Survey report for the Global South eHealth Observatory

THE GLOBAL SOUTH

EHEALTH OBSERVATORY

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Meeting with the
# " Deployment DHIS2-ALIMA-Nigeria"
Project

Nigeria - April 2020
Julie LANCKRIET, under the supervision of Samir ABDELKRIM -
STARTUPBRICS

Health personnel trained in data collection on DHIS2 by Alima, working in the Borno Health Centres.

CONTEXT

Alima is a major international humanitarian NGO, present in 11 countries of the Continent, with headquarters in Dakar. This extension explains the particular geographical distribution of the teams involved in the project presented to us, and our video conference thus brings together staff split between Dakar, Abuja and Maiduguri (North-East Nigeria). This, coupled with the Covid-19 context which seems to be putting a lot of pressure on the NGO's project teams, has led to several delays in our communication with the Deployment DHIS2-Nigeria project, which will eventually be made up for by a condensed and informative discussion during a video conference in April 2020. Due to connection difficulties linked to the project's very exiled geographical location, we unfortunately have not been able to meet any beneficiaries, and we could interview only a few medical professionals.
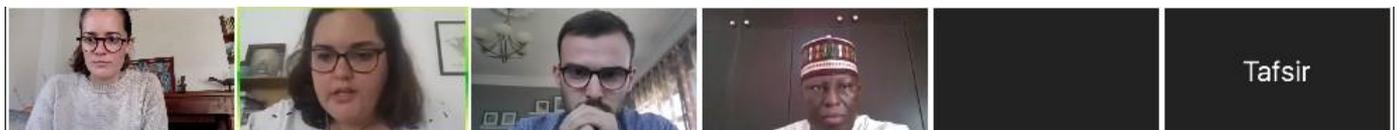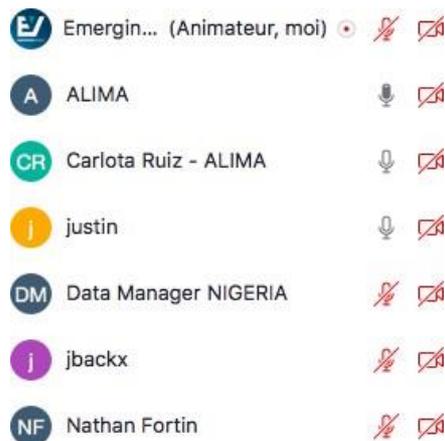
Video conference on 9 April 2020 with the Alima and StartupBRICS Project Teams

Nigeria is a Federal country, with three levels of government: the central state, the 36 federal states and over 774 local governments. Its healthcare infrastructure follows this division, with central management of *Teaching Hospitals* and Federal Medical Centres, while *Primary Healthcare* Centres are under the responsibility of the Federal State and its Health Commissioner. As for the other countries in the sub-region, the most common health problems encountered are malaria, ARIs (Acute Respiratory Infections) and diarrhoea. In Borno State in particular, which is located in the extreme north-east of Nigeria on the borders of Chad and Cameroon, skin infections are also present.

This region, neighbouring the mythical Lake Chad and twice the size of Belgium, is the historic stronghold of Boko Haram, the Islamic sect formed in 2009 and whose macabre toll since then is estimated at nearly 27,000 victims and more than 2 million displaced persons. Although the fight against the terrorist group is one of the priorities of the Buhari administration, its results remain mixed and the Borno State does not seem to be able to ensure the proper functioning of its public services today. Alima's teams explain to us that like all the other NGOs present in the area, they travel the

170 kilometres or so that separates Maiduguri - capital of Borno - from the city of Monguno where their project is held, exclusively by helicopter! The latter makes the round trip 2 to 3 times a week, and the humanitarian teams are systematically accompanied by officers of the security forces. These extreme security measures concern expatriate staff as well as nationals.

Geographical location of the Borno State (cut out in red) and the city of Monguno (symbolised by the red cross) where the Deployment DHIS2 project of Alima is held.

Unfortunately, in addition to the severely deteriorated security situation, the economic situation also finds itself in a difficult position, and the area suffers from a poor power supply and temperamental satellite internet links. Health is not spared by these precarious conditions, and the collection of health data is consequently all the more complicated. Like nearly 60 low- and middle-income countries, Nigeria has nevertheless chosen a digitalised health data collection and management system called DHIS2, which has gradually been implemented across all its structures since 2013. Developed by the University of Oslo in 1994, this health information and data management system meets international standards and is in line with WHO recommendations. The implementation of DHIS2 in the North-East of the country has nevertheless been made impossible by the security crisis, condemning nearly 5 million people to remain outside the radar of public health policies, despite finding themselves in a situation of severe food crisis.

