![eHealth AFRICA]

Annual Report
/ 2015

www.eHealthAfrica.org

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Executive Directors' Letter

2015 has been an incredible year of achievement for eHealth Africa.

While the West African region has faced unprecedented health challenges including the outbreak of Ebola, eHealth Africa (eHA) has played a crucial role in providing innovative solutions to tackle these challenges.

The success of eHA's programs is due to the strong partnerships formed with the Guinea, Liberia, Nigeria, and Sierra Leone Governments. Their Ministries of Health, State and Local Governments and donors have been crucial to our success. We are grateful they met us, read our proposals, and supported our innovative approaches to managing emergency situations which have improved tens of thousands of people's lives.

In 2015, eHA scaled up Ebola call centers from a few people on mobile phones to an operation involving hundreds of staff using our custom-designed software. We built and renovated Ebola Outbreak Emergency Operations Centers that provided governments and partners with facilities to coordinate the Ebola outbreak emergency response. In Northern Nigeria, we strengthened health systems through a direct delivery system for vaccines that delivered over four million doses to health clinics, and reduced stockouts in Kano and Bauchi States by 60%. Health Camps helped over 1.6 million children under five and over 2.2 million women from the most vulnerable segments of society with medicines for malaria and diarrhea.

Nigeria successfully interrupted the transmission of the poliovirus through our monthly Immunization Plus campaign days, with zero cases for 12 consecutive months (and counting), and is now tracking for full eradication in 2017.

eHA grew its Senior Leadership Team to ten Directors. After rapid growth in staff during 2014, we took the opportunity to focus internally and further strengthen internal procedures. Management spent time reviewing standard operating procedures across the different offices which are now being rolled out across the organization. Directors met in Sierra Leone in December for the first Strategic Planning Meeting, spending two days developing a long term strategic vision.

As we move into 2016, we look forward to assisting West African Governments' health interventions to move from emergency response to long term health systems strengthening. We will continue to work together to ensure local people are firmly in control of their own health challenges, and develop better systems for monitoring future epidemiological outbreaks.

Adam Thompson and Evelyn Castle
Executive Directors and Co-Founders

02 2015 Results

- 748 staff based in five country offices.

- 1.6 million children under five and over 2.2 million women were given free medicines through Health Camps.

- 1,400 healthcare workers used Kano Connect phones to alert supervisors of vaccine stockouts and communicate directly with their peers.

- Four million doses of lifesaving vaccines were delivered through eHA's Vaccine Direct Delivery project to Kano and Bauchi States' health facilities.

- 40,000 health facilities were mapped by eHA's Geographic Information Systems team to show the availability of health services across Nigeria.

- 135,900 kilometers of roads were mapped across 16 states in Nigeria.

- 241 contact tracers and 122 supervisors were trained in Liberia on eHA's contact tracing application Sense Ebola Follow Up.

- 470 families received regular updates on a loved one's Ebola status through the Trace and Go application in Liberia.

- 1.1 million kilometers were driven by eHA-supported vehicles that were provided to partners in Guinea to ensure they were able to quickly respond to the Ebola outbreak.

- Over five million calls were managed in Guinea, Sierra Leone and Liberia, by 260 eHA trained call center operators, using eHA custom-designed Ebola call center software.

- 350 clinical staff were trained and nearly 9,000 participants were vaccinated with an Ebola vaccine in Sierra Leone.

- 0 cases of wild poliovirus in Nigeria / Africa in 2015.

Mission Statement

eHealth Africa's mission is to build stronger health systems through the design and implementation of data-driven solutions that respond to local needs and provide under-served communities with tools to lead healthier lives.

04

Emergency Management Program

eHealth Africa

Sense Ebola Follow-Up

In 2014, the Ebola outbreak in West Africa impacted the lives of millions of people across the region and the world. Throughout the epidemic, new approaches were needed to follow up with each person who came into contact with an Ebola victim, and were therefore at risk of contracting the disease and spreading it to others. Contact tracing is a way to ensure that anyone at risk of becoming symptomatic of Ebola has twice daily visits by contact tracers.

Contact tracers check people's temperature and determine if they have a fever or are presenting with any other Ebola symptoms. This was an important strategy used to control the outbreak, as any contact who experienced symptoms of Ebola was immediately brought to an Ebola Treatment Unit where they received life-saving care.

188
Contact tracers trained in Liberia

53
Supervisors trained in Liberia

241
Mobile phones provided in Liberia

eHA developed the mobile application Sense Ebola Follow Up (Sense) in 2015 to record in real time the number of people exposed to the Ebola virus. 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 system was crucial to stopping the Nigerian Ebola outbreak in 2014 when only 20 people across the whole country were infected.Following this success, eHA introduced a modified version of Sense in Liberia and Sierra Leone and provided training to the contact tracers and supervisors in 2015.

eHA provided smartphones to the contact tracers and supervisors were given tablets to allow them to access dashboards for real time alerts and data analysis. Sense was developed to be offline first - it syncs opportunistically, and recognises when there is no network coverage. Once the contact tracer moves into a network area, Sense then sends the data automatically via internet or SMS. eHA's role was to provide the technology, management support, hardware, and training for the contact tracers who worked directly for eHA's partners. This included Action Contre la Faim in Liberia and World Health Organization in Sierra Leone.

Sense won the Innovation award at the 2015 Netexplo Forum, held in Paris, France. Evelyn Castle, eHA's Co-Founder and Executive Director, joined the other winners of the award on stage to discuss global health tech solutions, and officially accept the award for eHA. At a local level, a certificate of honor was presented to eHA's Israel Z. Kollie, by the Media for the Promotion of People and Institutions of Substance Organisation at eHA's Liberia office.

531

Contact tracers trained in Sierra Leone

69

Supervisors trained in Sierra Leone

"The network, the phone and the application are all good because they are fast. We can send our information and within one second it will go straight to the Ministry of Health and Social Welfare. All partners will monitor this information and can respond to any issues because eHA has made it possible to spread the information quickly."

—   Mohamed, Contact Tracer, Liberia

"The system is very effective. I am happy with eHA because they make my work easier. I can send in my report very quickly. By the end of the day my information is already gone - before it was not like that. I had to wait for my supervisor to come and collect the information and carry it to the office, and it took a long time. But now it is very easy and short."

