End of Grant Narrative Report

Grantee Name: KNCV Tuberculosis Foundation, Nigeria

Grant Number: STBP/NT/GSA/2021-43

Reporting period: ☐ Quarterly ☐ Mid-term ☒ End of Grant ☐ Other **Reporting Period Dates: 22nd June 2021 – 31st August 2022**

Report Date: 17th September 2022

1. Overview

Describe the activities that were conducted during the project Make sure to highlight successes and describe main challenges (both internal and external factors).

Introduction:

The Digital Adherence Technologies Project (DATs) was a 1-year pilot project funded by Stop TB Partnership/UNOPs to implement the Comprehensive Introduction of Digital Adherence Technologies to Support Tuberculosis Treatment in Nigeria with support from the USAID-funded Introducing New Tools Project (iNTP). KNCV Tuberculosis Foundation implemented the DATs pilot project with technical oversight from the National TB Program and partners including KNCV Tuberculosis Foundation Netherlands, Everwell Solutions and Interra Networks to provide a robust technical framework for the project implementation. KNCV Nigeria and partners implemented the DATs project in eight (8) states within the USAID-funded TB LON 1&2 project coverage area including: Akwa Ibom, Anambra, Benue, Imo, Kaduna, Kano, Nasarawa and Rivers States. These states were selected to reflect a mix of TB burden and gaps in treatment success rate and were expected to enroll a total of seven-thousand-five-hundred (7,500) patients on DATs, five-thousand (5,000) on 99DOTSLite a modification of 99DOTs to use medication labels and two-thousand-five-hundred (2,500) patients on Video Observed Therapy (VOT).

Fig. 1.1: Project Coordinator, Iboro Gordon introducing DATs to the State TB Program Managers from the 8 states

To establish a sustainable framework for the implementation of the DATs project within the Nigerian context, KNCV Nigeria facilitated a situational assessment of required and existing structures through effective stakeholder collaboration with the National and State Tuberculosis Programs by facilitating a project introductory meeting with TB program managers of implementing states. The meeting which took place at the KNCV Nigeria conference hall on the 19th of August 2021 had in attendance the National Coordinator, NTBLCP Dr Chukwuma Anyaike, the State TB Program Managers of the 8 DATs implementing states and representatives of KNCV Nigeria. The meeting provided an overview of the project implementation scope, expectations, available support mechanisms and state-level target projections based on previous TB treatment enrolment data. The introductory meeting also provided a platform to share on how DAT interventions have been implemented in other countries to support TB patients with medication adherence to encourage positive treatment outcomes, participants also shared insights and feedback on how the project can be implemented to suit the context of Nigerian healthcare. Fig. 1.1 shows the DATs project coordinator introducing DATs to the state TB program managers from the 8 implementing states.

Stakeholder Engagement:

KNCV Nigeria and partners collaborated to ensure all the implementation structures and strategies were in place for the project roll out and patient enrolment into the DATs models available. This included building technical capacities of implementation teams at various levels, central team and trainers (TOT) at national, cluster and state levels for subsequent step-down training by trainers to the health care workers in ninety-eight (98) selected facilities across the eight (8) DATs implementing facilities. These clustered trainings were targeted at State TB Program core-staff, LGA TB Supervisors, KNCV Nigeria State teams, DOTs focal persons and TB LON 1&2 ad-hoc working within the selected facilities. Equipped with the requisite skills and knowledge on the use of the Everwell app for patient management and adherence reporting the implementation teams and DOTs focal persons were provided with job aides including IEC materials, patient handbills and medication labels distributed based on facility enrolment projections.

Fig. 1.2: The National Coordinator NTBCLP Dr Anyaike flanked by the ED KNCV Nigeria Dr Odume at COOUTH, Anambra State

KNCV Tuberculosis Foundation Nigeria sustained collaboration with government stakeholders at national, state and LGA levels through advocacy, technical coordination and participation in joint supportive supervisory visits with the National TB Program (NTP) to ensure acceptability and widespread uptake of Digital Adherence Technologies (DATs). The Executive Director KNCV Nigeria Dr. Bethrand Odume accompanied by the National Coordinator NTBLCP Dr. Chukwuma Anyaike conducted a joint supervisory visit to Chukwuemeka Odomegwu Ojukwu University Teaching Hospital (COOUTH) in Anambra state where KNCV Nigeria is supporting a total of 10 facilities on DATs including COOUTH. The visiting team inspected the use of the two DATs models; 99DOTSlite and Video Observed Therapy (VOT) and a first-hand account of the impact of DATs implementation by health care worker and patient was documented during the visit and Fig. 1.2 shows the KNCV Anambra Cluster Lead Dr Chijioke Oke describing the services offered in the facility to the National Coordinator NTBCLP Dr Anyaike and the Executive Director KNCV Nigeria Dr. Odume flanked by DOTS focal persons implementing DATs. The details of the patient and health care worker interview can be watched here *https://youtu.be/xq9pf5x2804*

