



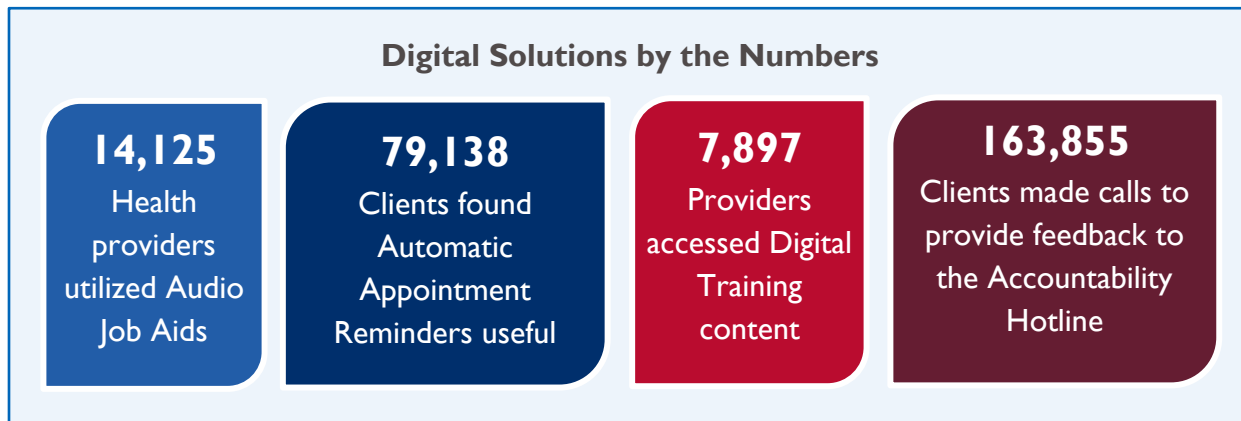
USAID Integrated Health Program Technical Series

## Digital Solutions for Improved Quality Health Services

### INTRODUCTION

The United States Agency for International Development (USAID)'s Integrated Health Program (IHP) in Nigeria is a five-year (2020-2024) program with the objective of quality of and access to of primary healthcare services in Bauchi, Kebbi, Sokoto, Ebonyi and the Federal Capital Territory (FCT). In partnership with Viamo, IHP utilized a suite of digital health tools to enhance the accountability of quality services, automated appointment reminders to increase uptake of essential maternal, newborn, and child health services, and audio job aids, which refreshed technical competencies among frontline healthcare providers. These interventions have contributed to improved access to and quality of care within the IHP-targeted states. This technical brief shows the contributions of digital solutions to improved quality of care and the sustainability approach adopted to ensure continuation by the host states.

### SUMMARY OF RESULTS



## BACKGROUND

With the widespread use of mobile phones in Nigeria, it is imperative to utilize digital technology to enhance the capacity and utilization of the Nigerian health system. The use of mobile technology is widely acceptable in Nigeria with over 80% of the population owning a mobile phone.

Mobile technology can be used to share information with health providers, provide information about the importance of routine immunization and antenatal care (ANC) appointments, and help remind patients of upcoming medical appointments.



Studies show that there are several reasons patients do not receive recommended follow-up care or ANC, postnatal care, immunization, and other child health visits. This diminishes health outcomes, leaving patients vulnerable to missed essential care during vulnerable life stages. Patients or caregivers often forget to attend follow-up appointments or skip vaccines because of the long time between appointments or scheduling confusion. There is often a significant drop-out in between routine immunizations for children when caregivers forget to schedule a follow up appointment. Reminders help to ensure parents or caregivers take their infants and children for vaccines at the scheduled times and pregnant women remember to attend their ANC appointments.