—   Terrence, Contact Tracer, Liberia

Trace & Go (TAG)

During the Ebola outbreak, when Ebola patients were taken to Ebola Treatment Units (ETUs) in Liberia, communications strategies used to send information on a patient's status to their respective families was often poor. Family members often did not know which ETU patients had been take to, patient's health status, or even patient's death status. This lack of communication led to fear and hostility towards the ETUs, which had a negative effect on the overall Ebola response.

eHA partnered with UNICEF and Liberia's Ministry of Health and Sanitation to implement Trace and Go (TAG), a mobile application to provide regular Short Message Service (SMS) updates to family members of ETU patients. eHA created the interface for TAG on-top of UNICEF's RapidPro software. When a patient first enters an ETU, a data entry clerk takes their information which includes a mobile number for a family member. The patient's information is then entered into a database that ETU medical professionals update with medical information. TAG ensured that any time a patient's status changed; whether their condition improved or deteriorated; were transferred to another ETU; or were discharged, the software automatically alerted family via SMS.

eHA provided the tablets used at the ETUs, hired and trained the data entry clerks, and provided training on how to use the system. TAG helped over 470 patients' families receive up to date information on their loved ones' health status.

472

Patients entered into the system

16

Case investigators hired and trained

2

Supervisors hired and trained

Laboratory support in Liberia

eHA supported Liberia's Ministry of Health (LMOH) in strengthening the capability of laboratory services during the Ebola response through providing internet connectivity and data management services. These services were being introduced because the LMOH laboratories were not able to manage the large number of blood samples that were being tested for Ebola. There was also no system used for tracking and sending blood test results to the National Ebola Operations Center (NEOC). The delays receiving lab results impacted the NEOC's ability to respond to outbreaks and hindered medical professionals' capacity to provide appropriate care for patients.

eHA worked with five major LMOH laboratories to provide internet access and five data entry clerks who entered all the lab sample results into an Access database. This ensured good data record keeping, dissemination and analysis. It was a technologically simple solution that worked for the LMOH. It led to improved communications between the laboratories and the NEOC, standardized laboratory reporting, and faster test results reporting. This allowed staff to inform and quickly treat Ebola patients. The laboratory infrastructure will continue to be improved using advanced lab information systems.

In 2015, the West African Health Organization celebrated its 28th Anniversary in Guinea. The celebrations focused on the contribution of mobile phones to the management of epidemics at the community level. eHA organized the event which was attended by over 130 people. eHA contributed technical expertise, organized the presentations, provided logistics and budget support, and mobilized mobile technology partners from the global health sector. Amer Sattar, eHA's Guinea Country Director was one of seven panelists, and spoke alongside leading industry experts on eHA's work.

5

Laboratories supported: LIBR, Tappita, Bong, Redemption, ELWA III

30,643

Samples reported

5

Data Managers

1 daily report

submitted per laboratory

Ebola community outreach and behavior change projects

Sierra Leone's Cotton Tree News reaching communities

Even when the Ebola outbreak was ravaging communities, some people did not believe Ebola was real. They continued with dangerous cultural practices that included caring for sick people at home and burying bodies in traditional ceremonies.

eHA supported Cotton Tree News in Sierra Leone through logistics and finance support for a community outreach project. It used radio, daily news, discussion, magazine programs and interviews to disseminate messages about the dangers in continuing specific cultural practices. eHA provided fifteen satellite links across Sierra Leone, six digital recorders, two laptops, and a CD duplicator. All media partners had access to these resources which allowed them to reach a larger segment of the population through better technical outputs and increase the spread and quality of behavioral change programming across the country.

"CTN's Ebola response program funded by the CDC Foundation through eHA Sierra Leone contributed immensely to the suspension of some cultural and traditional practices that aided the transmission of the Ebola virus; the significant increase in knowledge and awareness of the existence (of EVD) and acceptance to modify and suspend certain behaviours resulted in a significant decrease in new Ebola infection rates in the country; and a marked reduction of stigmatization of survivors."

— James Tamba Lebbie, Editor-in-Chief, Radio Mount Aureol-CTN

Providing health training to female leaders to slow Ebola rates

When Ebola reached Bombali, Tonkolili, and Kono districts in Sierra Leone, it spread faster than in other parts of the country. This was partly due to poorly communicated information and traditional belief systems. As a result, these districts were more vulnerable to renewed transmission.

eHA partnered with the Amazonian Initiative Movement and the U.S. Embassy to manage the logistics needed to deliver health training to Soweis. Soweis are the traditional female leaders who provide health information and guidance to their communities. They also have the greatest risk of contracting Ebola due to their leadership and community engagement roles. By providing Soweis with health information, they were able to perform their leadership duties safely, and pass on knowledge about Ebola to their communities. Training sessions focused on safe alternatives to traditional practices including caring for the sick, washing dead bodies before burial,

Over

125

Public service announcements by local leaders were broadcast

Over

35

magazine and discussion programs were broadcast

Over

95

Ebola virus disease related news items containing messages for behavior change were broadcast

360

Soweis in three districts were provided with training

eHealth Africa

and traditional methods of midwifery — practices that had the potential to transmit Ebola. Participants in the trainings pledged to suspend traditional practices during the outbreak which helped curb transmission and protected communities from Ebola.

"Burying the dead is a tradition we should follow, but we must take into consideration that the method of burial does not determine the deceased's destination (heaven or hell)".

— Rev. Khazalie

Bombali Center and Conferences for Ebola Survivors

eHA renovated and furnished an Ebola center for survivors in Bombali, Sierra Leone. Renovations included a new recreation room, counselling unit, consultation room for evaluating survivor needs, outside gazebos, and a caregiving space for therapy to Ebola survivors.

eHA partnered with the Bombali District Ebola Response Committee, Sierra Leone's Ministry of Social Welfare, Gender and Child Affairs, and the CDC Foundation to provide community level conferences and counselling outreach clinics. These were

in all thirteen districts. eHA worked with section chiefs, religious, and traditional leaders to organize the conferences which brought together Ebola survivors and their communities. The conferences provided an opportunity to address Ebola survivors' issues including infecting spouses and children through bodily fluids (semen and breastmilk). Attendees said the events were timely and relevant in reducing stigma towards survivors.

Community outreach to stop the spread of Ebola

To curb the outbreak and encourage safe behaviors, eHA partnered with the CDC, WHO, and chiefs and traditional leaders in Sierra Leone to train community leaders on communicating about Ebola. Twenty participants received training from WHO staff in using picture and flipbooks for both literate and illiterate community members on Ebola prevention and control strategies. Book themes included how to care for sick relatives, the importance of early referral to health facilities, and safe burials using assigned teams.

1,000 mother support group leaders and secretaries in 500 rural communities were trained as peer educators by WHO staff using story and flipbooks. All were local trainers and worked with people in their own homes using group discussions to answer questions and ensuring information was followed.

