# 20
# 20

## Half-Year
## Impact
## Report

eHealth
AFRICA

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**This report is possible because of our team!**

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*Vaccinators leaving for their assigned settlements after collecting the vaccines to be used in the House to House campaign in Kogi State.*

# Our Mission

Our mission is to build stronger health systems through the design and implementation of data-driven solutions that respond to local needs and provide underserved communities with tools to lead healthier lives.

# Our Expertise

Public Health

Logistics and Infrastructure

Digital Health

Data Management

Project and Program Management

Monitoring and Evaluation

Geographic Information Systems

*A vaccinator in Kogi State educates members of a household during a House-to-House Immunization Plus Days session.*

# Capacity Building

A competent health workforce is critical for attaining Universal Health Coverage (UHC) and for ensuring that health systems are prepared for, and can respond to public health emergencies. We work with partners to identify gaps in the knowledge and skills of health workers and proffer sustainable solutions to bridge those gaps.

Through the Vaccine Direct Delivery (VDD) project, we provide a third-party logistics service to the Sokoto and Zamfara State Primary Health Care Management Boards for the delivery of potent vaccines to last-mile health facilities. We trained health delivery officers to effectively utilize our solution, LoMIS Deliver to route, schedule, and execute deliveries to health facilities. This eliminated vaccine stockouts and provided decision-makers with data to help them effectively allocate vaccines to health facilities.

In Borno state, Routine Immunization coverage rates dropped due to the combination of insecurity and destruction of health facilities, eHealth Africa worked with partners including the World Health Organization (WHO), Rotary International, the U.S Centers for Disease Control and Prevention (CDC), the United Nations Children's Fund (UNICEF), the Bill and Melinda Gates Foundation (BMGF), Solina Health and Novel-T to launch the Routine Immunization Expansion (RIE) strategy that uses Geographic Information Systems (GIS) solutions to identify and target settlements for RI sessions. We trained RI teams to read GIS maps and utilize them during the micro-planning process to

estimate target populations and allocate catchment areas to health facilities across the state. This enabled the teams to prioritize and plan what areas to reach based on criteria like accessibility, habitation status, and proximity to adjoining settlements.

The National Emergency Routine Immunization Coordination Center (NERICC) launched the Integrated Medical Outreach Program (IMOP) to address immunization and primary healthcare gaps through various strategies including medical outreaches. eHealth Africa trained healthcare workers across the country on the use of GIS maps for microplanning. Access to location intelligence during the microplanning stage gives health planners an accurate estimate of the target population so that adequate resources can be allocated for health programs.

eHealth Africa trained decision-makers in Borno state to visualize and analyze vaccination geo-coverage data during supplementary immunization activities for better planning of future activities in security-challenged and hard-to-reach areas. We supported the Kano State health system to set up a COVID-19 call center for faster case reporting and follow-up. We trained call center personnel to man the lines, collect necessary contact information and aggregate the data for immediate action.

**3,265**
people trained

**456**
learning hours spent by users of the eLearning platform

**65%**
65% of participants trained were women

**9**
health delivery officers trained on effective health delivery management

**369**
hours spent on capacity building activities

## eHA ACADEMY CASE STUDY

For us at eHealth Africa, capacity building is not just a strategy for strengthening health systems. It is a way to give back to the communities that we live and work in. We are always on the lookout for skill and knowledge gaps that we can work with local partners and communities to build so that we can leave them better than we met them.

We accomplished this in Conakry, Guinea through the eHA Academy in 2016. eHealth Africa designed and delivered a free 8-week curriculum, taught by expert instructors with software design and development expertise. The goal was to create a pool of local software developers with the required skills and expertise needed to create technological tools that could address gaps and challenges in health care delivery and disease surveillance.

In Northern Nigeria, where we have implemented the bulk of our projects, we realized that there was also a need to build capacity in other communities we work in beyond our projects. We started by hosting monthly tech meetups where we could share our knowledge and experience with tech enthusiasts in Kano State. Four years after the eHA Academy closed in Guinea, we realized that we needed to do more to develop tech talent in Northern Nigeria. In response, we reactivated the eHA Academy in Kano State, Nigeria. The first cohort of the Academy ran from February 29 to April 25, 2020.

Busari Azeezat, a content creator and self-taught graphic designer, is one of the graduates of the first cohort in Kano. She became interested in tech as a way to improve access to the quality of education and agriculture in Nigeria. This is her account.

## MY JOURNEY TO WEB DESIGN

### Busari Azeezat

My first encounter with web design was in 2015 at a tech program. It was a self-paced course. We were given course materials and were expected to study on our own. However, because of my school activities, I could not keep up with the curriculum. Fast forward to 2020, after my National Youth Service Corps (NYSC) year and considerable graphic design skills, I decided to try learning web design again.

I saw the eHA Academy flyer on a friend's Whatsapp status and it seemed perfect for me to apply. At first, I thought it would be fully offline and that we would need to meet, learn, and have our progress tracked. I was pleased with this structure because I learn better when I am part of a community, rather than by myself. It turned out that the program was partially offline but we were assigned mentors, had deadlines, and overall, we had a means of being held accountable, which I really liked.