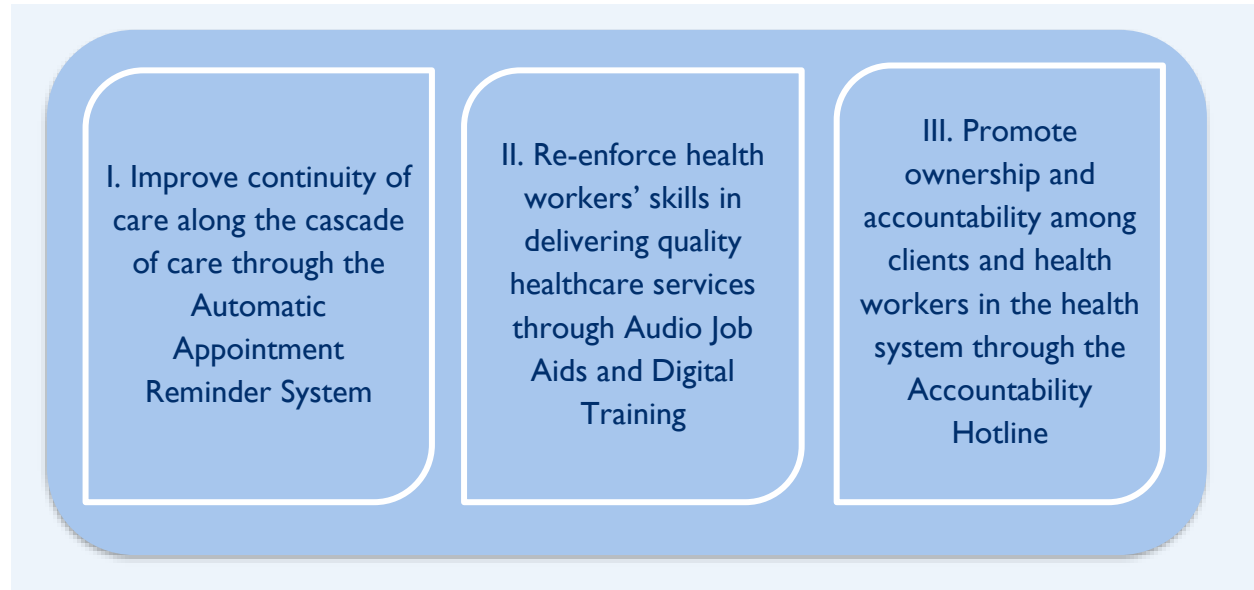
Insufficient human resources and frequent attrition of health care workers can severely impede the progress of health services. Moreover, with the extensive use of mobile phones, it is crucial to use this medium for health information dissemination and capacity building. Audio Job Aids (AJA) are one of the most cost-effective ways for health providers to access critical job-related information conveniently not dependent on geographic locations.

Additionally, digital health solutions in public health can be beneficial for assessing health services. One such initiative is the Accountability Hotline (AHL), which gives patients an opportunity to register their satisfaction experience. This also falls in line with SDG 16.6.2, which signifies citizens' satisfaction with public services. Health governance can greatly improve due to feedback mechanisms. Hence, the AHL significantly bridges the gap between service delivery and patient satisfaction.