500

mother support group leaders (all women) trained. 500 mother support group secretaries (mostly men) trained

6,455

mother support group members provided with storybook and flipbook knowledge

500

mother support group secretaries (mostly men) trained

Ebola response support

Sierra Leone's Western Area operational support

During the Ebola outbreak, West African governments and partner organizations needed knowledgeable in-country operational support to quickly implement life-saving strategies. With established procurement, logistics, and programming teams available, eHA provided operational support services to the Western Area Ebola Response Center (WAERC) in Sierra Leone.

eHA processed the monthly salaries for over twelve months for 200 district surveillance officers, 300 community monitors, an administrator, and data managers at WAERC. eHA procured supplies including fuel, phone credit, and rain gear. WAERC was then able to focus on responding to sick and suspect Ebola alerts within 24 hours, and providing an effective Ebola response to Sierra Leone's Western Area.

"There are many moving parts in the response. eHA's ability to work with the other partners has been really helpful. The operation in Freetown is too big for one organization and eHA worked well with everyone else; we did not need to deal with problems between partners. eHA also ran 117 (National Ebola Alert System) and provided support for surveillance and consumables. Throughout all of this, eHA has been incredibly flexible, quick, and pragmatic."

— Aldo Gaeta, District Team Leader, WAERC, Sierra Leone

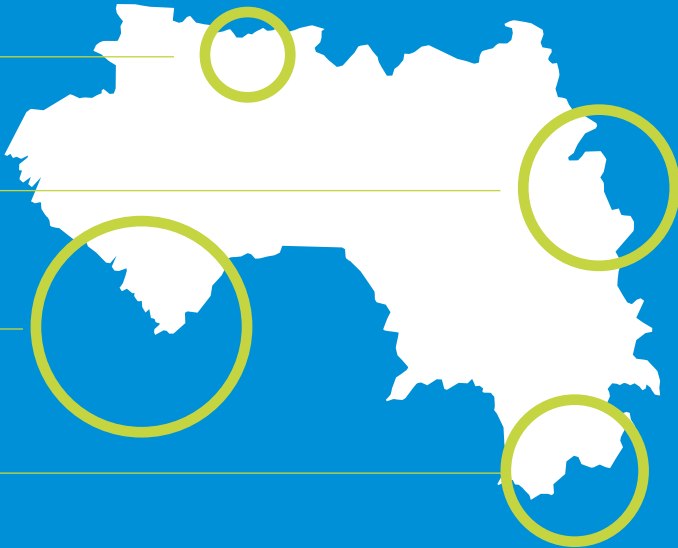Geographic distribution of Ebola outbreak response vehicles in Guinea

12
Moyenne Guinée

25
Haute Guinée

32
Basse Guinée

23
Guinée Forestière

Over a million kilometers of travel in Guinea was provided through fleet management support

In Guinea, eHA worked with the CDC Foundation to establish a fleet management system and logistics for their donation of 100 vehicles for the Ebola outbreak response. Vehicles were used for patient transportation, surveillance activities, contact tracing, lab sample transportation, community mobilization, safe burials, visiting intervention sites, attending meetings, and moving equipment. They were crucial to both international and national partners including Medecins Sans Frontieres, Save the Children, Alima, and the National Ebola Response Center, who could then focus on Ebola eradication work. The vehicles covered over 1.1 million kms.

eHA introduced systems for the management of: vehicle maintenance, obtaining fuel, hiring and training 115 drivers, providing vehicle insurance, registering vehicles, and dispatching vehicles to correct locations. Additionally, 325 motorcycles were procured, registered, and deployed by eHA during the response, which provided vital transportation of local health workers from across the country involved in the Ebola response.

Liberia's county health and support teams

eHA provided vital support to County Support Teams (CST) in Liberia. CSTs did whatever was necessary to mobilize resources, support, and quickly and efficiently fill gaps in emergency situations. eHA worked with CSTs to construct family isolation areas that provided comfortable housing for the families of Ebola patients while they were supporting patients.

Both CSTs and County Health Teams provided:

- Basic household items to Ebola patients and their families, Ebola survivors, and Ebola orphans

- Logistics support to the District Health Officer, Tewor District for psychosocial counselling and community integration services

- Logistics support to the County Task Force Social Mobilization team

- Active case searches

- Awareness campaigns

- Salaries to District Health Officers

- Deploying rapid response teams to Ebola hotspots in Grand Kru, Grand Bassa, and Grand Cape Mount.

eHA supported 76 health workers who cared for patients in holding centers and quarantined rural communities. eHA also coordinated funding and payments for the knowledge, attitudes and practices study.

"The Ebola epidemic in West Africa was unprecedented. The CDC Foundation needed an organization on the ground that could obtain products, services and implement systems to ensure the CDC Foundation's response needs on behalf of CDC could be met. eHealth Africa was an invaluable partner in performing this role."

– Charles Stokes, retired President and CEO, CDC Foundation

Ebola Emergency Operation Centers

During the Ebola response, international and local partners needed Emergency Operation Centers (EOCs) to ensure Ebola response activities were coordinated. Funding to build and renovate major centers in Liberia, Guinea, and Sierra Leone was provided by the CDC Foundation, and implemented through partnerships between eHA, and the Governments of Guinea, Liberia, and Sierra Leone.

eHA's role was to build the EOCs and equip them with appropriate technology needed for the response. This included reliable access to power, computers, internet access, TV monitors, video conferencing facilities, printers and networking equipment. eHA managed the construction and setup of the EOCs and day-to-day operations in all four countries. Now the EOCs have been repurposed to monitor new Ebola cases and other infectious diseases within the countries. This intervention increased local capacity to manage future health challenges and improved emergency preparedness systems throughout West Africa, which will strengthen future public health infrastructure.

In Sierra Leone, eHA worked with partners to prepare and construct the EOC, establish and connect water and power supplies, install internet services, procure furniture and fixtures, and train staff. Over 70 partners used the EOC building, which was officially handed over to the Ministry of Health and Sanitation in March.

In Guinea, eHA renovated a floor of the Guinea Government's EOC building. This included making the space open for collaboration, installing generators, restoring elevators, building a water source, providing furniture and equipment, and providing internet and IT tools. The EOC was fully functional in January and used by 53 partners. It was officially handed over to the Ministry of Health in June.

In Liberia, eHA coordinated the construction of the National EOC and equipped it with dedicated power and water sources, IT capacity and supplies. eHA also provided training and established County EOCs (cEOCs) in each of Liberia's fifteen counties. cEOCs provide the infrastructure needed to support county-level emergency preparedness and management functions.

"You need to have a place where people can converge and work in harmony. That did not exist before the EOC. There were some challenges getting the structure and the IT up and running, but now it is working very well. Creating the right environment is a must for me to work well. That has been successfully done."