Capacity Building and Systems Strengthening:

To further strengthen the capacity of healthcare workers in DAT implementing facilities, virtual weekly data review meetings were instituted on every Friday of the week by 10am to provide routine technical assistance to state level teams on DAT implementation across the 8 states. These meetings were aided by a PowerBI data reporting dashboard and slide presentations from the state teams which were designed to track progress towards patient enrollment by facility, achievement against assigned targets, adherence percentage by health facility, patient enrollment by DAT type, age and sex, TB disease type and other key reporting indicators to support program implementation and tracking of DAT enrollment cascade. Fig. 1.3 shows a screenshot of the state and facility teams participating in the weekly review meeting via MS teams. Virtual support platforms on WhatsApp were also introduced for all DAT implementing states where health care workers and state teams can receive real-time support from the KNCV Central DAT team. Explainer videos and informational photos on "How to Enroll Patient on DAT" and other routine support actions on the Everwell App were routinely shared on these virtual platforms as a refresher and quick reference guide for troubleshooting issues that may arise while using the Everwell App and also serve as patient counselling guides and enrollment prompts to the health care workers.

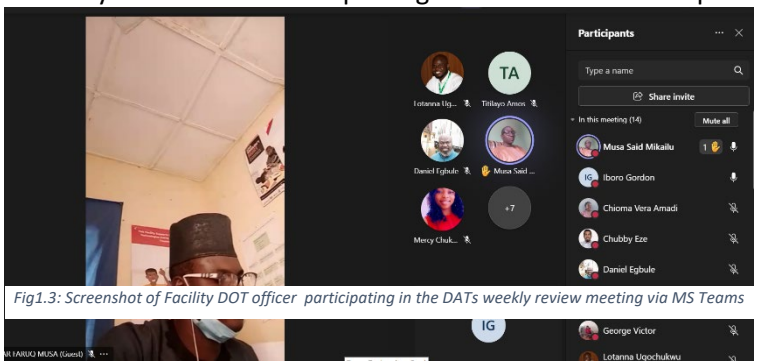


Fig1.3: Screenshot of Facility DOT officer participating in the DATs weekly review meeting via MS Teams

Data validation systems were instituted to establish data consistency and validity of the reports received from the facility-level teams on the Everwell Adherence Platform. Integral to the data validation process is to routinely tease out duplicate patients erroneously enrolled on the adherence platform due to network or technical issues at the facilities, reconcile reported outcomes with patient reports on the TB treatment registers or other source documents, validate the completeness of phone numbers issued by the patients to avert missed doses recorded as a result of incorrect phone numbers and ensure consistency in data elements at affect the period of adherence monitoring such as treatment end dates, DAT type and disease classification. To ensure quality reporting of DATs project achievements, supportive supervisory visits were conducted to DATs implementing facilities targeted at improving quality of reports, supporting uptake of DATs, providing technical assistance and hands-on capacity building in the use of the Everwell App and other DATs tools used by both health care worker and patients enrolled into any of the two intervention models.

Some pictures from facility TA visits are shown below.

Fig. 1.4 - 1.7: Photos showing on-site mentorship and capacity building for focal persons in DATs implementing facilities

To promote the awareness and increase uptake of DATs across implementing states and facilities, KNCV Nigeria featured in a radio segment "TB TORI" to share the value-add of digital adherence technologies in TB treatment. The available intervention models in the country were explained in common parlance known as "pidgin English" to enable target audience to easily grasp the benefits of these intervention models and encourage uptake of DATs by TB patients. The role of the NTP call center was also shared to boost the use of the toll-free line 3340 to inquire for more information on the use of any of the DATs models or explore facilities where DATs services are available. Fig 1.8 shows a promotional flyer for the DATs feature in the radio segment TB Tori at Wazobia FM Abuja.

Fig. 1.8: Poster flyer for the TB Tori feature by the DATs Project Coordinator

To ensure 100% achievement of donor set targets, KNCV Nigeria completed the grant 3-month extension procedures which resulted in the recalibration of set targets across implementing states to close gaps from unmet enrolment numbers. Various innovative strategies were adopted to avert missed opportunities for patient enrolment at the facility level: tagging of medication labels when kitting TB drugs for DATs patients which ensures that the patient is identified as a DAT patient during refill pickup and is counselled accordingly using the Everwell adherence calendar and adherence statistics, routine audit of TB treatment register to identify missed opportunities and offer DATs to eligible patients at return visit during intensive phase.

2. Procurement and Supply Chain Management

Provide updates, if any, on the procurement for the technology, software, and the other supplies needed for your project.
Are there any issues with distribution of the technology to the facilities, health care providers, or patients? Describe any challenges and how you plan to address those.