## OBJECTIVES

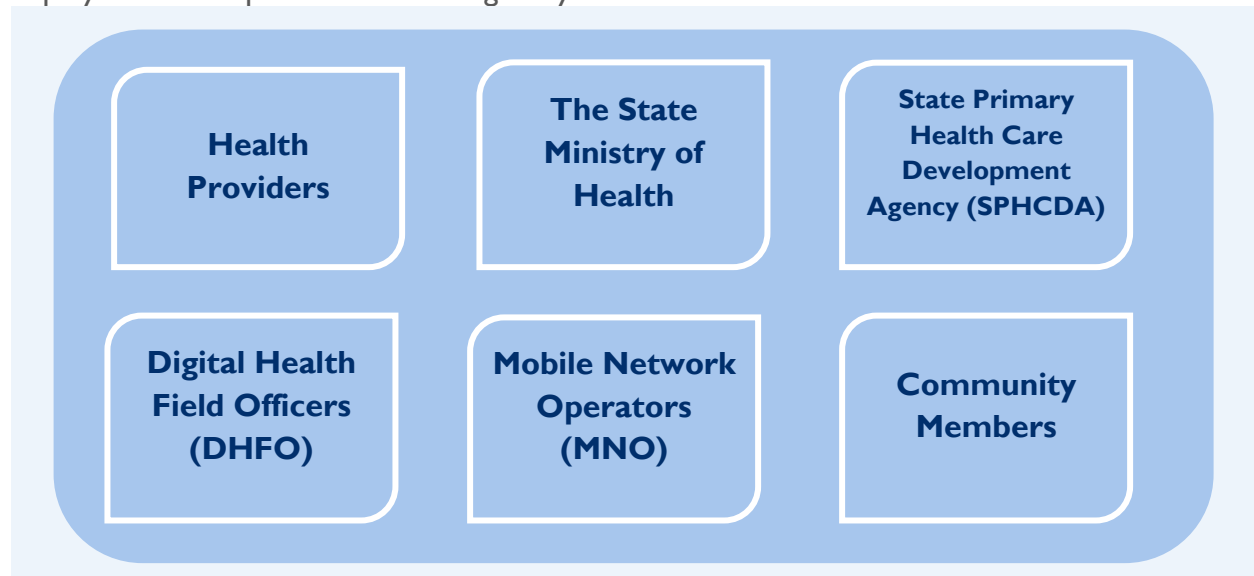
This intervention aims to use digital technology to address challenges with access and quality of care in IHP-supported states. Some of these challenges include high default rate in hospital appointments resulting in loss to follow-up and disruption in care, knowledge, and skill gap occasioned by frequent attrition of healthcare workers and unavailability of a structured

feedback mechanism for both clients and health workers.



## KEY ENGAGEMENTS

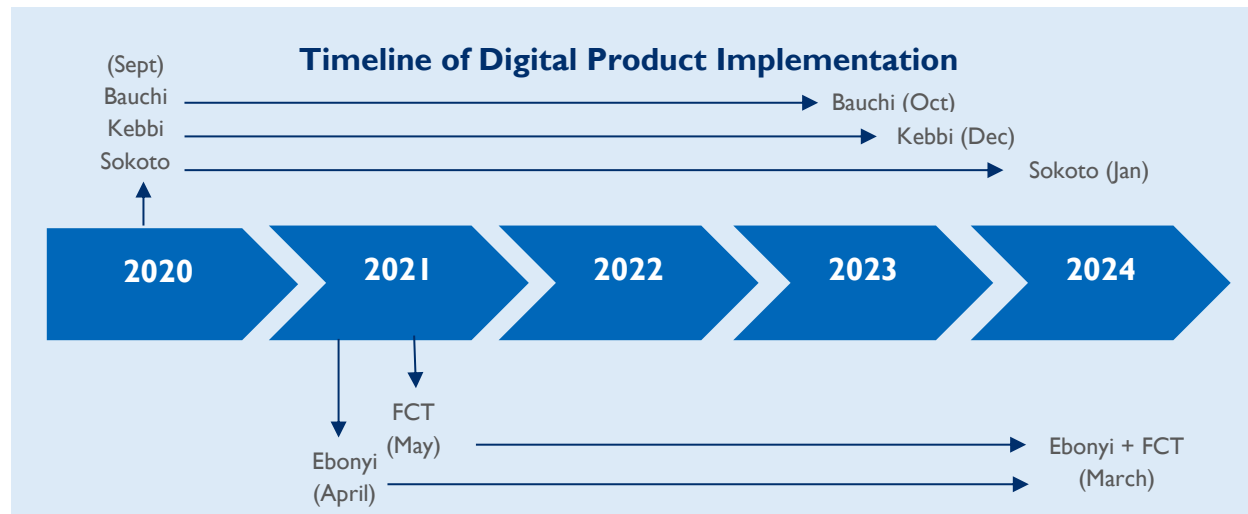
Key stakeholders were engaged in the design, development, and implementation processes of the digital interventions to ensure ownership, facilitate sustainability, and ensure seamless deployment and operations of the digital systems.