— Dr. Amara Jambai – Deputy Chief Medical Officer, Ministry of Health and Sanitation, Sierra Leone

"eHA was engaging in very useful humanitarian and development work, but without running around and demanding medals, they just came on with it. In the initial stages when it was a frontier operation, it was very easy to work with eHA. They were very flexible and responsive. They saved a lot of lives and they increased the capacities of a lot of young people. 117 operators were young people, and through that work they gained self-confidence. Even aside from what they did for the Ebola response, in terms of developing youth capacity, eHA has done an amazing job."

— Ob Sisay – Director of the situational room, Sierra Leone EOC

Ebola call centers

All the countries affected by Ebola had small scale telephone numbers for health information prior to the outbreak. But those lines could not manage the significant increase in calls for Ebola information during the outbreak, and did not have the functionality to coordinate ambulance and treatment services. eHA partnered with the Ministries of Health (MOH) in Guinea, Liberia and Sierra Leone to scale up the existing universal, toll-free numbers to become Ebola focused call centers.

The call centers served a number of purposes. For the general public they were the first point of contact for health information and advice, and ambulance and treatment services information. For implementing partners, they were crucial to facilitate coordination and gather feedback from the public.

The eHA custom designed call center software provided operators with an easy to use system that better recorded and tracked calls from sick and suspect cases. The software was able to send SMS text messages to Ebola responders which improved coordination between the operators, partners and the military.

eHA's software generated daily reports which provided key information on call volume, geographical distribution of call origins and alert types, and a daily summary of alerts. This information was used by the Emergency Operations Center (EOC) management to make evidence-based recommendations that included refocusing county teams on the ground to cover Ebola hotspots. Throughout the response, eHA improved the call center software quickly and efficiently to better suit the evolving needs of users and response partners.

In Liberia, eHA partnered with the MOH to establish the 4455 call center, housed in the Emergency Operation Centers. 4455 was managed by the MOH and the Liberian Government. This streamlined compliance with government mandates and priorities. eHA's role was to input all data collected during the response into the electronic system and provide call center software training. The result was improved data analytics and valuable information to decision makers who could better distribute field teams to Ebola hotspots.
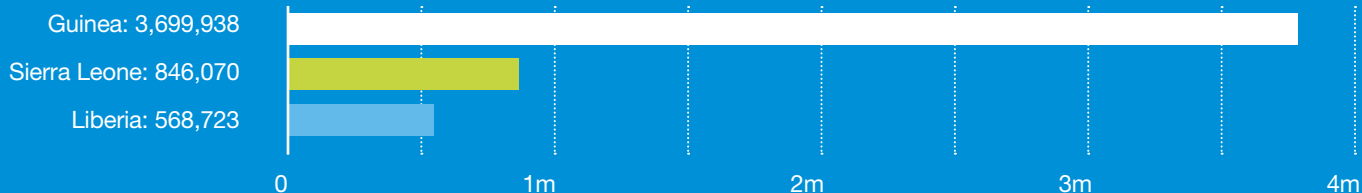
In Guinea, eHA increased the capacity of the 115 call center from 16 operators answering 200 calls a day to 110 operators answering over 9000 calls a day. 115 played a vital role in fighting Ebola by managing over 65 daily alerts for ambulances and ground-level health services. eHA decentralized the dispatching of ambulance support in five prefectures which were locally staffed. Staffing included operators, dispatchers and response partners who were able to view the alerts using the software in real-time and coordinate alerts at a local level. A quality assurance system was provided, automatically prompting operators to contact the previous day's alert callers to check if they received the assistance they required.

"Building 117 from a bunch of kids with mobiles to a room with so many staff in a country that never had that before is a phenomenal feat. It is extremely useful - we use 117 to engage with the response, watch where the alerts are, and analyze it to know how to strategize on the response. I couldn't overstate the importance of eHA in 117 and the response."

— Ob Sisay – Director of the situational room, Sierra Leone EOC

eHA call center statistics

Total calls received in 2015

Guinea: 3,699,938
Sierra Leone: 846,070
Liberia: 568,723

| 0 | 1m | 2m | 3m | 4m |

Average daily calls

Guinea: 10,137
Sierra Leone: 2,318
Liberia: 1,558

| 0 | 11,000 |

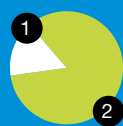**Average number of monthly operators**

110
115
34

| 0 | 120 |

Regional highlights

Guinea

Total number of actioned calls (for partner response)

19,418

Category of actioned calls

Type of alert calls

1. Alerts
1,895

2. Health information
11,678

3. Other
5,845
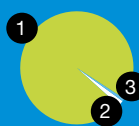
1. Death
1,848

2. Security threat
30

3. Quarantine
17

Number of operators' training sessions 20

Partners involved in the response 5 (WHO, IFRC, Guinea Red Cross, MSF, IMC)

Number of decentralized operation centers 11

Sierra Leone

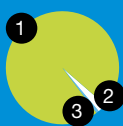Total number of actioned calls (for partner response)

20,000

Category of actioned calls

Type of alert calls

1. Alerts
14,459

2. Health information
409

3. Other
5,132

1. Death
13,978

2. Security threat
86

3. Quarantine
395

Partners involved in the response 6 (ACF, Concern, Red Cross, GOAL, WHO, World Vision)

Number of decentralized operation centers 8

Liberia

Number of calls for death
2,608

Number of calls for symptom / sick 4,139

Number of repeated calls for death, symptom & sick
3,084

Total number of general calls (quarantine, awareness, accident, logistics, fire, survivor & death benefits)
4,798

Calls for survivor/death benefits forwarded to Red Cross 847

In Sierra Leone, eHA successfully increased the 117 call center capacity from eight operators to 238 operators at the peak of the response. 117 also expanded its operations to include decentralized dispatching and a call back system. This resulted in an improved response, decreased delays in mobile teams helping patients at the district level, and enhanced the public's perception of the call center.

In both Sierra Leone and Guinea, eHA provided regular psychosocial training to all call center operators. Operators received many calls from traumatized civilians expressing fear and anxiety. The training taught operators how to respond to these calls and provided an opportunity to share experiences, receive guidance from specialists, and gain practical tools in stress management.

One of the software developers, Patricia Garcia, presented a paper at the JSConf EU on the challenges and successes of the software entitled: *The labour of love conference for the JavaScript community in Europe*.

"The role of 115 in the fight against Ebola was very important. The 115 call center facilitated the alert management, the follow up on alerts and also helped reduce the response time. 115 facilitated communication between us agents of the response and the community."

— Diallo Mohamed Lamarana, Red Cross Focal Point, Guinea

Connecting communities through 117 call boxes

In Sierra Leone, there are parts of the country that have little or no access to cellphone networks. During the height of the Ebola crisis, this was an issue for people living in these areas because they could not call for an ambulance, a burial team or get up to date health information. eHA installed 117 call boxes in seven rural communities in Kambia and Port Loko Districts who had limited or non-existent networks with phones that directly linked to the 117 call center.

