families who have lost loved ones during the Ebola outbreak with the location of their burial/grave sites via a dedicated reunification program.

Sense Ebola Follow Up - Contact Tracing

eHA developed the mobile application Sense Ebola Follow Up in 2015 to record in real time the number of people exposed to the Ebola virus. Sense Followup is a hybrid mobile app built for Android phones and tablets. It provides a simple interface that guides health workers through the processes of registering a contact and performing a followup. The individual's record holds geotags so that the contract tracers have the ability to track, follow up, and test members of specific communities for Ebola. This app was crucial to stopping the Nigerian Ebola outbreak in 2014. Following this success, eHA introduced a modified version of Sense in Sierra Leone and Liberia and provided training to the contact tracers and supervisors in 2015.



100 families reunited with graves of loved ones lost to Ebola via confirmed matches in the SLED database.



5 data packages prepared and provided to national researchers to support public health research proposals.

Sierra Leone Trial to Introduce a Vaccine against Ebola (STRIVE)

During the EVD outbreak in 2014, the CDC engaged eHA to assist in the implementation of the first-ever clinical trial in Sierra Leone. The clinical trial was to test a vaccine against the Ebola Virus Disease.

eHA facilitated the construction and maintenance of a climate controlled warehouse to maintain physical records of participants of STRIVE. eHA's ICT technicians also provided technical assistance to the Ministry of Health and Sanitation and College of Medicine and Allied Health Sciences (COMAHS) and worked with Technical Resources International Inc (TRI) to maintain electronic clinical data.

eHA continued to work with the COMAHS to prepare for a United States Federal Drug Administration (FDA) audit of the participants, as required for licensure of the Ebola Vaccine used in STRIVE.

The safety and immunogenicity data collected through this trial are expected to form critical components of the vaccine licensure application to be submitted to the U.S. Food and Drug Administration. Participant files will be tentatively moved to Atlanta in the third week of January 2019.