The eLearning platform was a good one. I could track my progress and there were challenges to test my understanding of the concepts I had learned. I was determined to see it through to the end even if it meant using up large amounts of data, subscribing on a weekly basis, or saving my laptop battery to meet up with deadlines for projects and challenges. Learning HTML & CSS was easy. I found it easier to complete the challenges and did the assigned projects. However, the Javascript track was very challenging and long. I would get headaches often. I remember reaching out to my mentor about deadlines and how challenging I thought Javascript was.

Despite all these, my determination not to stop halfway helped me pull through. It was indeed an amazing learning experience for me and once more, it helped to reinforce my belief in the limitless things I can achieve. After our final projects, I decided to better my understanding of web design by choosing to be a front-end developer. I enrolled for the Ire Aderinokun Udacity Scholarship so that I could gain even more knowledge and skills. Unfortunately, I was not awarded the Udacity scholarship. I, however, was awarded three-month access to educative.io by the scholarship founder and I have been on the track since.

It meant a lot to me to receive the email saying that project was one of the best. It was a reward for my hard work and it further encouraged me to take my current front-end development track courses more seriously irrespective of the challenges I may face. I look forward to becoming a "full-blown" front-end designer by the end of the year. I hope to design amazing products and solve problems with this skill. My profound gratitude goes to the organizers of eHA Academy as they helped set me on this path. I hope that my story encourages people to put in their best and strive to finish whatever they start.

Thank you.

Busari Azeezat

*A cold chain officer in Ungwauku PHC, Kano State shows us some of the charts kept in the health facility.*

# Data-Driven Decision Making

Public health decision-makers often face difficult decisions when allocating their resources to increase the reach and effectiveness of programs that work to improve the health of communities. Across health systems, decisions are often mate with too few sources of empirical evidence. As an organization, we work to improve health systems primarily by developing technology driven decision support tools that collect data and provide insight to decision makers to make evidence-based decisions that draw them closer to achieving their goals.

Since 2012, we have been collecting datasets as part of our work in the region and they are now centralized in a geodatabase. We used these datasets when we developed the the Missed Settlement Tracking and Analysis (MISTA) tool to support the Borno State Primary Health Care Development Agency (BSPHCDA) to improve the daily monitoring of settlement visits and it has reduced the number of missed settlements during campaigns in Borno state.

The data we collect is consistently made available to relevant decision makers at national and subnational levels to provide the evidence needed to improve and/or change their programs.  In states like Sokoto and Zamfara in Nigeria, our health delivery officers  in the Vaccine Direct Delivery third party logistics service we offer, routinely retrieve data from each health facility on stock levels, vaccine consumption, vaccine wastage and state (functionality and maintenance) of cold chain equipment from each health facility. This data is used by RI stakeholders in each state to make improvements to the RI programs.

**45** post-campaign validated missed settlements shared with the National EOC for follow-up and decision-making

**25** RI stakeholders in Sokoto and Zamfara who use monthly VDD data for decision-making

**100%** of Sokoto State RI stakeholders utilizing VDD for RI decision making monthly

**4** government agencies use maps for decision-making

# ELIMINATING VACCINE STOCK CHALLENGES IN BICHI ZONE

For a long time, the Bichi zone in Kano state was faced with the challenge of a high percentage of health facilities within the zone that experienced vaccine stock-outs. With 63 facilities in the zone submitting paper-based reports on a monthly basis, a large amount of data needed to be analyzed to identify the facilities that were at the minimum stock level. The minimum stock level is the quantity of vaccines on hand, at which a health facility's vaccine stock must be replenished to avoid a stock-out. To conduct this analysis, the vaccine stock inventory data for all the health facilities in the zone first had to be entered from the paper-based reports onto a spreadsheet. This process delayed action for days and sometimes weeks and led to vaccine stock-outs at the health facilities.

The resolution of this problem lay squarely on the shoulders of the Zonal Cold Chain Officer, Tukur Abdulsalam. He manages the zonal cold store and is responsible for ensuring that the target population in Bichi zone has access to potent vaccines at all times by managing and maintaining the cold chain system. In addition, he coordinates the distribution of vaccines from the zonal cold store to all the health facilities with functional cold chain equipment and the 6 LGA cold stores of the zone. To accomplish this, he needs to consistently collect and review data relating to the utilization/ consumption rates of vaccines in all 63 health facilities and 6 LGA cold stores in the zone. In addition, Tukur supervises and trains the cold chain officers in his zone, and ensures that all vaccine management reports and records are completed and submitted on time.

In 2017, the Kano State Primary Health Care Management Board adopted LoMIS Stock, a mobile and web-enabled vaccine inventory management solution developed by eHealth Africa, that allows health workers to report and keep track of vaccine consumption and availability levels, and cold chain equipment status at the health facility level, using their mobile phones. Supervisors can access their reports through the web dashboard, analyze the data, and ensure that health facilities never run out of vaccines. Supervisors can also see when cold chain equipment have been reported as faulty and make the necessary plans to repair them.