Call boxes were put in central locations in the communities - primarily healthcare centers or at the chief's residence, key gathering points for the community. The call boxes connect to very weak cell networks to ensure the person is able to reach the Ebola 117 call center for support.

The boxes proved very popular during the outbreak and will remain in the communities to provide a long-term means of communication with 117 to report infectious disease outbreaks and receive health information.

Vaccine trial in Sierra Leone

The Sierra Leone Ebola vaccine trial studied the safety and efficacy of the newly developed VSV-EBOV vaccine. Frontline health workers including nurses, doctors, swabbing teams and burial teams volunteered to receive the vaccine. Trial staff carefully monitored the volunteers and provided them with free healthcare throughout the study.

The College of Medicine and Allied Health Sciences (COMAHS), Sierra Leone's first medical school, was the key partner. eHA set up seven vaccination sites across Sierra Leone, recruited and trained 350 clinical staff, vaccinated nearly 9,000 participants, and supported three data hubs (spaces where data staff conduct work and clinical staff store files and perform follow up operations). eHA also provided surveillance mechanisms that included the monitoring of trial participants.

The vaccine trial also developed and distributed health information materials to participants and established a 24 hour hotline where participants could get health information or report health issues. eHA ensured there were good networks of referral medical care providers throughout the country.

eHA established payment mechanisms for the participants, provided transportation refunds through mobile and cash payments, and created an administrative database where staff checked in patients to monitor health and any side effects. This improved data collection and analysis techniques for the study.

eHA developed Sense ID, a mobile application and dashboard to track patients throughout the study from registration to the end. Sense ID was developed as offline-first technology (OFT). OFT can be used without a mobile network or internet connection as patient information is available offline, and entries or modifications are automatically synced once the device is in a networked area.

Technical guidance was provided by the CDC and information is being used to determine the efficacy and safety of the vaccine. This will help the vaccine become licensed for the general public in 2016 and beyond.

"The best part of my day is when participants start arriving at the center. This gives me joy because it is a sign that we will be vaccinating new participants."

— Matron Dominga A Sogie Thomas, study manager

ZMapp study in Sierra Leone

In Sierra Leone, eHA provided procurement support to the ZMapp study: A Multicenter Randomized Safety and Efficacy Study of Putative Investigational Therapeutics in the Treatment of Patients with Known Ebola Infection. 54 Ebola patients were enrolled in the study. The ZMapp study had two groups - participants who received TKM-Ebola, and control group participants who were not injected with the drug. Just under half received an injection. The study was run by the National Institutes of Health (NIH) who worked across seven different Ebola Treatment Centers (ETCs) and hired over 20 staff based in the ETCs.

eHA provided support to the study through the procurement of supplies, mobile phone credits, vehicles, trial insurance, and payment of staff salaries. This allowed the NIH to focus on the ZMapp study and provide a high level of care to Ebola patients. ZMapp research coordinators continued to follow up with enrolled patients to monitor their health and report any potential adverse effects from the drug.

"I loved to go to work because the patients that we sent to the center, most of them made it out. I feel good, because I am able to help. And I am able to save lives. And sometimes I would become friends with my patients, they would come back and visit me and tell me how they are doing."

— Mariam, nurse with the ZMapp trial who gave injections to patients

"With eHA's help we started a clinical research study in record time. eHA helped us acquire clinical trials insurance, hire staff, get supplies and transportation, and get started right away. They were instrumental in helping us start this study really quickly. It's pretty much unheard of that things move that quickly in this situation."

— Nikki Gettinger, Clinical Project Manager, NIH, ZMapp study

05

Health Delivery Systems Program

Health Camps

Health Camps reaching millions of vulnerable women and children in Northern Nigeria

In Northern Nigeria, some sectors of the population do not have consistent access to health care due to a lack of health facilities in remote areas and the inability to pay for transport to reach a functioning facility. Within these communities, there are low levels of medical knowledge and sometimes a mistrust in foreign medical interventions which results in the most vulnerable segments of society falling ill with preventable and treatable diseases including malaria, tapeworms, ulcers and diarrhea.

- In 2015, the number of Health Camp boxes increased by 56% compared to 2014.

- Since 2013, Health Camps have helped over 3.8 million people, including over 1.6 million children under five, and over 2.2 million women.

Health Camps (HC) fill this health care gap for this particular group. HCs work with government partners to supplement monthly Immunization Plus Day (IPD) campaigns with medicines and medical supplies through supplying HC boxes. Each HC has at least one portable box of essential drugs and basic medicines for 100 recipients, which are diagnosed and distributed to recipients through trained community health workers. Traditional community leaders provide credibility to the project through openly promoting and encouraging community members to attend HCs.

eHA significantly increased the number of HC boxes from 34,188 in 2014 to 60,427 in 2015. Boxes were distributed across 44 of Kano's local government areas for the IPD campaigns. In July, construction began on a new, larger multi-purpose building in Kano which was completed in December. Other highlights included a special HC in late October where His Royal Highness the Emir of Kano asked eHA to supply HC boxes to Dambatta, Makoda, and Ungogo LGAs. He visited some villages and saw the positive impact HCs had on his state's population, and the Emirate Council is considering introducing them in other high priority areas in Kano State.

"It is my utmost desire to reach my people with an effective healthcare delivery intervention, and Health Camps are the channel through which this can be achieved visibly and more efficiently."

— His Royal Highness, The Emir of Kano,
 Special Health Camp held in Kano State

Kano Connect

MOVE: Vaccine stock management

Kano Connect (KC) is funded by the Gates Foundation and Dangote Foundation, in partnership with the Kano State Government (KSG) to build a primary health care communications platform. KC strengthens health systems and has improved communication and information flows across Kano State.

eHA procured, set up, and supported 1400 Android smartphones, managed a closed user group network (groups of healthcare worker mobile subscribers who make and receive calls between group members), and provided training and technical support for over 1400 routine immunization health workers. eHA also developed a unified data architecture to expand the state's capacity to manage routine immunization programs through an mHealth platform.

This year, eHA's Global Health Informatics Department developed a custom supportive supervision tool (SST). Supportive supervision is when feedback from supervisors is gathered, and shared with staff to improve overall performance. The SST was used by the Kano State Primary Health Care Management Board (KSPHCMB). This allows health care workers to share forms through an Open Data Kit which automatically produces a digital copy of key performance indicators. These are analysed by the KSPHCMB, and help improve health care workers' performance. In November, eHA began planning the transition of the project to KSG, which included the development of an affordable costing model for sustainability.