Leveraging materials from the ASCENT project, KNCV Nigeria worked with partners to redesign the ASCENT medication labels to suit in-country dimensions of TB medication blister packs. To ensure cost effectiveness and ease of deployment, an in-country vendors was contracted to manage the production and supply of the approved medication labels/stickers. A total of 50,000 labels were procured in the first batch and deployed across all implementing states, health care workers were also mentored on how to affix the labels on the blisters during demonstration sessions in the roll-out trainings. Following the feedback from the use of the first batch of medication labels procured, a second batch of medication labels was procured based on specifications and experiences from facility-use. Upgraded specifications included, the quality of sticker material, the font type, legibility of the unique 3-digit code on the stickers and the packaging of the labels (the initial batch came in rolls and while the new batch came in A4 gloss paper sizes). Fig. 2.1 shows a before and after of the medication labels procured.

Fig. 2.1: Before and After samples of medication labels procured

Fig. 2.2: HCW explaining the patient handbill at enrolment

To ensure visibility of the DATs project across implementing facilities, information materials including IECs, Standard Operating Procedures, Roll-up banners, and training materials were also adapted from the ASCENT project for design, printing and deployment. These materials were designed to support health care workers at the facility level in determining eligibility of TB patients to be enrolled on any of the DATs models, resolving DATs-related technical issues and supporting a DATs patient throughout the course of TB treatment. Patient handbills were also designed and deployed to be issued to patients at enrollment and containing relevant information on how to use any of the DATs model and a turn-over leaf designed to provide a space where the health care worker can input login details for the SureAdhere app for VOT patients. Fig. 2.2 shows a health care worker in Immanuel General Hospital Eket, Akwa Ibom explaining the DATs handbill to a DATs patient. Other materials were designed to create awareness on DATs within the facility as well as the role of NTP call center short-code 3340 in handling patients and health care worker technical issues.

KNCV Nigeria and partners worked with Everwell Solutions to customize and adapt the adherence platform for DATs implementation in Nigeria. This process involved the defining type and frequency of message triggers to 6pm Nigerian time for reminder messages, aligning content of Everwell app with in-country TB standard of care mechanism, refining healthcare worker task lists and defining data points available for download on the adherence platform. The SureAdhere VOT platform was also adapted and modified to include the country options and functionalities for Nigeria, patient login details were designed to auto-generate at enrollment of patients in VOT on the Everwell platform. Hierarchies for the 98 selected facilities were also setup by the KNCV team with support from Everwell and to facilitate the security upgrade of the adherence platform to industry recommended standards, new usernames and passwords were updated to suit the security upgrade specifications as part of efforts to ensure a secure adherence platform.

Distribution of technology to the DAT implementing facilities in Kaduna State was affected by Telecommunication Network Shutdown within the state owing to escalated levels of insecurity across the state. The Network Shutdown which stalled all telecommunication services was announced by Kaduna State Government on the 30th of September 2021 to curb rising levels of banditry and insecurity in major LGAs in the state and was restored on 26th November 2021. This led to a delay in enrolment of patients within the state and only limited facilities within the capital were able to enroll patients on DATs, facilities in insecure areas had to be replaced with facilities in secure areas to account for a full complement of 98 facilities, however one of the facilities was later able to enroll patients during the project period which increased the number of facilities implementing DATs to 99 facilities. DOTs focal persons from new facilities were provided on-site training and mentorship on the use of Everwell app for patient enrolment and patient management.

Photo samples from some of the IEC materials are shown below:

Fig 2.3 - 2.7: Samples of IEC materials designed, printed and deployed to facilities

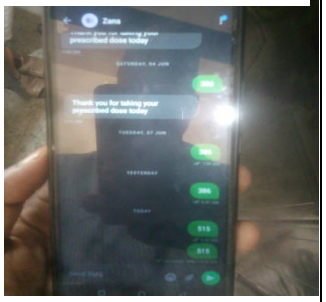
3. Installation, Customization, and IT Maintenance Considerations

Provide any updates on the installation and continued IT support and maintenance of the technology hardware and software for your project.
Did you experience any infrastructure issues for setting up and maintaining your project (for example: phone lines, network connectivity, and hardware issues). Describe any challenges and how you addressed those.
Did you make any adaptations to the technology for your project (for example: changes to the software platform, changes to 99 DOTS sleeves, etc.) Please describe.

KNCV Nigeria worked with the in-country technical partner, Interra Networks to establish and maintain the technical infrastructure of the adherence platform through the integration of the SMS short code on the adherence platform as well as managing the support actions of the NTP call center. The process of adherence platform integration with the 4 major telecommunication networks in-country including AIRTEL, 9MOBILE, MTN and GLO suffered a major set-back causing delays in patient enrolment. Only AIRTEL and 9MOBILE were available as at the time of roll-out trainings and commencement of patient enrolment. KNCV Nigeria leveraged the support of NTBCLP to issue letters to the outstanding telcos urging them to expedite the integration process with the adherence platform, explaining the impact the delays would have on project implementation. On the 22nd of December 2021 two-months post commencement of patient enrolments, all telcos were integrated to the adherence platform including MTN which accounted for 70% of patients phone lines and was the last telco to be integrated due to issues surrounding already existing short-codes using 3340 the in-country short-code for DATs.