HISTORY

Created in 2009, the Alliance for International Medical Action (Alima) specialises in humanitarian medicine, with particular expertise in the Sahel region. In 2016, the NGO will start operating in Northeastern Nigeria to contribute to the humanitarian response provided by many international organisations. It then developed projects near the *Muna Garage* camp in the Jere district, setting up general consultations for children under 5 years of age, as well as sexual and reproductive health initiatives for pregnant and breastfeeding women. ALIMA works in 5 camps for displaced persons, with 3 health organisations and in the town of Maiduguri, in partnership with the university hospital.

After two years working in the field and faced with the large volume of health data processed on a daily basis, the NGO nevertheless identifies gaps in information gathering, which it considers to be disorganised and of poor quality. Following the example set by the rest of the country's states as well as many other developing countries, the NGO decided to address these deficiencies by implementing a better data collection system. This is also part of its overall framework of action, since Alima is already implementing the DHIS2 system in several of its other territories of operation. A pilot phase was launched in April 2019 in the city of Monguno.

THE TEAM, AND THE INSTITUTIONAL SITUATION OF THE PROJECT

The deployment of the DHIS2 system in the federal State of Borno has therefore been carried out by the NGO Alima since 2019, in partnership with the federal and federated health authorities. It is accompanied in this project by IT4Life, a spin-off created by the company in 2017 to develop Digital Services dedicated to NGOs. Alima thus benefits from a dedicated IT expertise in security, development and data analysis. In Nigeria, IT4LIFE is thus carrying out decisive missions such as setting up DHIS2 bodies, configuration, training, monitoring and reporting.

On a governmental level, Mr. Kader Issaley's teams tell us that they began collaborating with the Ministry of Health in 2016, which mainly involves sharing health information. In this difficult territory, collaboration is crucial and Alima is actively involved in humanitarian cooperation networks: it regularly collaborates in the field with MSF Belgium and has joined UNICEF's regional sub-working group, which allows it to exchange with many other organisations, discuss good practices and address ethical issues encountered in the field.

Concerning the Alima project-teams, today there are twenty-six people involved in the development of the Deployment DHIS2 project in Nigeria. However, the latter did not require any real surplus in terms of human resources, since the NGO relied on its existing staff and initiated only one job creation: the national data manager. As for the rest of its projects, the strategic level is therefore located in Dakar, with a steering committee ensured from Abuja by the Nigerian medical referent, Mr. Kader Issaley and an organisation led by Mr. Jérôme Backx on the territory. The Data Manager, Mr. Justin Diomaye Ndiaye, is also identified as "Data Collection and Management Specialist". His

function is key to enable monitoring, training, data management and daily project activities. Every month, an activity report is produced by the field teams, while a strategy meeting is held every two weeks in Dakar with the headquarters team, which ensures that deployment activities are monitored and that the specifications are respected.
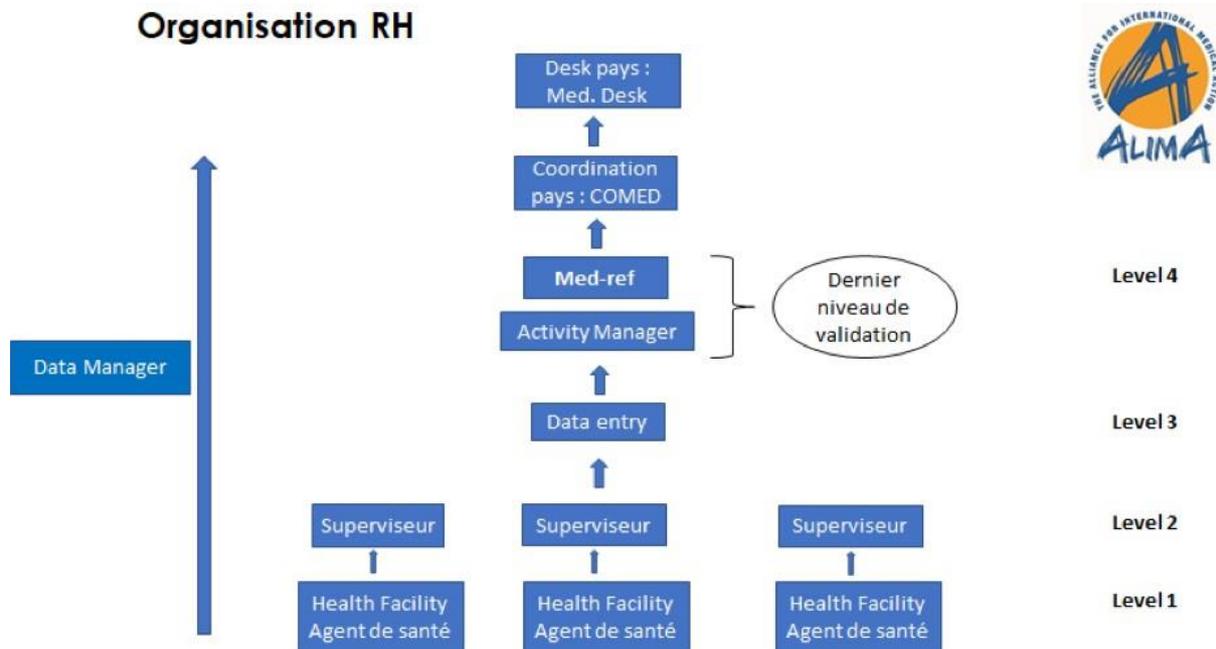