LoMIS Stock has bridged the gap between Tukur and the facilities under his watch as he now receives their reports in near real-time, allowing him to plan vaccine deliveries to health facilities before they get to the minimum stock level, re-distribute inventory from health facilities that were overstocked and generally monitor/supervise the consumption rate of health commodities.

Tukur's long-standing problem of analyzing health facility stock data has been eliminated by the solution. In addition to receiving reports in near real-time, he can analyze the data and visualize any one of his indicators easily and much more efficiently. He frequently creates reports, charts, and graphs which he uses in his presentations and reports at the monthly state routine immunization (RI) meetings. Perhaps one of the greatest benefits of using LoMIS Stock is that he no longer needs to physically visit every cold store in his zone. He can easily identify the problem facilities using the stock sufficiency and wastage indicators of the solution and provide the needed support.

*"LoMIS Stock is a fascinating logistics management tool that has greatly improved the cold chain logistics and vaccine security of Bichi zone. I am now able to visualize all my key indicators and make informed decisions."*

- Tukur Abdulsalam

Using the data from LoMIS Stock has also improved decision making in Bichi zone, for example, if a particular health facility has consistently reported stock-outs of a particular vaccine before the scheduled restocking period, Tukur can decide to increase the amount of that vaccine being given to the health facility, as it could mean that they immunize more children than initially estimated. Furthermore, he can compare the stock-out trends for that vaccine with the wastage rates. A high wastage rate is indicative of damaged/ impotent vaccines or poor use of vaccines. Whatever the scenario, this gives him ample data to make a decision and build the capacity of the health worker. This has freed up time for him to optimally support other immunization activities and to discharge his duties efficiently.

Thanks to LoMIS Stock, Tukur is better able to ensure that potent vaccines are readily available, optimally utilized and that the eligible children in the Bichi zone have access to quality vaccines and immunization services.

*A boy in Maiduguri, Borno State is about to receive the Oral Polio Vaccine during a House-to-House Immunization Plus Days activity.*

# Immunization

Immunization protects children against a majority of life-threatening childhood illnesses so that they can lead healthy lives in future. The benefits of immunization are optimal when children receive their full vaccination courses. In Nigeria, reports show that only 1 in 4 children received all the recommended vaccines and that vaccination coverage varies by geopolitical zone, area of residence, wealth index and the primary caregiver's level of education.  In order to meet the World Health Organization (WHO) target of immunizing at least 80% of eligible children in all geographical locations, health systems must ensure that all health facilities, even in hard-to-reach, security-challenged areas, are never out of vaccines. In addition, health workers must be monitored and supervised so that they provide the highest quality of routine immunization services at all times.

eHA works with partners and stakeholders in the Nigerian health system to address supply and demand-side gaps that lead to reduced access to quality immunization services. The Vaccine Direct Delivery (VDD) project and LoMIS Stock projects address supply-side gaps such as poor vaccine stock management at the health facility level. VDD ensures that health facilities in Sokoto and Zamfara states always have vaccines in stock to immunize children and eliminates the challenge of poor visibility and loss of vaccine potency

while in transit. LoMIS Stock enables health workers at the facilities to keep track of their vaccine stock and cold chain equipment, and to report vaccine utilization, wastage and cold chain equipment status data on a real-time basis so that decision makers can plan and address challenges as they arise.

Kano Connect was developed by eHA and the Kano State Primary Healthcare Management Board (KSPHCMB) to strengthen the delivery of primary health care services, especially Routine Immunization through capacity building and supportive supervision. eHA supports the state to maintain a comprehensive directory of health workers and health facilities in Kano state. In addition, eHA develops digitized observation checklists which supportive supervision program officers use to monitor and supervise the quality of routine immunization services provided at the facilities. The data collected can be stored on a dashboard which can easily be accessed and reviewed by managers for decision-making.

Through the Vaccinator Tracking System (VTS) project, we also work with national polio eradication partners across the country to increase the coverage of supplementary immunization activities like the Immunization Plus Days (IPDs) or outbreak responses. In Borno State, eHA along with other partners support the Borno State Emergency Routine Immunization Coordination Center to identify consistently underserved locations, confirm habitation status and accessibility, update health facility catchment data and expand Routine Immunization services in the areas. In addition, eHA supports the state to track Immunization Plus Days in both security-challenged and  non-security challenged areas so that eligible children who missed their vaccinations have another chance to be protected against infectious childhood diseases.

**3,253,596**
children immunized

**65%**
of health facilities reporting vaccine stock sufficiency in Kano State

**6,771**
supportive supervision visits conducted from January to June

**3,339,486**
vaccines delivered

**408**
health facilities visited for vaccine delivery in a month

**4,369**
successful deliveries

# TRANSFORMING ZAMFARA STATE'S VACCINE DISTRIBUTION SYSTEM WITH VACCINE DIRECT DELIVERY

In Northern Nigeria, there are already enough barriers to immunization. Mothers incur high transportation costs to and from the health facility and brave negative cultural attitudes and perceptions towards vaccinations to bring their children for immunization sessions. When vaccine stock-outs are added to this mix, children are turned back from health facilities without being immunized and the chances of them returning are slim.