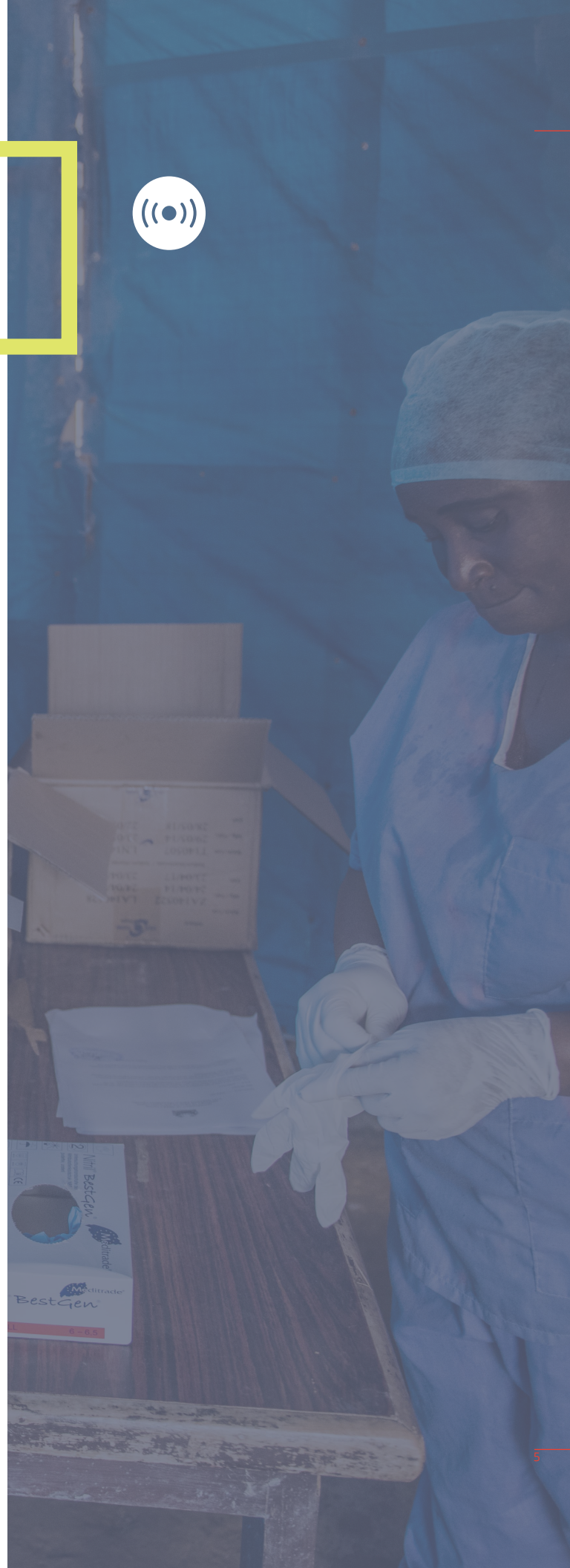
8,700

health care workers and frontline workers were vaccinated against Ebola Virus Disease in Western Area, Port Loko, Bombali and Tonkolili Districts.



350+

Sierra Leonean clinicians were trained to enroll, vaccinate, and provide surveillance, also building a functioning cold chain to support -80 degree centigrade temperatures to keep the vaccine viable.





Disease **Surveillance** **Systems**

Through our Disease Surveillance Systems focus area, we provide technological tools and operational support to collect and analyze data from the field level, including hard-to-reach communities, that contributes to the detection and ultimate prevention of public health emergencies and disease outbreaks.

Our goals are to increase the coverage of near real-time case-based disease reporting from communities, primary care facilities, and hospitals and increase the early detection and reporting of government-identified priority diseases.



Child Health and Mortality Prevention Surveillance (CHAMPS)

CHAMPS is a 20-year global research project with the goal to identify causes of child mortality and prevent child death through community engagement, diagnostic and laboratory innovations, surveillance network advances, policy-to-action activities and rapid, open access to data.

In 2017, eHA worked with partners including Sierra Leone's MoHS and Focus 1000 to set up the research site in Makeni, the largest city of Bombali district, Northern Province. eHA coordinated community engagement in the district to gather social behavioral information through formative research studies led by Focus 1000 on causes of death for children under 5. Community members were recruited and trained by World Hope International to report deaths to the national mortality surveillance hotline, 117. Data was then pushed from 117 to the mortality surveillance team for further follow up in communities and health facilities.

eHA provided informatics and data management support to the project and configured the 117 Call Center for Child Mortality Surveillance.



11

calls were made per week on an average in 2017, triggering SMS notifications from 117



Child deaths were reported, on average, within two days of the event in 2017



electronic Integrated Disease Surveillance and Response (eIDSR)

The electronic Integrated Disease Surveillance and Response solution (eIDSR) was created to improve the flow of information within health systems. Paper-based methods present challenges that make health and disease data reporting time-consuming and error sensitive, resulting in questionable credibility and completeness of information.

With eIDSR, disease prevention and control is enhanced through the timely electronic capture and submission of data on epidemiologically important diseases. The solution is tackling the problems of low weekly priority disease reporting rates, low quality of data, poor internet and phone connectivity hindrances and reducing errors in reporting.

The eIDSR project was implemented in collaboration with the Ministry of Health and Sanitation, World Health Organization (WHO), and Focus 1000,

In June 2019, The World Health Organization (WHO) announced Sierra Leone was the first country in Africa to transform its disease surveillance from paper-based to electronic.



To a very large extent, I believe we are better prepared now, as a country, to respond to public health emergencies than we were a few years ago. From a disease surveillance angle, we can now better respond to emergencies as data from locations under active surveillance during an emergency can be represented using maps showing spread or containment of outbreak. This has never been the case.

A.K. Sesay,
Deputy Data Lead
Directorate of Health Security
Emergency (DHSE)



90%

of health facilities submit their weekly reports electronically in 2019



80%

of trained facilities electronically submitting their weekly report on time



80%

of health care workers trained on the use of eIDSR



117 Call Center

The 117 Call Center was originally established by the Ministry of Health and Sanitation (MoHS) in 2012, as part of a wider support system to improve maternal and child health. It enabled the public to register concerns, inquiries, and observations on free health care services for pregnant women, lactating mothers, and children under the age of five. Five months into the Ebola Virus Disease (EVD) outbreak, the Public Health National Emergency Operations Center (PHNEOC) system was established, and it included scaling up and integrating the 117 Call Center into its operations. The U.S. Centers for Disease Control and Prevention (CDC) provided funding for the initial set-up and maintenance of the call center, and additional funding was available through a United Kingdom Government aid package to the Resilience Zero consortium, that comprised of CARE International, International Rescue Committee, GOAL, Save the Children, Concern Worldwide, Action Against Hunger and eHealth Africa (eHA).