Diagram of the human resources and project management organisation of the NGO Alima.

OPERATION AND TARGETS

The initiative led since April 2019 by Alima, in partnership with the Ministry of Health, aims to deploy DHIS2 in the entire State of Borno. This should improve the collection, centralisation, quality and analysis of health data. It is from the city of Monguno, an isolated and inaccessible area, that Dr. Kader Issaley's teams are deploying the Deployment DHIS2-Nigeria project. According to the latest figures published by OCHA [United Nations Office for the Coordination of Humanitarian Affairs] in January 2020, the city is home to a population of nearly 186,000 people, who are therefore the direct and indirect beneficiaries of the project.

Traditional health data collection

Health data collection is not a new phenomenon in Monguno, where it is traditionally carried out on a paper register, provided and regulated by the Ministry of Health. Present in each health care organisation, it makes it possible to record quantitative data from daily health care practice, such as the number of consultations made, the patient's name, age and sex, and the type of condition/disease encountered. Each week, the federated care centres carry out an anonymous aggregated collection of this data, in order to recover the number of patients received, the number of conditions or

even classification by age (0-1 year / under 5 years / over 5 years, etc.). The summary is sent physically to the central level, with all the difficulties that this entails for a security-critical area such as Monguno.

Traditional system of health data collection, with handwritten notes in the Health Centre's records.

Data collection via DHIS2

What has changed with the introduction of DHIS2 is that it is accompanied by the allocation of digital equipment to the health centres: each organisation receives its own tablet, which allows digital recording of all the data collected. This affects the daily life of the health personnel, since both the daily information and the weekly overview are now stored digitally. In practice, this transition is gradual and the Excel files that often serve as a repository for handwritten data will not be removed until the pilot phase is completed. A transition that is appreciated by health care personnel who need to maintain certain reference points, says Dr. Issaley.

The latter specifies that 17 forms are currently available on DHIS2 Nigeria, which classify the information collected into six major thematic areas: reproductive health, nutrition (outpatient and intensive), vaccination, hospitalisation, screening of malnourished children (brachial perimeter/MUAC done by the mother) and consultations in health centres. Another important element given the very degraded context in Monguno, is that data logging can be done in "*offline*" mode: the data will simply be synchronised later on the server, when the connection is retrieved.

To ensure the smooth running of this collection, Alima has set up a very structured process: the referring doctors (MEDREF) who are responsible for monitoring the process on the spot. The data is then sent every evening to the central organisation for an initial check: if a gap is found, the person responsible has the chance to immediately request additional data, before validation for posting on the DHIS2 digital register. The central manager is also well identified: it is the Medical Coordinator

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(COMED), who is responsible for checking that the monitoring indicators are correct with the help of the data manager and under the supervision of IT4life. They hold a key role, since once the information is validated, it can no longer be modified.