A vaccine stock-out is when health facilities run out of one or more vaccines needed for immunization. For many years, Zamfara state implemented the pull system of vaccine distribution, in which health facilities visit the cold stores at local government (LG) level to pick up the vaccines that they need. The LG stores, in turn, pick up vaccines from the state cold store. A significant effect of this method was the prevalence of vaccine stock-outs at last-mile health facilities. Health supervisors attempted to prevent this by analyzing health facility vaccine utilization and wastage data to set the minimum stock levels for different facilities. Once a health facility had reached its minimum stock level, the health facility in-charge would visit the Local Government cold store to replenish their vaccine stock.

Unfortunately, this system did not always work as some health facilities still ran out of vaccines before the restocking took place. This was a challenge for Nasir Yakubu, the cold chain officer for the Zamfara State Primary Health Care Management Board (ZSPHCMB). He is directly responsible for the vaccines that Zamfara state receives from the National Primary Health Care Development Agency (NPHCDA) zonal office in Kano, or the NPHCDA national office in Abuja, and ensuring that the 14 LG cold stores are stocked with the sufficient amount of vaccines. He also monitors the status and functionality of cold chain equipment across the state and provides prompt resolution whenever any of the CCEs stop functioning.

Several circumstances exist which may lead to a health facility experiencing a stock-out and after nine years of experience in vaccine cold chain and logistics, Nasir is well aware of them.

*"Health workers often need to travel to pick up vaccines from the LG cold store. In some cases, the health workers would travel long distances to the LG cold store, only to discover that the vaccines are unavailable. This resulted in stock-outs at apex and cascade facilities. It was all the more worrisome because the state cold store always had vaccines"*

Nasir was also unable to effectively track which health facilities were experiencing downtime on their cold chain equipment and this often led to vaccine damage; further worsening the stockout situation.

In 2019, the Zamfara State Primary Health Care Management Board engaged eHealth Africa to provide a third-party logistics service, Vaccine Direct Delivery (VDD), which would deliver vaccines to the 14 LG cold stores and the 147 apex health facilities on a biweekly basis. This marked Zamfara State's shift to the push system of vaccine distribution in line with the national Push Plus model which was adopted in 2013. The improvements to Nasir's work have been tremendous.

*"The stockouts of vaccines at the LG cold stores and health facilities are now a thing of the past. I ensure that the vaccines and data tools are packaged properly and ready to be picked up from the state cold store by eHealth Africa's health delivery officers. They deliver the vaccines at the correct temperature to all the LG cold stores and health facilities."*

In addition, VDD also incorporated a reverse logistics service through which safety boxes and used/empty vaccine vials can be collected from health facilities and delivered back to the state cold store.

This has allowed Nasir to better perform his monitoring and accountability tasks as he can now compare the number of empty vials and safety boxes with the number of children immunized. This gives him and the state an estimate of how much progress the health facilities are making towards reaching their target number of immunized children.

VDD utilizes an application called LoMIS Deliver to schedule, plan, and route deliveries to health facilities. Nasir and other stakeholders at the state level are able to view the status of their vaccines while in transit through a web dashboard. In addition, the VDD health delivery officers download cold chain performance data using an android application called VARO. The free Varo android application enables the capture and transmission of 30 Day-Temperature-Record (30DTR) reports from cold chain equipment using mobile phones. By downloading and sharing this data with Nasir, VDD health delivery officers support Nasir to track the functionality of cold chain equipment in the state, thereby enabling visibility into the overall performance of the state's cold chain system.

*"Prior to now, cold chain equipment at the facilities would fail or be non-functional for long periods without my knowledge. Through the LoMIS Deliver and Varo applications, I am better able to monitor and maintain the functionality of cold chain equipment in the state. This has greatly reduced our vaccine wastage rate and consequently, stockouts in the state"*

VDD has saved the state the extra cost in time and money, of deploying staff to physically take the record of the status of cold chain equipment. Now that vaccine stock-outs have been eliminated, Routine Immunization providers at the health facilities and the immunization team at the LG level are better equipped to plan their fixed and outreach sessions and reach more eligible children in their communities. Now more than ever, the Zamfara state health system is better positioned to protect its children against childhood diseases.

# CHANGING THE TIDE: IMPROVING TEAM PERFORMANCE AND VACCINATION COVERAGE IN ANAMBRA STATE

Anambra State is located in Southeastern Nigeria, a region that has not reported a case of polio since 20041. In spite of their impressive track record as far as Routine Immunization (RI) indicators, the state recorded an outbreak of circulating vaccine-derived poliovirus (cVDPV) in early 2020. This prompted the need for an urgent Outbreak Response (OBR) campaign to curb the viral outbreak in the state.

Supplementary Immunization Activities are mass campaigns that can strengthen routine immunization and other health programs. In Nigeria, they include Immunization Plus Days (IPDs) and Outbreak Responses (OBRs), where all the eligible children in a given geographical area are immunized at the same time, regardless of their previous vaccination history. The aim is to generate herd immunity and to increase the percentage of the population that is immune to polio. To achieve this, the World Health Organization (WHO) and the Global Polio Eradication Initiative (GPEI) recommend that at least 80% of the eligible children in every geographical location be immunized against polio. This denies the poliovirus of a fertile seedbed of hosts to infect and thus interrupts the transmission of the disease.

