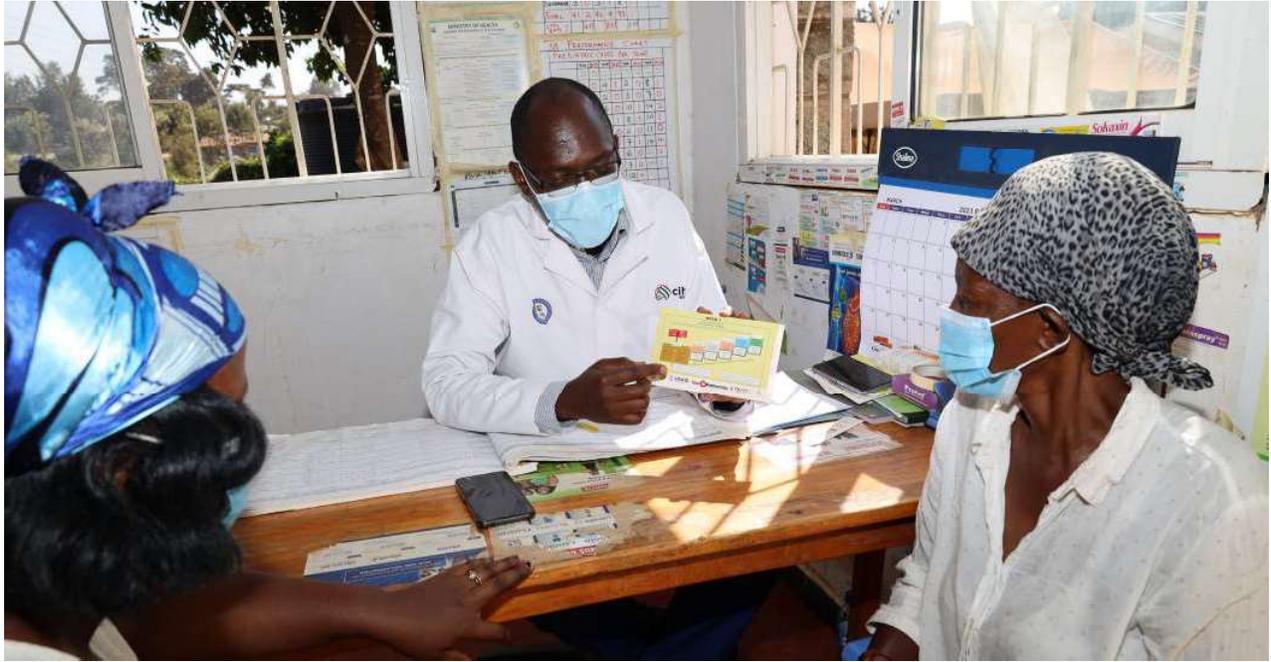


Improving Adherence to TB Treatment through Technology



Nicodemus Adera, the TB clinician at Chandaria Health Centre demonstrates to Monica Wanjiku and her daughter some of the writings on the digital adherence technology medication sleeves.

By Diana Munjuri CHS - USAID TB ARC II

Tuberculosis is the leading cause of single infectious agent deaths globally, with the WHO classifying Kenya among the high-burden countries. Recent estimates show that around 133,000 people have developed TB, among them 16,000 children. This is a huge burden on the health system, and a major barrier to economic development.

In 2022, the Ministry of Health's National TB Program reported 90,841 TB cases, compared to 77,854 cases notified in 2021. Despite the progress made in the fight against TB in Kenya, non-adherence to treatment has proven to be one of the factors derailing the progress. According to the Kenya National TB Program 2021 annual report, the country's treatment success rate stands at 77%, against a target of 80%. The death rate is still high at 13%, and lost to follow-up is at 5.4%.

Treatment adherence is a key factor for treatment success, and non-adherence is associated with adverse outcomes like high morbidity and mortality, the development of multi-drug-resistant TB (MDR TB), which is very expensive to treat, relapse, and transmission to contacts, among others, a derailing situation Nicodemus Adera, the TB clinician at Chandaria Health Centre, resonates with.

"For over 12 years I have served at this clinic, one of my biggest challenges has been patient treatment getting lost after follow up. Each time I initiated TB patients on treatment, some would stop midway, especially after the symptoms disappeared, which mostly happens between five days to two weeks after taking TB drugs," Nicodemus shares.

That was Nicodemus's agony until December 19, 2022, when the Ministry of Health's National TB Program, in collaboration with the Center for

Health Solutions - Kenya through its USAID and Stop TB Partnership Global-funded Introducing New Tools Project, rolled out the use of Digital Adherence Technology (DAT) in the facility.

"Before the rollout of the technology in the facility, we were taken through a three-day sensitization on how to implement DAT. This included criteria on client enrollment and utilization of the data for decision-making," Nicodemus says.

Once a patient is diagnosed with TB, they are counseled on the disease's causes, how to avoid spreading it to others, the length of treatment, and the need of adherence, among other things. They are then enrolled in DAT.

"The enrollment involves inputting their biodata into the adherence platform, which I have installed on my phone, and demonstrating to them how to pick the drugs from the

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Monica Wanjiku a TB patient daughter sends the code on the digital adherence technology medication sleeves after taking her TB drugs. JPG

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fixed-dose combination medication sleeve. The patient reports medication intake daily by sending a toll-free SMS message using a code found on the customized packaging," Nicodemus explains.