"In the past, sending the physical data could take up to one or two months. You have to understand that with the Boko Haram situation, all the teams were afraid to make the journey. Now, no more travel is necessary and once the coordinator has given their approval, it is done in one evening. "
Kader Issaley, Nigeria Medical Referent for Alima

Daily data entry on the DHIS2 application takes only a few minutes at MEDREF, but the crucial point for optimal data entry lies in the training of health workers. This is why Alima's teams decided to create the position of Data Manager, who is responsible for piloting the skills development activities. The objective is clear: to teach them to work on the quality of the recorded data, in order to be able to make them independent in the long run. In order to increase the involvement of health personnel, Alima's teams considered it relevant to survey them on the use of DHIS2: it was found that the teams had a clear interest in it, being sensitive to the use of new technologies, as well as to the possibility of using tablets to facilitate a formerly handwritten data input considered tedious and time-consuming.

"Training in data recording is very important: it should not be seen as a definitive type of education. The better the quality and the more it is repeated over time, with regular reviews, the better the quality of the data entered, and the fewer the errors. "
Mohammed, Nigeria Data Manager for Alima
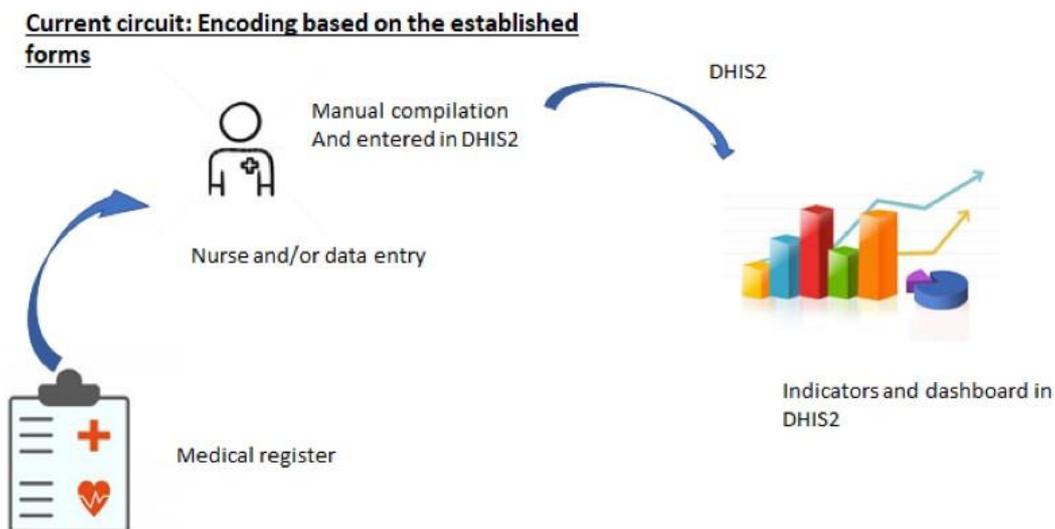
New proposal: Encoding based on direct data per patient
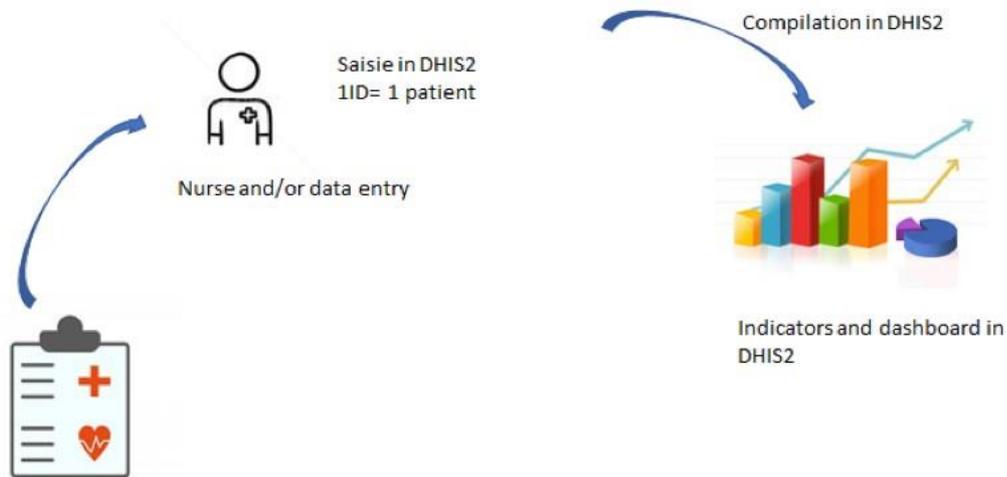
Explanation of the planned transition from the pilot phase to the continuation of the Deployment DHIS2-Nigeria project

Standardisation of health indicators and data analysis

More than a simple recording system, interest in DHIS2 also lies in the fact that it leads to a uniform definition of health indicators: each variable must be recorded according to the same criteria to achieve a standardised production of data between the different health centres at a regional, state and ultimately global level, under the control of the WHO.