Network connectivity and glitches in technical infrastructure posed a challenge in the enrolment of patients. Technical issues ranged from reports of SMS not syncing with platform, platform not sending outbound messages, a disconnection of telco integration, and loss of network from the service providers. These technical issues resulted in a high volume of false missed doses and were managed via prompt manual doses by the HCWs leading to a higher percentage of manually reported doses. KNCV Nigeria also liaised with technical partners, Interra Networks and Everwell Solutions to resolve any technical or software issues that affect seamless service delivery. Fig. 3.1 shows a patient's phone displaying text messages sent to 3340 without a response and subsequently not recorded by the adherence platform. A technical support mail thread was setup to provide real-time support for network connectivity issues ranging from phone lines not receiving reminder messages for 99DOTSlite patients, phone line service provider network outage as experienced by Airtel and GLO lines within the quarter, inability to review VOT videos by healthcare workers and other technical issues experienced. This was aimed at reducing the turn-around time for resolving technical issues to ensure smooth DATs implementation across supported facilities.

Fig 3.1: Patient phone showing short-codes sent without replies



4. Health Care Provider Engagement with the Technology and Software Platform and Management of Patients

Provide an update on health care provider engagement and use of the technology/software for patient management. Updates can include how many facilities and health care workers are using the technology; how health care providers are trained and supported to use the technology/software; is there a plan in place for how health care workers should use the dosing history for patient management and how to respond to non-adherence (escalation protocol)? Describe any challenges that are being reported by the health care providers on using the technology for patient management and how those will be addressed.

Fig. 4.1 : Cross section of participants at the DATs roll-out training in Anambra State

A total of 248 Health Care Workers including DOT officers and TB LON 1&2 project facility-level support ad-hoc staff were trained on DATs implementation and enrollment of patients using the Everwell App from 98 selected facilities, these clustered trainings were facilitated alongside representatives of the national and state TB programs. The training modules covered the role of DATs in TB patient management, how DATs supports HCWs to remotely provide support to patients, navigation of the Everwell App, hands-on demonstration of patient enrollment on DATs using the Everwell and SureAdhere apps for patients enrolled in 99DOTSlite and VOT. These trainings were followed by onsite facility visits to provide hands-on support to HCWs and further provide technical assistance as well as step down trainings for other DOT staff so as to provide robust support for patient enrolment into DATs models and returning DATs patients. Fig. 4.1 shows a cross section of participants in the DATs roll out training for facilities in Anambra State.

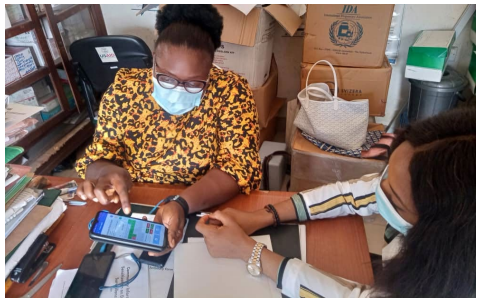
Integrated TB Call Centers

Fig 4.2: A call center agent at the NTP call center

Through the support of the NTP call center, KNCV Nigeria and partners provided an additional layer of differentiated care support to both health care workers and DATs patients. The NTP call center supported health care workers in managing patients who do not report digital doses resulting in at least three (3) consecutive missed doses, these patients were line-listed and contacted routinely to encourage adherence and to provide reasons for missed doses. Following the escalation protocol established with the call center, patients report on non-adherence, technical issues with the use of any of the DATs models, adverse drug reactions, patients' general complaints on any DATs related issue are collated by the call center and shared weekly to KNCV Nigeria. These reports are in turn disseminated to the state and facility-based teams to ensure patients are given the required support and where necessary missed doses are accounted for on Everwell app using manual doses by the health care worker based on patient feedback. The toll-free line of the NTP call center which matches with the in-country short-code for DATs 3340, was also included in all information materials and health workers were encouraged to call-in for FREE whenever they experience any technical issues and inform their patients to do same when they experience technical issues using DATs. Fig 4.2 shows a NTP call center agent flanked by another agent who have all been trained to handle DATs related requests and feedback from patients.