Nkechi Onwuvunka is the State Immunization Officer (SIO). She works with partners and other colleagues at the Anambra State Primary Health Care Development Agency to plan routine and supplementary immunization activities and review immunization coverage reports from Anambra's 21 Local Government Areas (LGAs). This helps her to proactively identify challenges and address them promptly so that the immunization program in the state can run smoothly. She was faced with a challenge that could undermine the success of the OBR and thus, plunge the state into a full-scale epidemic. She suspected that vaccination teams were under-performing and falsifying data to cover up for their low coverage during vaccination campaigns. Unfortunately, she had no way of verifying what truly went on in the communities during the vaccination campaigns. Follow-up monitoring activities did not yield valuable information as she could not visit all 21 LGAs and the vaccinators she supervised seemed to be adhering to the standard operating procedures.

The National Emergency Operations Center (NEOC) requested the technical support of eHealth Africa to track the vaccination teams in nine high-risk LGAs of Anambra State so, the Vaccination Tracking System (VTS) was introduced for the first time in the state. For the duration of the campaign, every vaccination team was provided with a Geographic Information Systems (GIS)-enabled phone which tracked, recorded, and stored the coordinates of every location visited by the vaccinators. All the vaccinators had to do was to take the phone with them on their vaccination exercises. eHA also deployed project field officers to each local government area, to handle any technical difficulties and to ensure that the data from the phones were uploaded to a dashboard.

At the daily evening review meeting when the coverage data was presented, Nkechi could clearly see the reason for the low coverage rates. It became evident that some vaccination teams were not visiting the settlements that they had been assigned to and were spending less than the required time. This time, she had tangible evidence and was able to direct the LG immunization officers and Ward Focal Officers in charge of the defaulting vaccination teams to address the issue and stop the defaulting.

A bonus benefit of VTS is that it breaks down the daily coverage rate by LG, ward, and settlements, allowing Nkechi and her team to include missed settlements in the next day's plan. This improved the performance of vaccination teams, increased accountability, and enabled her to better supervise the progress of immunization campaigns. Most importantly, the quality and validity of data in the state improved tremendously and now, Nkechi and her team could make realistic, evidence-based plans to reach the children in Anambra state and end polio transmission. Nkechi was so pleased with VTS and its impact on her work that she would like all the health campaigns in all LGAs tracked with VTS.

*"To achieve holistic coverage and high team performance, I suggest that tracking should be incorporated into the implementation of all house to house health campaigns in Anambra state."*

*- Nkechi Onwuvunka*

Staff at the Kano State COVID-19 Call Center

# Improving Emergency Response

One quality of a sound health system is its ability to be prepared for and to respond to emergencies in a timely manner. This half-year, eHA has actively supported Nigeria's response to the COVID-19 pandemic at national and subnational levels.

eHA supported the Nigeria Centre for Disease Control and Prevention (NCDC) to trace and follow-up with individuals who have been exposed to COVID-19 for a period of 14 days after their last exposure. We set up an automated system that can call thousands of contacts on a daily basis to verify whether or not they had developed symptoms. Any individuals reporting symptoms were then followed up.
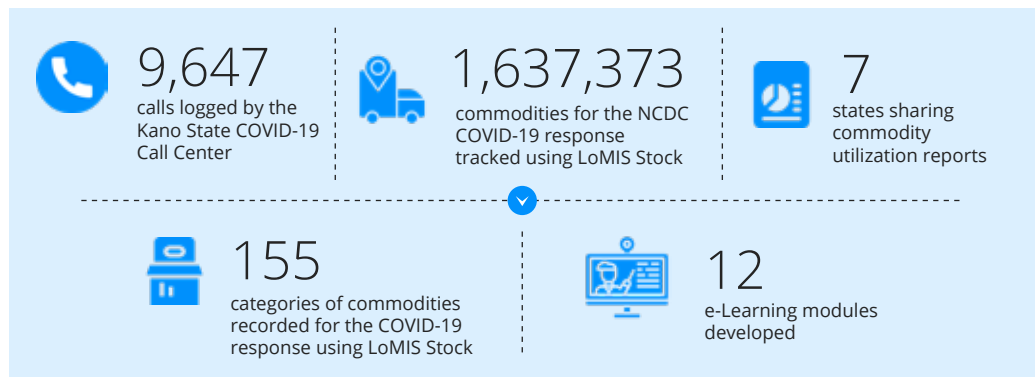
The NCDC also adopted LoMIS Stock, an inventory management tool designed by eHA, to manage the national stockpile of health commodities. Previously, stock inventory management at the NCDC was done using paper-based systems or spreadsheets. This method was prone to error and was time-consuming, as NCDC is responsible for distributing pharmaceutical and health commodities to health facilities, treatment centers and laboratories all over Nigeria. LoMIS Stock allows the NCDC to track their commodities electronically, in near-real-time through the web dashboard. Now, they can estimate optimal stock levels and plan restocks of health commodities more efficiently.