MOVE is a logistics information management tool developed by eHA to provide health facilities with vaccination and supply information. It is crucial as it ensures health facilities can run monthly polio and routine immunisation clinics across Northern Nigeria. MOVE tracks current vaccine stock levels, stock-outs, wastage, and stock movement and ensures vaccines are being rotated and not expiring through an easy to use dashboard.

MOVE is technology that enables information to be shared in real time and has the potential to provide tailored solutions for different types of health systems— from national response centers to remote health clinics. Improvements this year to the dashboard included the replacement of report and analytic tables with self-descriptive and user friendly charts and visualisations. MOVE now tracks and manages the status of cold chain equipment that stores vaccinations at health facilities.

–   Over 1400 health care workers were networked in the Kano State Primary Health Care Management Board (KSPHCMB) Routine Immunization program.

–   Launched the MOVE application to over 123 health facilities in 11 LGAs.

Vaccine Direct Delivery

Over four million vaccines directly delivered to Kano and Bauchi State health facilities

Vaccine Direct Delivery (VDD) was developed by eHA to meet challenges in Kano and Bauchi States for a reliable vaccine delivery service to ensure health facilities could run regular vaccination clinics for children under five and Immunization Plus Day campaigns for Polio. VDD provides a bi-monthly supply and stock check of vaccinations from State run cold stores by eHA's drivers who directly transport these to rural health facilities. Stockouts (when inventory is exhausted) within health facilities that administer routine immunisations have dramatically reduced from 90% in 2014 to below 30% in 2015 due to VDD.

VDD has delivered over four million doses of antigens to over 1,000 health facilities in Kano and Bauchi States, and increased the number of healthcare facilities it delivered to from 68 to 78% of Kano's wards. This year, staffing increased from 3 to 12 VDD drivers and the GIS team mapped over 32,000 kilometers of roads in Kano and Bauchi States on the OpenStreetMap platform.

– Four million doses of life saving vaccines were delivered by VDD to Kano and Bauchi States.

– Over 387,000 kilometers were traveled by eight drivers in Kano and Bauchi states.

This greater efficiency in the pre planning of routes meant more health facilities were covered in each delivery round. A new Direct Delivery dashboard was developed which now gives all users of the VDD a visualization of the delivery process, analysis and regular reports.

"The facts were very bad - 98% of LGAs in Kano experienced regular stock outs on highly used vaccines including BCG, Measles, and Yellow Fever, which made it very challenging to implement. Vaccines were not readily available in most of the facilities, there was no proper management or accountability of data for the vaccine supplied, and vaccine management was not well organized or properly accounted for. We decided to move to a push method which eHA developed. Now hundreds of millions of naira of vaccines are successfully transported".

— Pharmacist Rabiu Muhammad Fagge, Kano State Logistics Office

06

Nutrition and Food Security Program

eHealth Africa

eHA commenced a new Nutrition and Food Security Program this year which has already developed partnerships with local and international organizations. In February, the Global Health Informatics Department worked with UNICEF Nigeria to design and implement a mobile data collection application for the Nigerian National Nutrition and Health Survey. Developers produced a custom data tool that utilised tablets to capture key information including stocks of ready to use therapeutic food, micronutrient programming, and Northern Nigeria's severe acute malnutrition levels. eHA ensured accurate data collection throughout, by adding a dashboard feature that allowed UNICEF to monitor surveyors on a real time basis to ensure data was being filled out correctly. Electronic collection enabled faster analysis and report writing of the survey as information was already entered by the surveyors. This removed the need to employ data entry staff which resulted in this methodology costing less than a comparable paper-based survey.

In July, eHA signed a Memorandum of Understanding (MOU) with the International Potato Center (IPC). IPC focuses on tackling nutrient deficiency rates in Nigeria where over 41% of children below five have stunted growth and 29% are vitamin A deficient. The MOU will develop value chains for orange-fleshed sweetpotato (OFSP), a popular crop in Nigeria targeted as a mechanism to address overwhelming nutrient deficiency rates. It will monitor and track planting material dissemination, and develop and implement of national standardised systems, and create more opportunities to major markets. This will result in more vulnerable people in Nigeria having access to OFSP.

– The Nigerian National Nutrition and Health Survey utilized electronic data collection tools for the second time through eHA's design and development

07

Polio
Program

eHealth Africa

2015 was a milestone year for Nigeria, Africa, and the world in regards to Polio. Since 2012, eHA has worked with the Nigerian Government, the Global Polio Eradication Initiative, and other partners to stop the transmission of the poliovirus and completely eradicate the disease from Nigeria. This year there were a number of key successes:

– Zero cases of paralytic polio in Nigeria. In 2012, there were 122 cases of paralysis from wild poliovirus; in 2013, there were 53; and in 2014, there were six. The last case of paralysis from wild poliovirus in Nigeria was on July 24, 2014.

– Nigeria successfully interrupted the transmission of the virus for the first time, with zero cases for 12 consecutive months (and counting). This is significant for Nigeria which was one of only three countries in 2015 still considered endemic, but also for Africa. The entire African continent is non-endemic for polio virus for the first time. Nigeria is now tracking toward full eradication of the virus, which will be achieved in 2017 if the country sustains the progress with zero cases of polio and strong surveillance indicators.

– In 2015, WHO announced that WPV2, one strain of poliovirus, was globally eradicated.

Mobile based tracking, mapping and dashboards to ensure more children are vaccinated

The Vaccination Tracking System (VTS) is a mobile-based geoposition tracking system that collects the coordinators of field vaccinators as they go house-to-house during Immunization Plus Days (IPD) campaigns. VTS was developed in 2013 by Novel-T and implemented by eHA and has tracked 29 campaigns in 10 states across Northern Nigeria. This year VTS managed 560 team deployments for eight separate IPDs.

The base maps created from satellite images that eHA's Geographical Information Systems (GIS) department created received vital support from the Data Collection team (DCT) and VTS teams. DCT members work in remote parts of Northern Nigeria to track information from different settlements prior and during monthly IPDs. They visit areas that polio vaccinators miss and obtain names of geolocated settlements through supplementary immunization activities (SIAs) and microplan lists. Following this activity, microplan lists are then updated, fed into the GIS maps for SIA's, and then added to the VTS dashboard.

The VTS dashboard is crucial to the whole polio operation as it generates the information needed to better plan and coordinate activities before and during IPDs. VTS teams finalised the maps via vaccinator coordinates against the basemap. During IPD's this year, the additional information DCT's gathered, played a crucial role in identifying missed and neglected settlements during campaigns and were crucial in planning for mop up days directly after the four-day IPD. The DCT also implemented the eTallySheet tool. This ensured data quality and validation of the production model in Kano State.