KNCV Nigeria continued to prioritize adherence to treatment for DATs patients using different approaches such as the capacity building of health care workers on DATs enrollment counseling strategies to ensure compliance to sending of text messages/videos to report medication intake by DATs patients and the use

Fig . 4.3: HCW counselling patient using Everwell adherence calendar



of tasks lists and Everwell app feature which provides the health care worker with priority groups of patients who require adherence support based on patient information on the adherence calendar. Fig. 4.3 shows health care worker at Primary Health Center Uyo, counseling patient using the adherence calendar. Routinely, health care workers were supported to address the high volume of patients not sending digital codes to confirm their medication intake. To achieve optimum medication adherence, patients with high volume of cumulatively reported missed digital doses were sampled across the states and interviewed to better understand the reasons for DATs non-compliance and feedback showed that issues ranging from technical difficulties, network challenges due to service provider issues, forgetfulness in sending codes and issues surrounding ease of use of secondary caregiver phone number to routinely send text messages or videos are responsible for low DATs compliance by patients. This further reiterated the need to offer proper and detailed patient counselling at the point of patient enrolment into any of the DATs models, health care workers also recommended an adjustment to the timing of reminder messages from 6pm to 6am as patients are advised to take their TB medication in the morning hours as part of efforts to improve DATs compliance.

HCW Support

Through disbursement of monthly stipends to health care workers, KNCV Nigeria supported facility-teams with data bundles to aid the use of Everwell app in patient enrolment into preferred DATs models and to support the routine use of the adherence platform in overall patient management. However, health care workers experienced internet connectivity issues due to poor internet connection at the facility especially those situated in remote areas, thereby affecting real-time enrollment of patients. To mitigate this, details of consenting patients were collated and uploaded on the Everwell App when internet connection improves or is restored. Health care workers in high volume facilities also frequently reported running out of data due to volume of enrolments and lack of smart phones to ease the burden of enrolment on few DOTS focal persons who owned smart phones, these facilities continued to leverage on smart phones owned by TB LON 1&2 facility ad-hoc to facilitate enrolments and the structure of reimbursement was aligned to match number of patients enrolled.

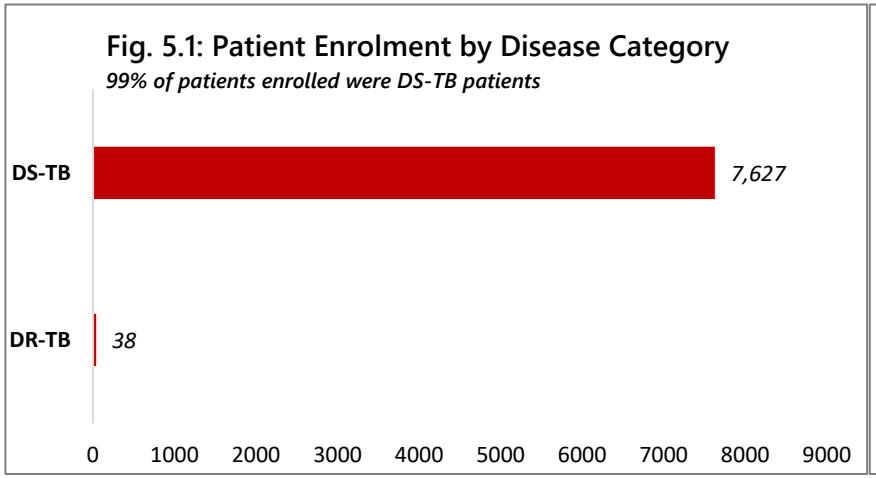
5. Patient Enrollment and Engagement with the Technology

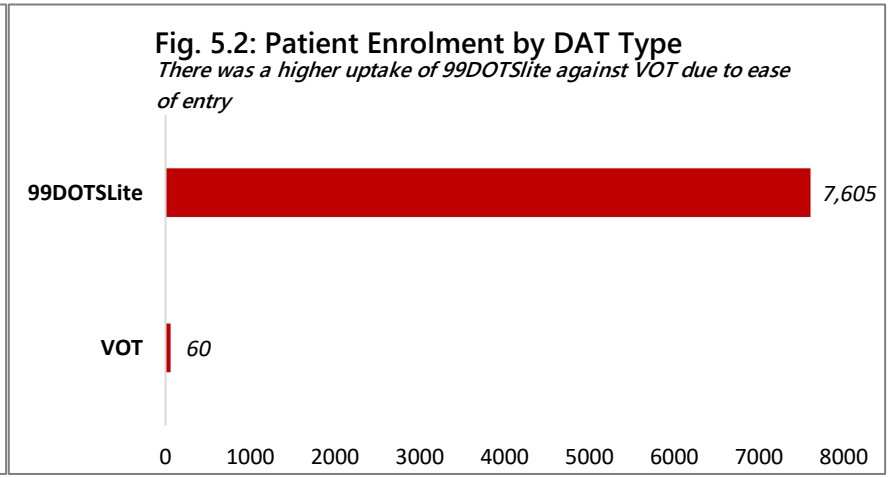
Provide an update on patient enrollment for the project. Updates can include information on recruitment process; numbers enrolled; and how patients are educated and supported to use the adherence tools.

Describe any challenges that are being reported by patients on taking their treatment or using the technology and how those will be addressed.