To effectively control the COVID-19 outbreak in Nigeria, the NCDC understood that front-line health workers across the country needed to be prepared and trained to prevent infections and control disease outbreaks. Prior to now, most training activities were conducted in-person and required the participants to travel to the training locations. In the light of the pandemic, this was no longer possible. eHealth Africa worked with the NCDC to develop and deploy an eLearning course that featured instructional videos on accessible platform. Learners could access the courses from any location and the NCDC could

monitor users' progress and learning on the platform. eHA also provided support to the Presidential Task Force on COVID-19. We engaged a communications firm to monitor public perception, trends and media headlines in the country, and tocoordinate the development of a national communications strategy. Based on this strategy, sensitization activities in states with high prevalence rates were conducted in partnership with the State Task Force and creative assets—translated to indigenous languages—were developed to encourage behaviour change. The large scale of testing for the COVID-19 virus resulted in a sample management and data flow challenge. The NCDC Laboratory network needed a centralized system that would allow for the efficient tracking and management of samples. eHA deployed the SENAITE Laboratory Information Management System (LIMS). The system enhances visibility at each stage of sample processing: sample collection, registration, processing and analysis, results visualization and storage/archiving.

In Kano state, we supported the Ministry of Health by setting up and running a call center dedicated to reporting, tracking and following-up COVID-19 cases. We procured and installed the relevant IT equipment at the EOC and set up a toll-free line. We also trained agents to man the call center line. We also assisted to transport samples collected in Kano to the NCDC lab in Gaduwa, Abuja, and to transport lab commodities and test kits from Abuja to Kano. eHA also deployed an electronic Open Data Kit (ODK) questionnaire and a data monitoring dashboard to investigate deaths that were suspected to be as a result of COVID-19.

At the state level through the EOCs, eHA printed COVID-19 training manuals, guidelines and Frequently-Asked Questions (FAQs), provided preventive kits (face masks, gloves and hand sanitizers), and participated in daily review meetings and COVID-19 subcommittees in Kaduna, Bauchi, Borno, Sokoto and Yobe states. In Borno and Kwara states, we developed and deployed an ODK for case investigation, contact tracing and contact symptom diary forms which would replace paper forms and be used by pandemic response teams in the state. In Borno state, we created local government (LG) level health facility maps to support the LG COVID-19 task force teams to develop response plans for their respective LGs.

**9,647** calls logged by the Kano State COVID-19 Call Center

**1,637,373** commodities for the NCDC COVID-19 response tracked using LoMIS Stock

**7** states sharing commodity utilization reports

**155** categories of commodities recorded for the COVID-19 response using LoMIS Stock

**12** e-Learning modules developed

# ADDRESSING NCDC' S LOGISTICS AND SUPPLY CHAIN CHALLENGES DURING THE COVID-19 PANDEMIC

The Nigeria Centre for Disease Control and Prevention (NCDC) is at the forefront of the country's response to the COVID-19 pandemic. To ensure that an effective response was mounted to contain the spread of the pandemic, the NCDC coordinated the establishment of systems for contact tracing, case reporting, sample collection and laboratory diagnosis across the country. Setting up these systems required a great resource investment to procure and distribute the needed services, equipment and health commodities to laboratories, isolation and treatment centers, and selected health facilities, within the shortest possible time.

Chibuzo Eneh, a pharmacist, is NCDC's Head of Logistics and Supply Chain. She is directly responsible for managing NCDC's national stockpile according to its mandate. To achieve this, she supervises the staff and oversees the day-to-day operations of the NCDC national stores. She also ensures that the pharmaceutical and non-pharmaceutical commodities for COVID-19 and other disease outbreak responses that are managed through NCDC are distributed in a timely manner.

In the past, the NCDC managed its national stockpile using paper-based, manual processes and systems or spreadsheets. This system was error-prone, time-consuming and did not allow for real-time data analysis. Top-level decisionmakers like Chibuzo did not have real-time insights into how commodities were managed and so allocating, replenishing or distributing health commodity stock and other resources were not evidence-based. Given the urgency that is characteristic of an emergency situation, it was clear that the current logistics and inventory management system would be inadequate for the volume of stock that the NCDC would handle during this period.

*"Some of the challenges faced prior to LoMIS Stock implementation include the inability to generate real-time data on inventory movement and stock management. The need for efficient inventory management and data visibility became more evident, as it became cumbersome to manually manage several line items deployed for the COVID -19 preparedness and response."*

*- Chibuzo Eneh*

In 2019, NCDC commenced the process of upgrading its inventory management system by switching to LoMIS Stock, an electronic stock management tool developed by eHealth Africa to address supply chain and logistics challenges in health systems. LoMIS Stock helped NCDC to record and keep track of the commodities issued out to states and treatment centers across the country. To support their COVID-19 efforts, NCDC requested that eHA expand some features specifically for managing COVID-19 related commodities. These commodities were updated on the database and eHA modified the system to make data-entry more efficient and user-friendly.