## APPROACH & ACTIVITIES

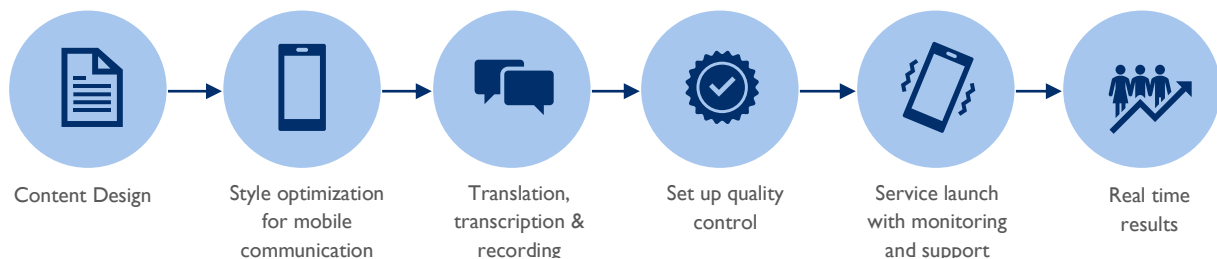
IHP's digital solutions interventions adopted a human-centered approach. Stakeholders from the Ministry of Health at the state and national levels, with support from the SPHCDA, contributed to the design of all digital products. To ensure a seamless implementation, the various digital products were rolled out in phases, while the challenges encountered served as a

lesson when scaling up to other facilities or locations. The activities conducted are system design, data collection, and analysis.



### System Design and Set-up

The set up of the digital products were done systematically and collaboratively with the State Ministry of Health (SMOH), including relevant SMOH agencies and departments like the State Primary Health Care Development Agency (SPHCDA). Initial engagement with key stakeholders were held to brief them of the product and get their buy in. The products were designed in collaboration with these government stakeholders. The process includes content design, optimization, translation and recording, system quality check, and launch. The mobile network providers for these products are MTN, Airtel, and Etisalat.



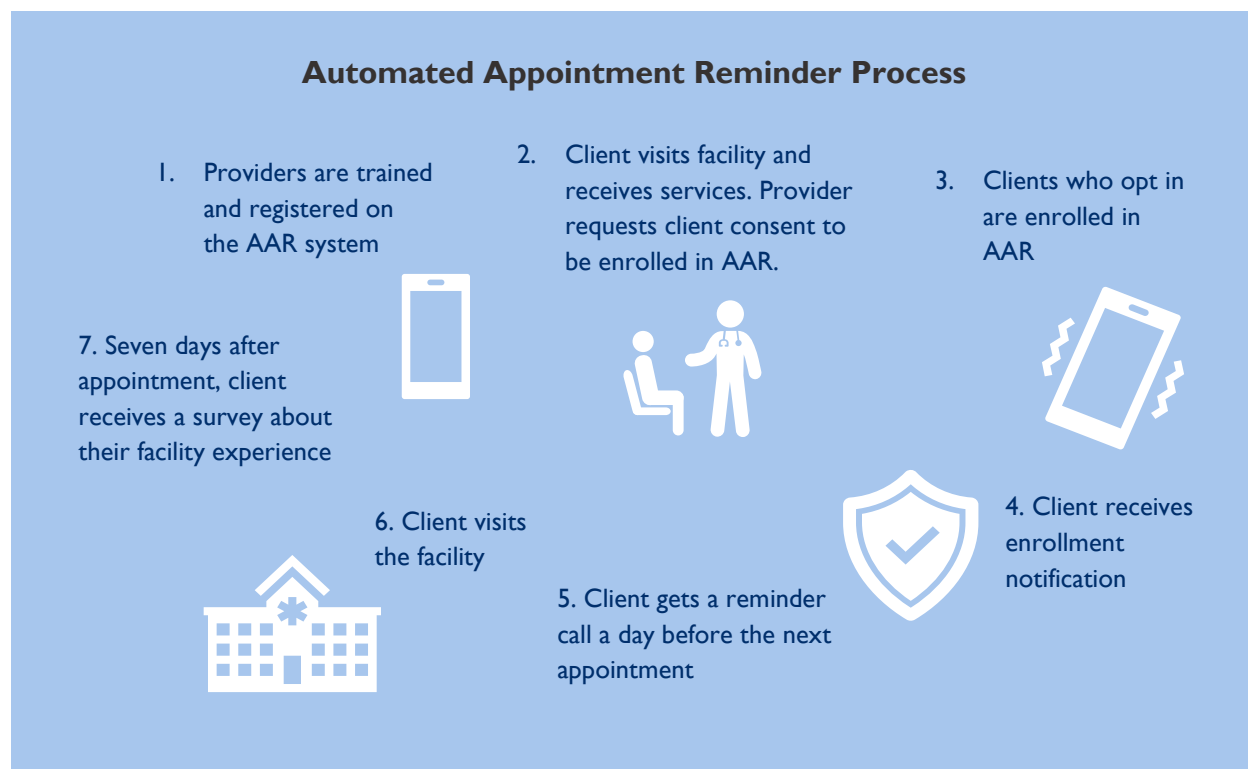
### The Design and Set-up of the Automated Appointment Reminder System