The 117 Call Center was used to document, track, and provide follow-up on suspected EVD cases, and also served a number of other functions including communication, coordination, and data management. eHA provided technical and operational 117 Call Center to all 16 districts in Sierra Leone, increasing the 117 Call Center capacity from 8 to 238 operators at the response's peak. Post-Ebola, the call center has transitioned

into a strong disease surveillance mechanism in support of the government's One Health Initiative, a multi-sectoral partnership to prevent, prepare and respond to disease threats. Currently, there is funding from the World Bank to the MoHS, through the Regional Disease Surveillance Systems Enhancement (REDISSE) Project, to strengthen the cross-sectoral capacity for collaborative disease surveillance and epidemic preparedness in Sierra Leone through the call center.

Importantly, the 117 Call Center served as the first point of contact for advice, health, and treatment information for the public, whose feedback was gathered for quality assurance. The initiative improved emergency response times and decreased mobile team delays at the district level. Public perception of the call center was enhanced through reliable access to assistance and treatment information.

“When I started working with the 117 Call Center team in 2014, our main tools were a mobile phone, pen and paper. This paper-based method had its own challenges in terms of recording data and avoiding duplication of efforts. The chain of command in the old system was also too long. eHA upgraded the way work is being done in the 117 Call Centre. We became exposed to using computers and software. This is making the job quite easy for us. These upgrades have also fueled faster response. eHA also introduced the call back system whereby follow-ups are made to previous callers in a bid to know whether their concerns once raised or cases reported have been addressed. If not, appropriate channels are also exhausted in order to address them.

Tejan Mansaray,
117 Call Center Supervisor,
Freetown Sierra Leone



Auto-Visual Active Flaccid Paralysis Detection and Reporting (AVADAR)

In 2016, the Bill and Melinda Gates Foundation (BMGF) funded the AVADAR Project in Sierra Leone, with the main objective of improving AFP surveillance for the purpose of identifying hidden cases of polio.

Building on the success of the pilot of the mobile based Auto-Visual AFP Detection and Reporting (AVADAR) surveillance system in Nigeria, the project was scaled up to strengthen surveillance by improving timely detection and reporting of suspected AFP cases in countries at risk of the re-emergence of the polio virus. Ebola was not the only life-threatening disease in Sierra Leone since 2014. Children were affected and dying of Vaccine Preventable Diseases (VPDs), including Polio.

eHA implemented the AVADAR Project in Sierra Leone, producing the AFP educational video for AVADAR mobile application, facilitating capacity building of community informants on accurate AFP detection and timely reporting, procuring/distributing mobile phones to community informants, undertaking routine field supervision visits to community informants to resolve technical and silent reporting issues.

Formative Assessment for Mortality Surveillance (FAMS)

eHA started implementing the FAMS project in Sierra Leone with the main objective of determining causes for low levels of death reporting from communities and propose viable solutions to enhance reporting through the 117 Call Centre.

eHA worked with the CHAMPS project and the MoHS to develop survey tools and research plans targeting specific communities in Kenema and the Western Area.

A mixed research approach, involving qualitative and quantitative processes, was successfully conducted in 2017 targeting specific communities across these two regions. Preliminary results were disseminated to key stakeholders at all levels, with recommendations on strategies to improve death reporting and mortality surveillance in Sierra Leone.



1,300
research participants in 2017



68
true AFP cases from inception to transition



594
Community Informants trained to date



32
community health officers trained to support with investigation of AFP cases and resolving technical phone issues at the community level.



4
District Health Management Team IT technicians trained to investigate and resolve technical and silent reporting issues, navigating and generating report using the AVADAR dashboard.



1,300
WHO & MoHS personnel trained on how to conduct trainings using the AVADAR training guidelines and methodology.