> *"Our main focus today is to standardise the definition of indicators in health centres. Previously, each organisation had its own scoring method, resulting in huge discrepancies ranging from 1 to 4 on some indicators. The DHIS2 system allows us all to share the same definitions: we can now compare, analyse, and therefore decide. "*
> *Kader Issaley, Nigeria Medical Referent for Alima*

The project now has two individual data entries: the first in Monguno and the second in Maiduguri, where the aggregated implementation is taking place. To date, 8 health organisations have benefited from capacity building, with the provision of 14 tablets and the training of 22 users.

> *"We're still in the pilot phase. The objective is to be able to compare within 2 months the data collected in Monguno on the one hand, and in Maiduguri on the other hand, to choose those which will show the best qualitative rendering. "*
> *Justin Diomaye Ndiaye, Data Collection and Management Specialist for Alima*

At the end of the process, the analysis and interpretation of the data is the responsibility of those responsible for producing the reports, which are MEDREF, COMED, the Nigeria desk and the operations group based in Dakar. Indeed, DHIS2 is

also a powerful data analysis tool, which makes it easy to create maps, tables and graphs. Finally, within the framework of the collaboration between ALIMA and the Nigerian Ministry of Health, MEDREF and the coordinator are in charge of sharing the information collected with the country's health authorities. In light of the security context in Monguno, however, the Ministry does not have a continuous presence there, but data is exchanged from Maiduguri.

"On site, we can give each Chief Medical Officer a weekly summary table: this gives him/her an overall view that allows him /her to better analyse the situation."
Jérôme Backx, Field Coordinator for Alima

TECHNOLOGICAL SUPPORT AND LEGAL FRAMEWORK

The DHIS2 system, developed by the University of Oslo, was accompanied by the creation of an open-source application, now used by many countries for the management of their health information systems. The Alima teams thus chose to use it as it is, without making any changes, but adapting the forms for Nigeria.

"It's very simple, fast and can be used daily: just enter the data at the end of the day, the application immediately sends it to the central office for validation, and it is integrated into the system with no further action to be taken once it is approved. It's as simple as that. "
Kader Issaley, Nigeria Medical Referent for Alima

As far as data security is concerned, the data is anonymised and protected with an encryption code, which encrypts it from start to finish. The server on which they are stored is also secure, with a second server as backup. Access to the platform is reserved only for people with a login and password. IT4Life, the spin-off company created by Alima, is responsible for all data security. The database is periodically backed up by spin-off and storage carried out using Google Drive.

IMPACT AND ADDED VALUE

⇒ **The 1st added value of the Deployment DHIS2-Nigeria project lies in the improvement of health information collection.**

The collection and analysis of quality data is essential to improve the effectiveness and efficiency of healthcare services. There is now a consensus that the lack of reliable data on key health problems and determinants undermines development efforts, as it negatively influences efforts to monitor key health problems and outcomes. Through the use of digital technology and DHIS2, data are better collected, stored, shared and ultimately integrated into the national database to contribute to planning and assessment.

"The DHIS2 system is much better than the old handwritten method: in every respect, it's day and night! Firstly the quality of the data, its granularity: the system is much more flexible with finer response possibilities. "
Mohammed, Nigeria Data Manager for Alima

"Using DHIS2 allows us to have an early warning system: the system is much more reactive and from one day to the next, practice errors can be corrected thanks to the immediacy that digital technology provides. "
Kader Issaley, Nigeria Medical Referent for Alima

These advances thus ultimately benefit vulnerable populations. Indeed, in this zone where the Ministry of Health is encountering difficulties in formulating an effective response to the needs of the affected and isolated populations, nearly 84.5% of the inhabitants are internally displaced persons, with a significant number of women and children.

Staff of the NGO Alima in consultation at the health centre, equipped with their tablet

⇒ **The second added value of the programme is the exploitation and analysis of the data allowed by DHIS2.**

As mentioned above, the system created by the University of Oslo also allows the data collected to be used to create concise visualisation tables, which ultimately lead to better decision-making.