If known, include information on why or why not eligible patients agreed to use DAT; if and why patients stopped using DAT or were switched to using DOT.

KNCV Nigeria commenced enrolment of patients on DATs by October 2021, following delay in the setup of telecommunications infrastructure and integration with the adherence platform. A total of seven-thousand-six-hundred-and-sixty-five (7,665) patients were cumulatively enrolled on DATs in both intervention models by August 2021, seven-thousand-six-hundred-and-five patients (7,605) were enrolled in 99DOTSlite, and sixty patients enrolled in VOT. Of the total number of patients enrolled, thirty-eighty (38) patients were DR-TB patients while seven-thousand-six-hundred-and-twenty-seven (7,627) patients were DS-TB patients. A breakdown of DATs enrolment by disease category and DAT type is represented in Fig. 5.1 and 5.2 below





Based on the eligiblity criteria for enrolment, patients enrolled on VOT were required to own smartphones to enable them to utilize the SureAdhere app to send videos of medication intake daily. This resulted in a low uptake of VOT, which remained below 2% against donor-targets since the commencement of patient enrollment and a subsequent 55% DAT switch rate from VOT to 99DOTSlite. KNCV Nigeria conducted switch-interviews for patients who were switched from VOT to 99DOTSlite to ascertain the reasons for poor VOT uptake to guide program implementation. Of the 25 patients interviewed 48% (12)

reported issues surrounding stigma and not wanting to be seen while making videos, 16%(4) reported a knowledge gap and difficulty in using the SureAdhere video app, 12% (3) reported technology fatigue complaining of sending too many videos while 16% (4) reported other reasons including loss/damage of smart phone, time constraints and error in enrolment into VOT.

KNCV Nigeria sustained enrolment of patients in 99DOTSlite throughout the project period, this was largely attributed to the ease of entry to 99DOTSlite which required a basic feature-phone easily available to patients, patient's family members or treatment supporter as opposed to access to a smart phone to utilize VOT. Based on age group gender, more males were enrolled on DATs accounting for 63% of all enrolments and only 37% of patients enrolled were females, adults aged 25-49 years accounted for the highest number of enrolments for all genders. Fig. 5.3 and 5.4 shows the breakdown of DATs cumulative enrolment by month, enrolment by gender and age. The number of patients on VOT continues to change due to DAT switch from VOT to 99DOTSlite

Fig. 5.3 : Monthly enrolment by DAT type

VOT uptake remained low throughout the project period

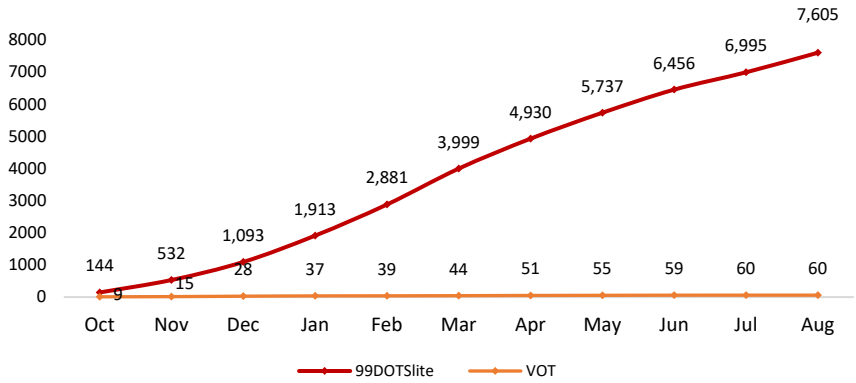
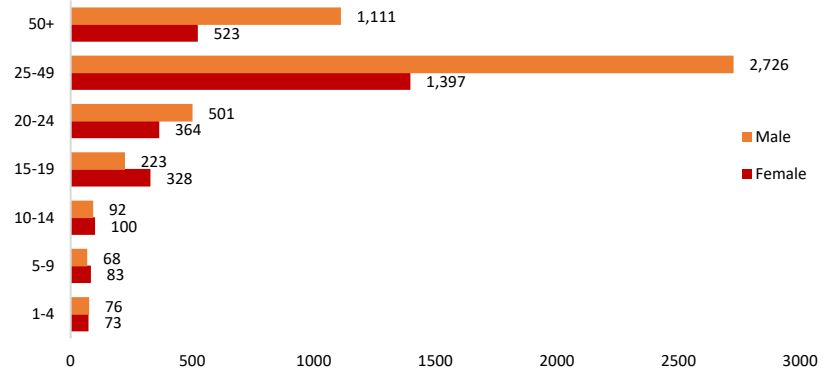


Fig. 5.4: DAT enrolment by Gender and Age

63% of DATs enrolments were males



Two (2) success stories have been documented from TB patients receiving TB treatment in DATs implementing facilities within the period of DATs implementation. A middle-aged relapsed TB patient was enrolled on 99DOTSlite in Sir Muhammad Sunusi Specialist Hospital, Kano, the patient confessed that the reminder messages received daily helped him stay consistent in taking his TB medication in his second round of treatment as opposed to the forgetfulness he experienced during his first treatment. Also, a patient enrolled on VOT in Federal Medical Center, Owerri in Imo state submitted that sending videos daily provided an accountability mechanism for his medication intake to support his treatment adherence.