*"The LoMIS intervention has provided critical solutions to ensure the effective management of COVID-19 related commodities in NCDC. Moreover, the platform allowed real-time end to end visibility of stock levels and its distribution, which has helped resource allocation and has supported decision making at management level."*

*- Chibuzo Eneh*

The benefits of this new system to Chibuzo and the entire Logistics and Supply Chain team are multidimensional. Transiting from the paper-based method of tracking inventory to an electronic medium made it easy to track incoming and outgoing stock. This eliminated the burden of manual reconciliation between sender and receiver facilities. In addition, LoMIS Stock provides real-time, end-to-end visibility to stakeholders and decision makers on the number of commodities received in-store and the total number of commodities issued out to points of care. This has mitigated delays in the turn-around-time between distributing, replenishing and monitoring commodities from National take-off points/warehouses to sites/facilities across Nigeria, where they are dispensed and consumed.

Decision-makers are now better able to manage stock levels, understand stock consumption rates at the facility-level and ensure that the commodities needed to conduct tests and treat patients are available at all times. The wider impact of this is that the NCDC is better able to contain and control the spread of the pandemic across Nigeria.

*"LoMIS, though not too expensive, brought about an organized and streamlined inventory management system, better data use, improved performance, greater system efficiency and customer satisfaction. This significantly improved NCDC's disease preparedness and response management, as demonstrated in ongoing COVID-19 relief efforts across Nigeria."*

*Our field operations team getting ready for a vaccination tracking activity.*

# Logistics & Operational Support

With over a decade of experience and expertise working across Africa, we support our partners by identifying challenges and creating unique solutions that can help them achieve their goals. We provide operational support ranging including design and construction of sites and facilities, provision and installation of power and connectivity infrastructure, facility management and field operations. The aim of this service is to support our partners to execute projects and deploy solutions seamlessly and efficiently.

Our collaboration with the World Food Programme (WFP) involves the management of warehouses in Kano State where food and non-food commodities are stored for distribution to over 1.2 million displaced people in Borno State.

eHA also manages the operations of the national Emergency Operations Center (EOC) in Abuja and seven state EOCs in Bauchi, Borno, Kaduna, Kano, Katsina, Sokoto and Yobe states. Representatives from government health parastatals and partner organizations meet at the EOCs to review and monitor disease data, especially during emergency situations, and to plan and execute coordinated response efforts in a timely manner. eHA installed and maintains the necessary power and information technology (IT) infrastructure including internet access, video conferencing facilities to enable stakeholders review and analyze data in near-real time.

The Auto-Visual AFP Detection and Reporting (AVADAR) project is implemented in 11 polio high-risk countries in Africa. eHA managed the operation in eight of these countries— Cameroon, Chad, the Democratic Republic of Congo, Liberia, Niger, Nigeria, Sierra Leone and South Sudan. The project aims to increase the completeness, timeliness and rate of of Acute Flaccid Paralysis (AFP) reporting by enlisting community members to serve as informants by sending a "Yes" or "No" SMS response to having seen a child with AFP symptoms in their community. eHA's support included training community informants, providing equipment including mobile phones, power banks and solar chargers to informants, and resolving technical issues. Even though eHA has transitioned the operations in six countries to the World Health Organization (WHO), we continue to manage operations in two countries (Cameroon and Niger) and to supply equipment to support operations in four countries.

### Operational support for Disease Surveillance

**82%**
of technical phone issues were resolved by eHA AVADAR team in Niger and Cameroon.

**43.5%**
of silent reporting issues resolved weekly by eHA AVADAR team during onsite monitoring in Niger and Cameroon

**1,503**
solar chargers procured for AVADAR implementation across 6 target countries in Africa

**12,000**
Sq. Meters managed/ maintained by eHA

**52,743**
metric tons of food and non-food commodities handled by the WFP

**6**
PEOCs supervisory visits conducted in a quarter

## Fatimah Howeidy

*"Fatimah always has a smile for everyone. She discharges her duties proactively and works efficiently with little to no supervision."*

Haruna Kaita Project Manager, Polio EOC

*"Hajiya Fatimah is an exceptional manager. She is passionate about her work and is a wonderful mentor. Her leadership skills are excellent and it is easy to follow her lead. She's one of the few managers I have worked with who cares about your wellbeing and life outside the workplace."*

Ifere Okibe, Administrative, Coordinator, Kano EOC

# Staff Spotlight

Fatimah Howeidy is the Office Manager for the Kano Emergency Operations Center. In her 5 years with eHealth Africa, she has worn many hats. She was our first Human Resources (HR) Manager. She coordinated the development of most of our foundational HR policies and Standard Operating Procedures. Fatima also hired eHA's first 200 staff. From September 2016 to 2017, she was the Project Manager for the Health Camps project that packaged and delivered essential medicines worth $2M to Borno and Kano States.

In her current role, she liaises between eHealth Africa and the Kano State Government. She has been instrumental in cementing our relationship with the Kano State health system through various projects including the creation of the Ministry of Health's first website, Kano State Primary Health Care Management Board (KSPHCMB) renovation and the installation of internet and power infrastructure at the Ministry of Health.