Pilot of a new eTallySheet

A pilot of the eTallySheet tool was introduced this year. It is a digital version of a paper-based tally sheet that tracks the number of households visited and the number of children vaccinated by house-to-house teams during polio campaigns. The sheet is installed on a Global Positioning System enabled Android smartphone.

eHA worked with the WHO and Novel-T to pilot the tool during five IPD's in Northern Nigeria this year. The outcome was greater efficiency in conducting data collection and collation of immunization data from households. This lead to more actionable and accurate data on coverage of the IPD's.

Data Collection team participates in crucial internally displaced person's assessment mission

In July, the Data Collection team participated in the Nigerian Government and Humanitarian Country Team Joint Assessment of internally displaced people and returnees in Adamawa, Yola. They represented eHA amongst other key international humanitarian players including UNHCR, OCHA, and the IOM. They introduced new qualitative and quantitative methods of data collection, including focus group discussions and key informant interviews.

Polio Emergency Operation Centers

Polio Emergency Operation Centers (PEOCs) are headed by the Nigerian Government and run by eHA. They coordinate activity with partners, and implement programs that lead to the eradication of polio in Nigeria. PEOC's monitor and supervise routine immunization and SIAs at the state, local government authority and community levels. They improve accountability, are committed to strengthening local health systems, and provide a focused response mechanism for all polio-related activities.

This year all PEOCs received commendation letters from the National Primary Healthcare Development Agency (NPHCDA), and the State Primary Health Care Development Agency (SPHCDA) for improving the quality of program implementation. PEOC's did this through enforcing state level financial discipline and program accountability, implementing innovative management tools, and effective partner coordination.

eHA worked with Nigeria's National Polio Emergency Operations Center (EOC) to develop a comprehensive dashboard of all polio eradication data which was supported by the Gates Foundation. The dashboard helps EOC Staff to make evidence based decisions during monthly SIA campaigns through utilizing current information on the IPDs so they can better tweak target areas during the campaign. Later in the year, EOCs supported activities outside of polio response including measles campaigns, meningitis case reporting, and coordination in providing provisions to the over 3 million people living in internally displaced persons camps due to the violence in Nigeria's North East region.

End game strategy

The end game strategy to reduce rates of non-compliance

The End Game Strategy (EGS) involves mobile teams revisiting and working with non-compliant parents to accept the polio vaccine after the day's door to door vaccination activities. Non-compliance is defined when a parent refuses a vaccination for their child. This year, the EGS team resolved 87% (7,157 of the 8,217) of non-compliance cases, and 90% (12,408 of the 13,830) of child absent cases between January and September. Success was directly linked to support from state health officials, local government area (LGA) teams, and traditional and religious community leaders. Distribution of incentives to communities (soap, sweets, whistles, educational CDs on polio in Hausa, and quick factsheet flyers about the disease) also helped to increase compliance rates.

– Non-compliance cases reduced from 1,505 in January to 872 in October

– The visit of His Royal Highness the Emir of Kano to Minjibir during the July IPDs led to a significant reduction of non-compliance cases from 118 in June to 8 in September

"I didn't know much about the danger of not allowing my children to be vaccinated until after viewing an educational CD on polio. The clip changed my attitude completely and I promise to contribute by passing the information along to my friends so that our children will not be crippled by polio."

— Reformed non-compliant parent in Nassarawa LGA

Hard to Reach project

Helping the most remote parts of Northern Nigeria

Hard-to-reach areas (HTR) are those that have physical, communication, security, social and economic barriers that result in lower delivery levels of public service compared to other parts of Northern Nigeria. Children from these areas tend to be more disadvantaged because of lack of access to basic amenities and health services.

The HTR project, implemented by WHO and UNICEF, targets these communities as part of the overall Polio program. It provides integrated health services to these under-served communities through quarterly visits from WHO and UNICEF mobile health teams who provide polio and other essential vaccines and essential medicines administered by trained healthcare professionals.

This year, HTR staff vaccinated over 947,000 children with OPV (including 34,000 children receiving the vaccine for the first time) across six states. eHA developed over 30 maps for HTR staff including web maps and managed a weekly central tracking system. This used data submitted from mobile immunization outreach sessions from GPS-enabled android phones. Six training sessions were conducted in six states involving 102 LGAs who provided 150 Android mobile phones to mobile teams. They taught participants on the use of phones in capturing GPS coordinates and transmitting real time immunization data.

"We appreciate the ideas and involvement of our WFPs, community leaders, team supervisors in training and planning in order to correct settlement names and capture additional information required to provide us with a perfect micro plan."

- Chairman Dutse, Jigawa LGA

08

Areas of
Expertise

Global Health Informatics

eHA's Global Health Informatics (GHI) department designed, tested and improved all the organization's software and applications this year to ensure they were fit to deploy. This allowed eHA to continue to offer innovative solutions to global health challenges which have contributed to saving thousands of people's lives.

- Over 147,800 named settlements, 519 markets and 388 schools were added to the geodatabase.

- Over 40,000 health facilities were mapped showing services in Nigeria.

- Over 135,900 kilometers of roads were mapped across 16 states of Nigeria.

GHI has 58 staff based in Berlin, Kano, Freetown, and Conakry who are committed to developing offline first software, which is crucial to ensuring eHA's solutions can operate in the most challenging connectivity environments. GHI worked on a number of projects including the routine immunization data and the data flow throughout the Ebola response to contact tracers and call centers.

The GHI department works with the open source community, collaborates with developers in similar fields, and contributes to global informatics solutions. By improving and adding to open source coding and playing a role in building a community beyond software applications, eHA's GHI department is helping to advance global development informatics in West Africa and also globally.

The Geographical Information Systems (GIS) team continues to be one of the most capable GIS teams in West Africa, with proven capabilities in health mapping and using geospatial information in practical ways. Based in Kano, the GIS team has mapped boundaries for all administrative regions in the country, as well as the locations of 500,000 settlements, and 200,000 kilometers of roads.

This information is crucial to identify missed settlements, develop accurate micro plans, and organize delivery routes for Vaccine Direct Delivery which allows us to reach the most remote regions in Africa. GIS's contribution to this work was recognised at a number of African and International conferences through keynote addresses and plenary presentations. This included the Esri Africa User Summit in Cape Town, the Humanitarian Open Street Team Summit, and the Free and Open Source Software for Geoinformatics conference held in Seoul.