"DHIS2 should be seen as a continuous chain of improvement. Firstly, fieldwork is greatly enhanced by the use of computers and tablets. Secondly, teamwork is much simpler as well, since data can be shared and analysed using summary tables. Previously, all this required tedious operations and numerous exchanges. In the end, DHIS2 improves the quality of the decision and makes it easier for doctors to analyse the situation. "
Jérôme Backx, Field Coordinator for Alima

"Thanks to DHIS2, we will soon have a map of the district of Monguno with the origin of the patients, which should allow us to quickly see if part of the population does not have access to care for safety reasons for example. Today, we don't have this information. We only have general data. "
Kader Issaley, Nigeria Medical Referent for Alima

⇒ **Finally, the DHIS2 system has enabled health data to gain in both security and integrity.**

The protection of both health and personal data is a prerequisite for any health data management system. DHIS2 integrates security components that do not exist on the paper model.

"The added value is not only in the collection of the data, it is also in the analysis of this data: visualisation is very important. Another crucial point is the integrity of the data, which did not exist before, since an Excel document can be modified by anyone. "
Justin Diomaye Ndiaye, Data Collection and Management Specialist for Alima

"Excel did not allow the data to be secure: not only did the files contain personal information, but they were also modifiable! DHIS2 provides for a unique level of validation: the Medref. The senior levels can no longer change the data, which are now protected. "
Jérôme Backx, Field Coordinator for Alima

ECONOMIC MODEL AND FINANCING

The Deployment DHIS2-Nigeria project, which deploys free and open source software, is being implemented in health organisations where free care is guaranteed. The NGO Alima, for its part, operates 100% with public funds, and has not received any specific funds for the development of DHIS2 projects, but the humanitarian activities it is also implementing in Maiduguri and Monguno are financed by the sponsors ECHO and UNFDA. It is thus from this financing that the first DHIS2 developments in Borno were carried out. Alima estimates the annual operating cost of the programme at $95,000.

DIFFICULTIES ENCOUNTERED AND ROADMAP ENVISAGED

Difficulties

The first and main difficulty encountered by the project is naturally the unstable security context in which it is deployed. In Monguno in particular, NSAGs have carried out several attacks on military formations outside the city. Humanitarian access for the most vulnerable populations is a strong constraint. The implementation and monitoring of the activities, as well as the supervision of the project's stakeholders, especially the data manager, are therefore challenging.

"Everything we do is done in close collaboration with the authorities. We can say that the town of Maiduguri is safe, but the difficulty is in Mongono. It used to be a 3-hour drive, but now all the NGOs go there by helicopter, avoiding the roads at all costs, for their expatriate and national employees"
Kader Issaley, Nigeria Medical Referent for Alima

This security context is followed by a very limited presence of the Ministry of Health in the State of Borno, which complicates the implementation of DHIS2 and the sharing of health data. Indirectly, security also weighs on human resources, and several people from the team have thus left the project during its implementation, following in the footsteps of those from MedRef and CoMed, who have now been replaced. Finally, technical problems take up a large part of the team's daily lives. They are confronted with numerous power cuts and major connectivity problems that disrupt data transfer.

Roadmap

This year Alima plans to finalise the initial deployment phase of the project, which should allow for the definitive abandonment of the use of Excel records. In order to always improve the data collection process, ALIMA wishes to reinforce the training courses and improve the existing modules. They also plan to reinforce the supervision of the actors on site, and to recruit a team member based in Dakar in Monguno to ensure the completeness and synchronisation of data with the tablets, the updating of the servers and a new configuration of the tablets. ALIMA is also considering acquiring additional tablets for each activity. A data quality assessment module should be organised shortly, with a field visit to query the correspondence between the medical register and health data entry on DHIS2. Secondly, special attention will be paid by the NGO to strengthen collaboration with local, regional and national health authorities in Nigeria. Finally, it is planned to eventually scale up the project to the other ALIMA intervention areas, Nigeria and CAR.

COVID-19 FOCUS

Update: On 18 April 2020, Nigeria had 541 cases of Covid-19, including 166 cured and 19 deaths. The Lagos, Abuja and Ogun State areas have been in lock down since 30 March, while schools and universities in the affected areas have been closed, with a curfew from 8 p.m. to 6 a.m. and some inter-state travel prohibited.

Alima's daily activities: the project decided to continue its activities despite the Covid-19 context. While the teams are aware of the threat that the virus may pose to the continuity of their activities, the very objective of the project, in their opinion, contributes to the management of the crisis, through a better analysis of the health information present. Alima therefore considers it essential to continue its activities, which will ultimately contribute to strengthening the virus detection ability.