When she isn't at work, you can catch her cheering for her favorite football club, Manchester United FC.

# Our Partners

African Union Development Agency, New Partnership for Africa's Development

Anambra State Primary Health Care Development Agency (ASPHCDA)

Bill and Melinda Gates Foundation (BMGF)

Borno State Primary Health Care Development Agency (BSPHCDA)

Case Western Reserve University

Centers for Disease Control Foundation (CDCF)

Centers for Policy Research and Development Solutions (CPRDS)

Development Alternatives Incorporated

Free University Berlin, Germany, Institute of Informatics

German Federal Ministry of Education and Research (BMBF)

Intellectual Ventures/Global Good

International Foundation Against Infectious Diseases in Nigeria (IFAIN)

Kano State Government

Kano State Primary Health Care Management Board

Ministry of Health and Sanitation (MoHS)

Muenster University, Germany, Information Systems Department

Novel-T

National Primary Health Care Development Agency

Nigeria Centre for Disease Control and Prevention (NCDC)

Paul-Ehrlich-Institute, German Federal Institute for Vaccines and Biomedicines

South African Health Products Regulatory Authority

South African National Blood Service

Sokoto State Primary Health Care Management Board

ThinkMD

Technical University Darmstadt, Germany, Information Systems Department

University of Nebraska Medical Center (UNMC)

Voluntary Services Overseas (VSO)

Washington State University (WSU)

World Food Programme (WFP)

World Health Organization (WHO)

Zamfara State Primary Health Care Board (ZSPHCB)

## Partner Spotlight: Nigeria Centre for Disease Control and Prevention (NCDC)



The Nigeria Centre for Disease Control and Prevention (NCDC) is a parastatal of the Federal Ministry of Health that leads national efforts towards emergency preparedness and response to infectious disease outbreaks and public health emergencies. The NCDC coordinates all activities relating to the prevention, detection and control of communicable diseases in Nigeria, and is also responsible for ensuring that health and pharmaceutical commodities are available at health facilities, treatment centers, state Ministries of Health and laboratories all over the country.

Our collaboration with NCDC began with the development of a data portal which utilizes Geographic Information Systems (GIS) to identify patterns in disease occurrence and spread in specific geographical locations, and to compare and analyze the patterns to identify trends over time to predict, prepare for and prevent the occurrence of diseases like Cholera and Meningitis. As the world battles with the COVID-19 pandemic, our relationship with the NCDC has become stronger. We have collaborated on several additional projects ranging from the development of an eLearning platform to build the capacity of health workers on infection prevention and control, to health commodity inventory management using the LoMIS Stock solution and the deployment of a Laboratory Information Management System (LIMS).

Our partnership with NCDC has given us a wealth of knowledge and experience which we apply to our disease surveillance systems and in the design and deployment of our data management solutions. We are grateful for the opportunities we have received and look forward to a long working relationship with the Center.

# What Our Partners Say About Us

I commend the efforts of eHealth Africa in ensuring the supply of vaccines to apex health facilities and Local Government Area (LGA) cold stores in Zamfara State. I hope that this can be maintained.

**Muhammad Mahmud**
Stakeholder Relations Officer, New Incentive, Zamfara State

LoMIS Stock brought about an organized and streamlined inventory management system, with better data use, improved performance, greater system efficiency, and customer satisfaction.

**Chibuzo Eneh**
Head of Supply Chain & Logistics, Nigeria Center for Disease Control & Prevention (NCDC)

eHealth Africa's intervention was paramount to (the success of) the AVADAR project. eHA participated in the training and follow-up of the informants by strengthening their capacity, with a weekly identification and follow-up of silent reporters and prompt resolution of technical issues. This contributed to reducing the number of silent reporters and increased the rate of timeliness and completeness of the zero and AFP reports.

**Dr Kairo Kiari Kaka**
National Coordinator WHO AVADAR Project, Niger Republic

I most sincerely recognize eHealth Africa's immense contribution during the last OBR1 exercise in Anambra. I can testify that there was a remarkable difference in the output and quality of data from the nine (9) LGAs supported by eHealth Africa.

**Dr. Chioma Ezenyimulu**
Executive Secretary/CEO,
Anambra State Primary Health Care Development Agency (ASPHCDA).

eHealth Africa, during the COVID-19 pandemic, upgraded our video teleconference equipment at the incident coordination centre, provided internet and developed content for the NCDC eLearning platform. This support has impacted greatly on the COVID-19 national and sub-national response. There's never been a more pressing time where we have had such a demand for technology or a greater need to scale up our teleconference systems and internet infrastructure. We moved from having few or no online meeting attendees for the Emergency Operations Center (EOC) to 20 participants, from 2 to 3 meetings a week to an average of 3 meetings a day including weekends, connecting over 37 rapid response teams and state response teams at least once a week. Participants in the room can speak from any corner and be heard clearly. We continue to strengthen communications and coordination between national and sub-national public health emergency operations centers and extend scale-up to states.

**Emmanuel Benyeogor,** States Public Health Emergency Operations Centre (PHEOC), Coordination Assistant.

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# 2020 Half-Year Impact Report