Based on outcomes that are currently available at as the time of this report for DATs patients that were enrolled within the October – December Cohort, eight-hundred-ninety (890) outcomes have been reported out of one-thousand-hundred-and-twenty-one (1,121) patients enrolled within that period. The breakdown of the outcomes as represented in figure 24 and 25 below, three-hundred-and-twenty-six (326) patients were reported as Cured, four-hundred-and-ninety-three patients were reported as Treatment Completed, forty-one (41) patients were reported as Died, twenty-three (23) patients

were reported as Lost to Follow Up, and seven (7) patients as Treatment Failure. This shows a 92% Treatment Success rate for the outcomes currently available, KNCV Nigeria will continue to harvest and report outcomes once the technical glitches affecting log-in to Everwell App experienced by some facilities are resolved and report outstanding treatment outcomes all cohorts once available in line with National TB program reporting guidelines. Fig. 5.5 and Fig. 5.6 shows the distribution of treatment outcomes for the eight-hundred-and-ninety patients with treatment outcomes available in the October – December 2021 treatment cohort

Fig. 5.5: Preliminary Treatment Outcomes

Available data shows 92% Treatment Success was recorded for patients within the Oct-Dec 2021 treatment cohort

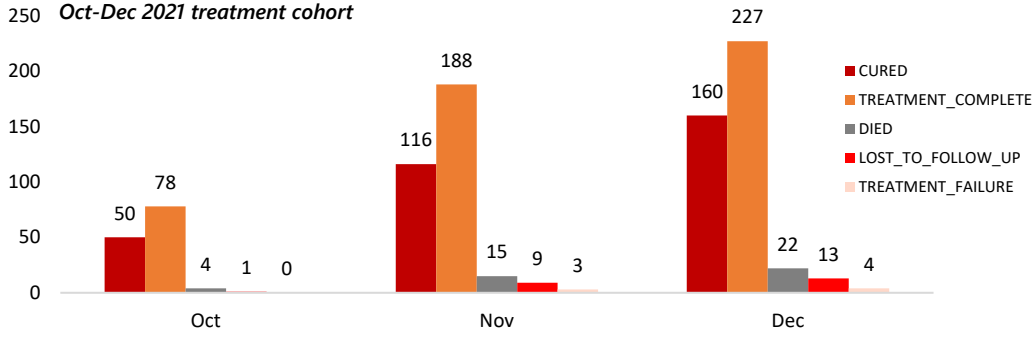
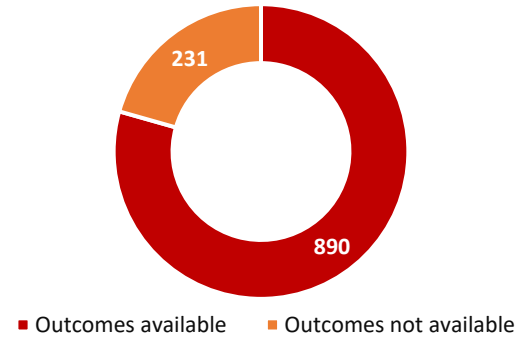


Fig. 5.6: Distribution of Outcomes reported

21% of outcomes for the Oct -Dec 2021 cohort are yet to be reported



KNCV Nigeria continued to leverage adherence feedback reports from patients contacted who missed reporting more than 3-digital-doses to provide adherence information to the health care workers. This was most beneficial in bridging the gap in adherence reporting by patients which was frequently interrupted due to technical issues and network challenges from service providers. Based on these reports, patients who missed sending text messages or videos were updated manually using the "manual dose" feature on the Everwell app with comments. An analysis of patient outcomes based on gender and adherence statistics are represented in table 5.1 below

Adherence Statistics by Patient Outcomes (n=890)						
	% Digital Adherence			*% Total Adherence (Digital + Manual)*		
Treatment Outcomes	***M***	***F***	***Total***	***M***	***F***	***Total***
Cured	*9%*	*10%*	*9%*	*98%*	*97%*	*98%*
Treatment Complete	*10%*	*8%*	*9%*	*99%*	*99%*	*99%*
Lost to Follow Up	*8%*	*9%*	*8%*	*83%*	*91%*	*86%*
Died	*3%*	*8%*	*6%*	*70%*	*81%*	*75%*
Treatment Failure	*3%*	*0%*	*3%*	*76%*	*100%*	*79%*

Following a Data Quality Assessment (DQA) of the patients enrolled on the adherence platform, 75 patients with invalid phone lines and unsupported network service providers were identified and shared with Everwell to be deleted from the adherence platform. These patients contributed to over 8,000 manual doses reported and underpinned the need to strengthen data validation systems on the adherence platform to ensure patients enrolled on the platform have been validated for data quality purposes. This deletion resulted in a change in the previously reported enrolment numbers by quarter and updated numbers are reflected in the Table 5.2 below and outcomes reported are as confirmed according to the NTP reporting guidelines.