Health **Delivery Systems**

Through our Health Delivery Systems focus area, we improve the quality and availability of healthcare for underserved populations, primarily through data management and operational support to enable better decision-making and build a stronger healthcare workforce.

Field Epidemiology Training Program (FETP)

Prior to the Ebola outbreak, Sierra Leone did not meet the Global Health Security Agenda (GHSA) recommendation of 1 epidemiologist per 200,000 people and did not have the requisite epidemiology infrastructure to study patterns of frequency and the causes and effects of diseases in the population. As a result, health care workers were not enabled to detect and investigate cases of public health concern nor interpret and analyze surveillance data for critical public health action.

This was a critical capacity gap in the Sierra Leone health system that also presented the opportunity for building and strengthening Sierra Leone's epidemiology infrastructure nationwide by giving middle-level health care workers the requisite capacity to carry out effective disease surveillance.

The Field Epidemiology Training Program (FETP) was implemented in Sierra Leone in June 2016 under the CDC-funded Cooperative Agreement in order to bridge this critical capacity gap. Since its establishment, there has been a 127% increase in epidemiological capacity nationwide in three years. eHealth Africa (eHA) implemented the FETP project in close collaboration with: Sierra Leone's Ministry of Health and Sanitation (MoHS); African Field Epidemiology Network (AFENET).



25

participants enrolled/graduated in FETP-Intermediate, contributing to 68% of Sierra Leone Global Health Security Agenda goal of 1 epidemiologist per 200,000 population



80

80 case or outbreak investigations conducted by these health professionals on Cholera, Measles, Meningitis, Yellow Fever Acute Flaccid Paralysis (AFP) and more



Community Health Officers Management and Leadership Training Program (CHO-MLTP)

Prior to the launch of the Community Health Officers Management and Leadership Training Program (CHO-MLTP) in 2016, there was no formal training of that nature for health professionals in the country. The U.S. Centers for Disease Control and Prevention (CDC) collaborated with the Ministry of Health and Sanitation (MoHS), Njala University, Emory University, ICAP of Columbia University, and eHealth Africa (eHA) to develop a novel training program to address this need and ultimately improve health service delivery and health outcomes in Sierra Leone. CHOs working at Community Health Centers (CHCs) were targeted to be the first cadre to receive this public health management and leadership training, given their key role as first-line health service providers and chiefdom leaders.

The aim of the CHO-MLTP is to emphasize public health systems thinking and basic management principles needed to run effective health facilities and outreach services. The emphasis of the project is also to strengthen interpersonal communication and engagement with community leaders in order to develop practical and sustainable solutions to longstanding public health challenges.

The CHO-MLTP is modeled after the CDC's Field Epidemiology Training Program (FETP). CHO-MLTP participants receive in-class didactic training/workshops that are then put into practice through mentored field projects at the participants' respective assigned post of duty over a five to six-month period. The field assignments are conducted at the CHOs' Community Health Centers (CHCs), feeder Peripheral Health Units (PHUs), or within their community to directly apply lessons learned from the classroom.

Key modules covered in the CHO-MLTP training include:

- Community engagement and relationship management
- Effective supportive supervision, time management, and on-the-job training for staff
- Public health management and leadership
- Quality Improvement methods and problem-solving skills (facility level)
- Service Availability and Readiness Assessments (SARA) for health facility management
- Data for decision making
- Drug inventory management (PHU level)

To ensure participants are empowered to apply these lessons to their daily work, the CHO-MLTP has four full-time field mentors who assist the participants in implementing their field assignments. eHA implemented the CHO-MLTP Project from 2016 through June 2019.



50%

increase in HIV screening at the community level by July 2019



60%

increase in hypertension screening at the community level

Teenage pregnancy reduced by 78% in Babara

Teenage pregnancy has long been a problem in Sierra Leone. In 2013, the country's rate ranked among the ten highest in the world, with 28% of girls aged 15-19 pregnant or already given birth at least once (UNFPA, 2015: 5). Sierra Leone continues to grapple with this issue nationwide. This has led to the First Lady of the Republic of Sierra Leone, Mrs. Fatima Bio, championing a "Hands off our Girls" campaign which was formally launched by the President of the Republic of Sierra Leone, Retired Brigadier Dr. Julius Maada Bio on December 14, 2018, raising awareness on issues affecting girls, including teenage pregnancy. There are many issues and challenges associated with teenage pregnancy, including maternal complications leading to death, increased school dropout rates, increased rates of Sexually Transmitted Infections (STIs), including HIV/AIDS, Hepatitis and others.