The AAR was designed to send appointment reminders to clients who visit health facilities to receive care, with the aim to increase continuum of care and uptake of health services and reduce loss to follow-up at the participating/implementation health facilities.

After the initial engagement with stakeholders, the ministry of health and the SPHCDA the system requirement was developed. The AAR was designed to send reminders for antenatal care, immunization, Covid 19 vaccination, pneumonia, child malnutrition and post-natal care.

First, the Viamo platform was set up for the AAR by building the clients’ registration and appointment flow. Then, the IHP supported facilities were coded and uploaded on the system. Based on the national guidelines for the management and care of the different conditions and

services, appointment schedules were set up as outbound messages. The reminder and Social Behavioral Communication Change (SBCC) messages which were developed in collaboration with the state government, were translated and recorded in five languages - English, Pidgin English, General Hausa, Sokoto/Kebbi Hausa, and Igbo. The recorded content was then uploaded onto the Viamo platform. Quality checks and testing were done to certify the flow and ensure the system is working according to design. To facilitate registration of providers, Digital Health Field Officers were recruited and trained using a training manual developed by the project.



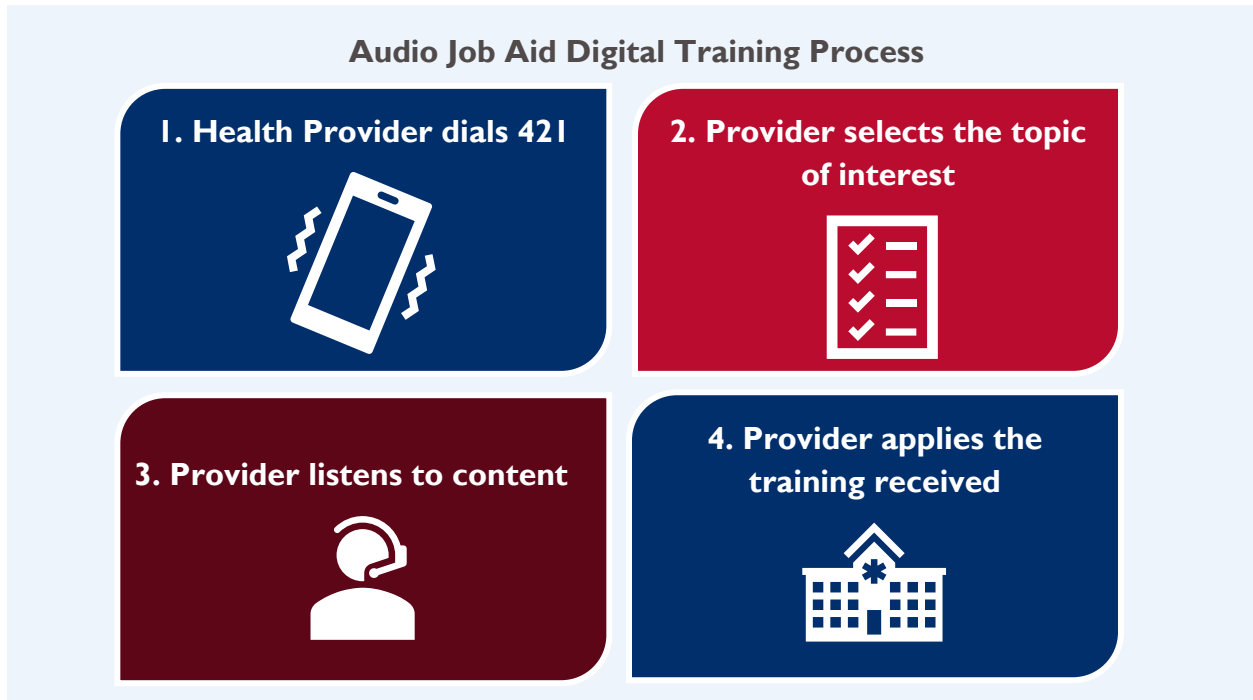
### Design and Set-up of the Audio Job Aid and Digital Training