PROCESS INDICATORS	Overall Project Targets	Q1	Q2	Q3	Q4	Progress to date	Progress to date against targets
Number of sites implementing DAT	98	99	98	98	99	99	101%
Number of people with DS-TB newly enrolled on DAT at implementation sites	5,000	1,114	2,905	2,465	1,143	7,627	153%
Number of people with DR-TB newly enrolled on DAT at implementation sites	2,500	7	17	7	7	38	2%
DS TB enrolled on DATs adhering to treatment at implementation sites	90%	0%	59%	86%	91%	91%	101%
DR-TB enrolled on DAT and adhering to treatment at implementation sites	80%	0%	36%	94%	97%	97%	121%
Number of people with DS-TB enrolled on DAT and successfully completing treatment	4,500	0	0	57	833	890	20%
Number of people with DR-TB enrolled on DAT and successfully completing treatment	2,000	0	0	0	0	0	0%
Number of people with DS-TB enrolled on DAT and switched to DOT or another DAT	150	56	15	5	6	82	55%
Number of people with DR-TB enrolled on DAT and switched to DOT or another DAT	75	0	0	0	0	0	0%
Number of people with DS-TB enrolled on DAT and become lost to follow-up	100	23	0	0	0	23	23%
Number of people with DR-TB enrolled on DAT and become lost to follow-up	50	0	0	0	0	0	0%

6. Next steps

describe final outcomes and lessons learned from your entire project and your plans for sustainability and/or expansion of the use of the tools.

Patient counseling at DATs enrolment and post-enrolment routine counselling at facility re-visit is pivotal to DATs compliance, these counseling sessions when structured to encourage patients to use the DATs tools using the adherence calendar and statistics provides patients with a continuous understanding of the benefits of DATs in supporting treatment adherence. Patients who were unable to send codes supported by the health care workers at enrolment were observed to be less likely to be DATs compliant due to inadequate hands-on information on the use of DATs as reflected in call center reports on patient feedback on reasons for missed doses. Fig. 6.1 shows patient supported at enrolment in IDH Kano, to send text messages at medication intake for 99DOTSlite

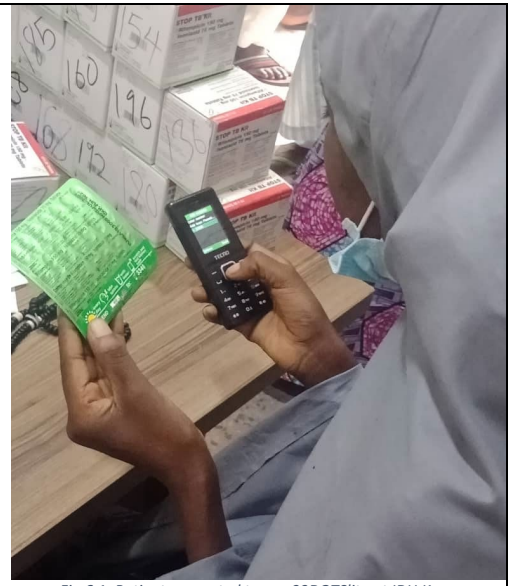


Fig 6.1: Patient supported to use 99DOTSlite at IDH Kano

Following the low-uptake of VOT, KNCV Nigeria is currently testing the use of smart pill boxes in Federal Medical Center, Keffi in Nasarawa state with the aim to record patient's perception and feedback from the test use to inform use for DR-TB at scale-up. As observed in the pilot implementation, DATs with low technology requirement and reminder systems are more beneficial to patients and easily accessible especially for patients in remote areas with low network penetration and poor network coverage.

To ensure sustainability of the project gains, there's a need to integrate DATs into the routine TB patient management process and strengthen collaboration with the national, state and LGA levels TB programs. Review of patient adherence statistics should also be integrated into the quarterly TB program review meetings to support inform decision making for TB stakeholders based on patient-centered data available form the adherence platform.

To showcase the gains and lessons learned from the DATs project pilot implementation to the global community, KNCV Nigeria submitted five (5) abstracts to the TB Union Conference on Lung Health, a virtual event which will be held from the 8th to the 11th of November 2022. Of the five (5) abstracts submitted to TB Union four (4) were accepted as e-posters. These abstracts will help to give more visibility to the DATs pilot implementation in Nigeria and provide opportunity for learning and experience sharing in the global space

Thank you! We appreciate your collaboration.