Community engagement on health promotion is one of the key training areas covered under the CHO-MLTP project. Through the health promotion training, CHOs are able to sensitize communities on issues affecting their health and wellness. Francis Kpaka, CHO, Babara Community Health Center (CHC) in the Kafu Bullom Chiefdom in Port Loko district, is one of 170 CHOs trained through the CHO-MLTP Project. His training was useful in addressing the rising rate of teenage pregnancy in the Babara community. With a thorough background in community engagement after his CHO-MLTP training, he went into action. *"After my training, I returned to my community to replicate what I had learned, every bit of what was imparted in me. CHO-MLT also taught us to let communities have ownership of programs. We engaged community stakeholders, held a series of meetings, asking them to share with us some of their health related challenges in the community. The feedback we got was shocking! Teenage pregnancy stood tall among health related challenges mentioned."* - Francis Kpaka.

Before now, data collection and management was poor across health care facilities. *"Prior to 2016, we were not doing great on data collection and management. But that is one area the CHO-MLTP has helped us improve on. So, we went back to our data, (thanks to the CHO-MLTP Training) and realized there were 22 cases of teenage pregnancy in 2018. We went back to the community to confirm it was indeed true, teenage pregnancy was alarming and is a worrisome problem in Sierra Leone."* - Francis

The knowledge gained in the CHO-MLTP project has been translated into activities that are yielding positive outcomes in Francis' CHC.

"Together with community stakeholders, we mapped out strategies for reducing teenage pregnancy in the Babara community. We started doing community sensitizations and health promotion activities in schools and the entire community at large, informing mothers, fathers, teenagers themselves, about the causes, dangers of teenage pregnancy and how it can be avoided. After these activities, we realized a drastic reduction of teenage pregnancy in the Babara community, from 22 cases in 2018, to 2 cases in 2019, accounting for a 78% reduction of teenage pregnancy in the community."

Francis has great joy over the successes his CHC has had, but he owes it all to the CHO-MLTP Project. *"It gives me great joy to see this happening in my CHC. Before CHO-MLTP, our roles were just confined to clinical services. CHO-MLTP broadened our horizon to being leaders as well as managers. I didn't care much about what was happening in my surroundings. I would just wait for patients to come to the clinic and get treated. I didn't care much about the root causes. The CHO-MLTP project taught me that I can take a more proactive step in preventing health related issues from happening in my CHC. My community engagement skills have improved tremendously"* - Francis



VaxTrac

Through routine immunization programs, health workers bring life-saving vaccines to people around the world. eHealth Africa works with partners to increase vaccination rates in the countries we work in. In Sierra Leone, one of the ways we did this was through VaxTrac.

VaxTrac, was a clinic-based vaccination registry system which health workers used in the field to enroll children and track their immunization records. Implemented from 2016 through 2018, this system eliminated the need for paper-based cohort books, tally sheets, and monthly reporting forms and improved health workers accuracy and efficiency.

VaxTrac was used at 50 health facilities including the Ola During Children’s hospital, the largest children’s referral hospital in Sierra Leone and improved the quality, timeliness, and usefulness of immunization data. VaxTrac also reduced vaccination drop out rates in the health facilities it was implemented in. Health workers accessed information on defaulters which was used for defaulter tracing activity during their outreach programs within the communities they served.



50,463
children registered on VaxTrac



+228,661
registered doses of administered
vaccine compiled in VaxTrac

Thank you to all our partners!

The Government of Sierra Leone
Sierra Leone Ministry of Health and Sanitation
U.S. Centers for Disease Control and Prevention (CDC) Sierra Leone
AFCOM
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Focus 1000
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Leidos Biomedical Research Inc.
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Restless Development
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World Hope International
UNICEF
Statistics Sierra Leone
University of Oslo
World Bank-REDISSE
34 Military Hospital



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