The design and set up of the Audio Job Aid (AJA), the PPMV info line and the Digital trainings followed the same process.

These products aim at building the capacity and skills of health providers through interactive voice response channels. It also served as a standard operating procedure for the treatment and management of common illness at the primary health level. The project in collaboration with the state ministry of health and the SPHCDA developed the contents for the different disease/services which formed the themes. The disease/services include COVID-19 vaccine, Child Health, Immunization, Maternal and Neonatal health, Malaria, Nutrition Family planning, Gender-Based Violence (GBV), Diarrhea, Waste Management and Lassa Fever. The contents were developed in alignment with national guidelines.

Once the contents were finalized, they were translated and recorded in five languages - English, Pidgin English, General Hausa, Sokoto/Kebbi Hausa, and Igbo.

The Viamo system was then set up to be able to allow for inbound and outbound calls to access the content. A pre-testing was done and based on feedback from testing, the system was updated and launched for use.



### **Design and Set-Up of Accountability Hotline**

The accountability hotline was established to provide a platform for clients to provide feedback (positive or negative) based on their experience at the health facility.

In collaboration with the State Ministry of Health and the SPHCDA, the project identified key themes for feedback in the primary health areas. These themes include issues with health providers, shortage of drugs and supplies, barriers to uptake of services, and satisfaction with services at the health facility. The system was built on the Viamo platform with contents translated and recorded in English, Pidgin English, General Hausa, Sokoto/Kebbi Hausa, and Igbo.

After quality checks and pre-testing, the system became live and set up for inbound calls and accessible to clients. When calls are made to the hotline, tickets are raised which are reviewed by the state appointed moderators. State appointed investigators are sent to rigorously investigate these complaints with facility supervisors. While complaints are assessed and addressed by Ministry of Health, Primary Health Care Development Agency, and IHP to improve the quality of Primary Health Care services, the health providers and facilities with positive feedback are periodically recognized.

## Accountability Hotline Reporting Process



### Data Collection

Real-time data collection was done through the Viamo Platform. The Digital Health Field Officers (DHFOs) provided technical assistance to health providers and clients using the systems. The timeframe of data collection was from September 2020 to March 2024.

### Data Analysis

The implementation progress was measured by the number of calls and interactions on the platform for AJA, AHL, DT, and PPMV. The AAR progress was measured by the number of clients enrolled on the platform, the number of reminders sent, and the number of responses to the survey questions. The data collected on the platform was analyzed using Google Sheets and later presented in a PowerPoint presentation.

## RESULTS

On the AAR across all supported states for the entire implementation period, a total of 4,453 Health Providers were registered, 295,251 clients were enrolled on the AAR platform under various conditions, 416,585 messages were sent, 402,559 picked up, and 260,521 completed. This suggests that the AAR may have contributed to important nudges to encourage clients to receive timely follow-up care for critical services such as antenatal care, immunization, post-natal care, and follow-up for childhood illnesses.