Monitoring, Evaluation and Research

The Monitoring, Evaluation and Research department was involved in a number of research projects this year. MER conducted original research on crucial global health areas including a study to understand health care worker knowledge, attitudes and practices on maternal and neonatal health services in Kano State. It focused on rural and urban facilities and found urban healthcare facilities have better equipment and a broader client base, and basic child health tools including incubators which were not available in rural areas. The second study focused on a needs assessment of internally displaced populations at camps in Yobe and Borno. Individuals found in IDP camps did not always have access to medical drugs and food, despite camp management saying that those resources were available. This raised crucial questions on whether partner services are meeting basic needs within camps.

MER also developed new external partnerships with the University of Nebraska Medical Center and Global Good, offering Northern Nigerian expertise to survey development, data collection, and research.

09 Our Partners

- Bauchi State Government
- Bill and Melinda Gates Foundation
- CDC Foundation
- Centers for Disease Control and Prevention
- Dangote
- The Department for International Development
- The European Commission's Humanitarian Aid and Civil Protection Department
- GOAL
- Global Fund
- Guinea Ministry of Health
- Institute of Tropical Medicine, Antwerp
- Intellectual Ventures / Global Good
- International Organization for Migration
- International Potato Center

- International Rescue Committee
- Kano State Government
- Liberia Ministry of Health
- National Primary Health Care Development Agency
- Nigeria Ministry of Health
- Paul G. Allen Family Foundation
- Sierra Leone Ministry of Health
- SIS-International
- The United Nations Children's Emergency Fund
- United Nations Foundation
- University of Nebraska Medical Center
- World Health Organisation

10 Financial Position

eHealth Africa's cash, cash equivalents and short-term investments as of December 31, 2015, totaled approximately $18,749,160. Total donor revenue, comprising of contracts and grants, for the twelve months ending December 31, 2015 was approximately $61,891,549. Over the same period, total expenses for the organization were approximately $49,215,343.
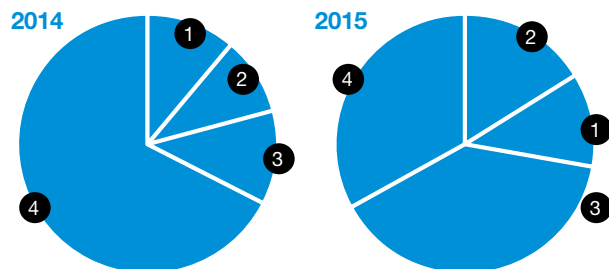All figures quoted are unaudited.

Operating revenue
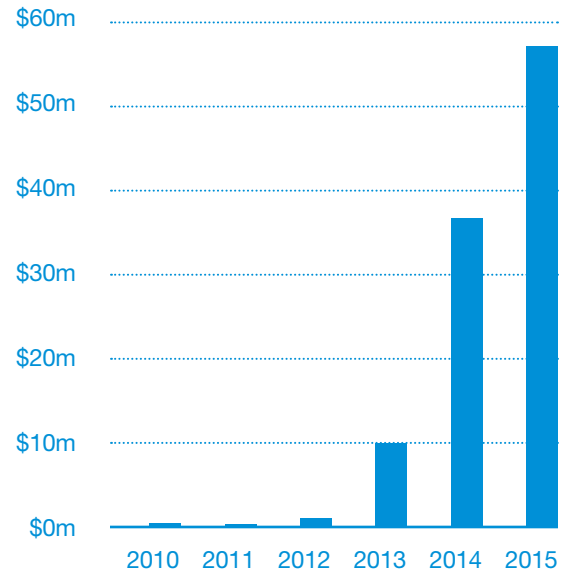
Overview
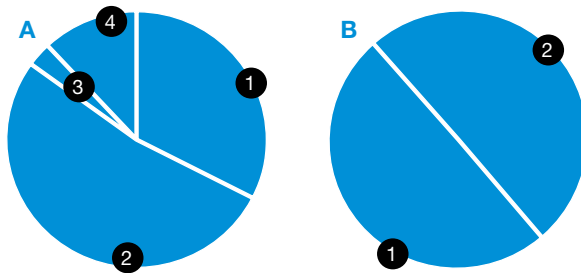
A	Assets	$US
1	Cash and equivalent	6,109,748
2	Accounts Receivable	9,834,424
3	Prepaid and other	607,188
4	Property & Equipment	2,197,799
	Total Assets	18,749,160

B	Net assets	$US
1	Unrestricted Net Assets	9,330,516
2	Restricted Assets	9,418,644
	Total Liabilities & Net Assets	18,749,160

Operating expenses

2014

2015

	Where we work (operating expenses)	$US / 2014	$US / 2015
1	Liberia	3,893,504	8,224,138
2	Guinea	3,416,421	5,801,980
3	Sierra Leone	4,115,615	19,759,887
4	Nigeria	23,551,897	16,625,843
	Total	34,977,437	50,411,847

Operating revenue

A

B
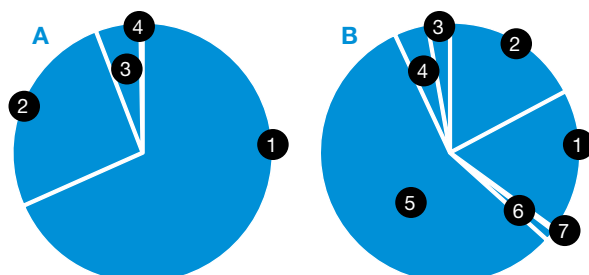
A	Operating revenue	$US
1	Private Grants & Contracts	38,957,413
2	US Govt Grants & Contracts	14,611,440
3	Other Govt Grants & Contracts	3,124,393
4	Other	144,901
	Total	56,838,148

B	Nature of programs	$US
1	Polio Eradication	9,890,654
2	Health Delivery Systems	9,961,896
3	Nutrition & Food Security	211,519
4	Health Informatics	835,178
5	Emergency Preparedness & Response	31,904,114
6	Integrated Disease Surveillance	2,363,824
7	Lab Systems Strengthening	1,526,061
	Total	56,693,247

HR Update

Berlin

457

Staff in Nigeria

37

Staff in Guinea

Guinea

Sierra Leone

Liberia

105

Staff in Liberia

109

Staff in Sierra Leone

40

Remote Staff

Key 2015 staff information

Nigeria
Guinea
Liberia
Sierra Leone
Remote

30

staff promoted
during the year

20%

of local staff
attended at least
one training course

5,700

applicants submitted
resumes to eHA

107

ethinic groups
work across the
four offices

57

staff have Masters
Degrees or PhDs

9

staff attained
educational degrees
while working
at eHA

Nigeria

748

Total Staff

eHealth
A F R I C A

eHealth Africa's mission is to build stronger health systems
through the design and implementation of data-driven
solutions that respond to local needs and provide under-served
communities with tools to lead healthier lives.

www.eHealthAfrica.org