## Automatic Appointment Reminders across All IHP Supported States



**614**

facilities  
implemented AAR

**4,453**

health providers  
registered

**295,251**

clients enrolled

**416,585**

reminders sent



**402,559**

reminders picked up



**260,521**

completed calls

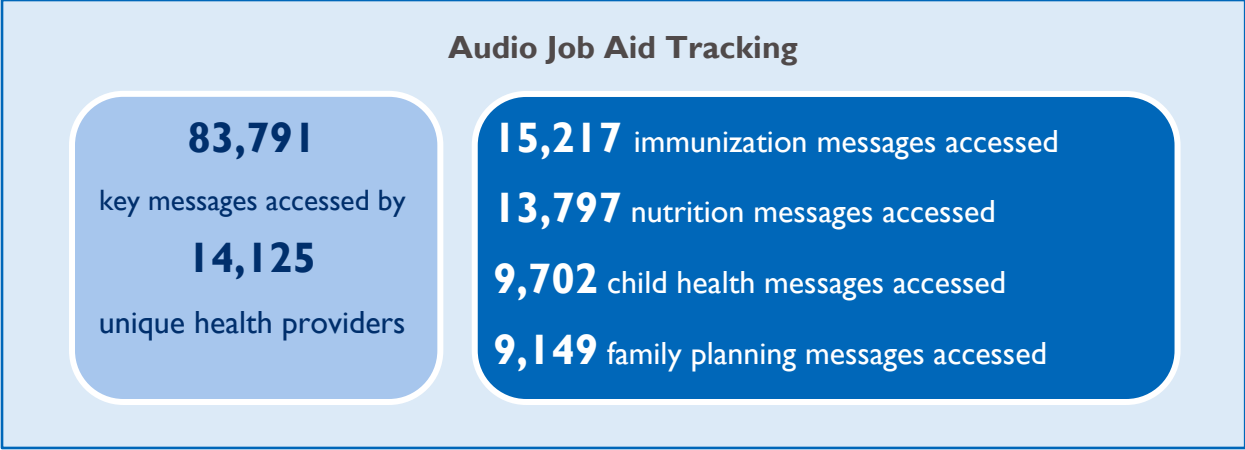


**79,138** clients found AAR  
useful

**96,032** clients returned  
to facility for follow-up

Across all states, a total of 14,125 Health Providers accessed 83,791 key messages on the Audio Job Aid platform. The topics accessed were COVID-19 vaccine, Child Health, Immunization, Maternal and Neonatal Health, Malaria, Nutrition Family planning, Gender-Based Violence (GBV), Diarrhea, Waste Management, and Lassa Fever. By ranked order, providers accessed content about immunization (15,217), nutrition (13,797), Child health (9,702), Family planning (9,149), Malaria (8,352), GBV (6,165), Maternal and Neonatal health (5,484), Diarrhea (4,445), Waste Management (4,204), Covid 19 vaccination (4,156), and Lassa fever (3,120). Notably, during outbreaks of Covid-19, Lassa fever, cholera, calls on how to detect, treat and prevent infection among healthcare workers and clients spiked.





A total of 223,336 calls were made to the accountability hotline by 163,855 clients. Out of the total calls made, clients' complaints accounted for 171,975, satisfaction based on their experiences at the health facilities was 26,634 and calls not associated with any theme were 24,727. The complaints were issues with providers 65,234 (38%), shortage of drugs and supplies 57,383 (33%), and barriers of uptake of services 49,358 (29%). These complaints were reported to the appropriate departments by the State Ministry of Health Moderators, investigations were done, and action taken by the relevant authorities.

A total of 7,897 Health Providers accessed the digital training content with an average completion rate of 43%. Topics included: Gender-Based Violence (GBV), Healthcare Waste Management (HWM), Cholera and Rotavirus, and Meningitis.

The PPMVs platform featured a range of content covering topics such as Immunization, Family Planning, Child Pneumonia, Notifiable Diseases, Data, and Essential Drugs. See figure 8 below for results. This unprecedented training program provided refresher training to PPMVs on general health, diarrhea, and child health following on-site training.

## LESSONS LEARNED

The project made an impact on the social behavior of clients and health providers across all the supported states.

The 4-2-1 service which provided free access to contents was critical to the outstanding uptake recorded by the various digital health products deployed on this project. This further illustrates how partnership with mobile network operators can support the implementation of digital solutions in resource constraints environment like Nigeria.

It has also become clear that engagement of relevant government ministries, department and agencies can contribute to strong ownership of projects by the government and promote sustainability.

Other lessons learned on specific products include:

#### **Accountability Hotline:**

- The AHL was instrumental in addressing stock out of commodities, which was a major complaint by clients. Feedback from the system provided information that helped PHCs, and the local government health authorities redistribute commodities.
- The use of government staff as moderators for the AHL promoted ownership and prompted sustainability commitment.
- Based on the successful implementation of the AHL, the health insurance agency in Sokoto, the Sokoto State Contributory Healthcare Management Agency (SOCEMA) has committed to integrating the AHL platform with their system. They see that this will be useful for ensuring that their investments in health insurance are delivered in a way that is satisfactory to enrolled clients.

#### **Automated Appointment Reminder:**

- The use of free USSD code for registration of clients was critical to incentivizing providers to enroll over 295,000 clients on the AAR system.
- The feedback survey on the AAR is subjective as it was self-reported. In future, a design with a built-in mechanism to be able to measure adherence would be recommended.

#### **Audio Job Aides, PPMV, and Digital Trainings:**

- AJAs are a good way to refresh knowledge and skills of health care workers which is important due to the high attrition and rotation of staff especially in rural and remote areas.
- AJAs and DTs can augment and complement onsite clinical skills training, but these are not a replacement for onsite training. The AJAs offered an efficient way to continually engage health care workers after the onsite training was over.
- The AJAs and DTs were very valuable in training health care workers to manage sudden disease outbreaks. These products were helpful during the outbreak of COVID-19, Lassa fever, meningitis, and cholera to keep health care workers abreast of treatment and management guidelines.
- The health providers experienced content fatigue once the content became too familiar, but their interest spiked anytime there was new content added to the existing content.

## **CONCLUSIONS AND RECOMENDATIONS**

The various digital interventions deployed in this project have demonstrated the potential of enhancing healthcare facility accessibility and strengthening the overall health system in the coverage states. Based on the successful implementation of the digital intervention products across all TOs, the retention of the AAR, AJA, and the AHL are strongly recommended. The following additional recommendations are made:

- To enhance appointment adherence, it is recommended to scale up the AAR system to additional facilities to improve the retention of scheduled appointments. Given the expressed intention of many clients to honor their appointments, broadening the scope of the AAR system can be instrumental in accomplishing this goal.
- The AJAs are now available on the free 4-2-1 services which is available nationwide on the Airtel network. The Federal or State Ministry of Health can keep a library of existing AJA content and add/update it for health care worker's use.
- The AJA content on the 4-2-1 service is only free to Airtel subscribers. There is need to expand the coverage of free calls to other networks in Nigeria.
- The state possesses the capability to create new content on the platform for AJA, PPMV and DT products. The state maternal, newborn, child health, and infectious disease experts are encouraged to add more content to the platform, to bolster engagement among health providers and enhance their proficiency by keeping them abreast of the latest best practices.
- The health facility Officer in Charge can take advantage of the contents contained in the AJA to facilitate learning and development through group lessons for healthcare practitioners, such as facility volunteers and student practitioners undergoing short-term training at the different PHCs.
- Also, the AHLs can be integrated with state owned health insurance agencies. This could be an important way to monitor the quality of insured services while also getting feedback to improve the system.

## Key Definitions

Audio Job Aid (AJA)	A digital tool designed for health workers to access additional training information in various health topics via mobile phone.
Automatic Appointment Reminder (AAR)	A system designed to send reminders for upcoming appointments at the health facility through mobile phone.
Accountability Hotline (AHL)	A system designed to provide feedback to a health facility following an appointment at a health facility.
State Primary Health Care Development Agency (SPHCDA)	The agency responsible for the administration and provision of primary health care services in respective states in Nigeria.
Patent and Proprietary Medicine Vendors (PPMV)	A community medicine vendor in Nigeria that dispenses over-the-counter medicines and basic health services.
Viamo	Partner organization that specializes in digital solutions to catalyze meaningful change and reach hard to reach populations in various sectors.



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