Any type of mobile phone can be utilized to submit the code to the adherence platform. It is only the health worker who requires a smartphone with bundles for the app to run, which is provided for by the project monthly at a rate of Kshs. 1000.

The application is easy to use, and the data is safe and secure. The data can be easily retrieved when needed for use in decision-making while adhering to the Data Protection Act.

"Unlike in the past, I can now communicate with my patients. I can keep track of their compliance. If a patient fails to send a code, the system sends me a notification listing the patient as a defaulter," Nicodemus

shares.

He adds, "At the click of a button, I am able to see patients pending lost to follow-up when they fail to take drugs on certain days, and I am able to take action early enough by inviting them to the facility to share the challenges they are experiencing and come up with a solution to the same, or even send the community health worker to check on them."

47-year-old Joseph Kamau, a resident of Dagoretti, is among the patients enrolled in the platform. Unlike his previous experience with TB treatment in 2010, which was marred by non-adherence due to forgetfulness to take drugs, he describes the application as his biggest treatment support system.

"In case I forget to take the medication and send the code, the application sends me a reminder. This is very helpful, as I sometimes forget I am sick since I am no longer experiencing any symptoms, which disappeared after five days of being in treatment," Joseph

shares.

52-year-old Monica Wanjiku, who was enrolled into the system using her daughter's phone as she doesn't have one, shares that her biggest worry when she was diagnosed with TB was when the health worker told her that if she failed to adhere to treatment, she would either die or spread it to her contacts. A story she relates with well as she had witnessed her neighbors succumb to the disease.

"The technology has made me and my entire household be in charge of our health. Apart from receiving reminder notifications to take the medication, the information on my treatment journey on the medication sleeves that my daughter and her children read and interpret for me has been very helpful. I feel empowered as a patient, and so does my household," Monica shares.

She adds, "The information has made me aware of my treatment duration, various phases in the treatment journey and what to expect in every phase, the importance of completing treatment, when to take the medicines, how to take the medicines, and how many tablets to take."

The technology is being piloted in Nairobi and Mombasa, which are among the high-burden TB counties in Kenya.

According to Elizabeth Mueni, the TB Coordinator for Nairobi County the technology is patient-centered as the health workers are able to monitor the patient's treatment and intervene early before they become lost to follow up.

"The application is both health worker and patient-friendly. The benefits we have noticed or observed are that; the patient is always in contact with the care worker, hence the quality of care is assured, unlike in the past when the patient would be given one-week or one-month drugs and only see the health worker when coming for a refill. With the technology, the health workers are in touch with the patient on a daily basis; hence, a mutual relationship or contact is made," Mueni notes.

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Mueni adds, "The technology is reducing the financial burden incurred by patients when on treatment as they do not have to make avoidable visits to the hospital to seek clarification since they have the information on the medication.

Dr Lorraine Mugambi-Nyaboga, USAID TB ARC II Chief of Party, describes the digital adherence technology as a game-changer, providing a patient-centered approach to TB care.

"With the technology, TB patients are being empowered to receive individualized care and support, hence the quality of care. The patients are able to choose the most suitable time to take their medication. This technology, in essence, places TB care and adherence in the hands of patients, hence breaking health care system-related and/or individual-social-economic or behavioral-related barriers to treatment adherence," Dr Lorraine says.

She adds that the technology adoption has been on an upward trajectory since its rollout in the two target counties in December 2022, which she credits to the collaborative effort and commitment of the staff at the Ministry of Health's National TB Program, the two counties, CHS and the health workers at the facility level.

"We have so far enrolled over 1,900 patients into the system in over 190 health facilities spread in the two target counties. We expect the number to keep on increasing as health care workers and patients embrace the technology due to its user-friendliness." Dr Lorraine shares.

She concludes by noting that the adoption of the technology is geared towards achieving the goal of eliminating TB by 2035, as it will help in improving the treatment success rate, reducing the lost-to-follow-up patients who are likely to become MDRTB patients or die, spreading the disease in the community, and reducing the catastrophic cost of treating DR TB.

DAT is one of the projects being implemented under the Introducing New Tools Project to strengthen TB care in the country. Other WHO-approved tools for TB screening, diagnosis, and prevention rolled out since June last year include;

- Treatment courses for TB preventative therapy: the 3RH regimen to benefit 13,000 persons
- Eight digital chest X-ray equipment kits with accompanying software for the computer-aided detection of TB
- Two interferon-gamma release assay (IGRA) machines to aid in the detection of TB infection
- 38 portable and battery-powered Truenat machines for molecular TB testing that can be easily used in hard-to-reach areas where reliable electricity supply is not reliable and,
- Connectivity solution for all TB diagnostic equipment known as TIBULIMS. ●

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SUCCESS STORIES: Treatment Interrupters



4,546

TB patients who had interrupted treatment were traced out of whom 3,558 (78%) were found and returned back to continue with medications since July 2021 to March 2023.

Nelly is a single parent working extra hard to be able to fend for her children. Jobs are hard to come by but she is doing the best she can. A visit with her youngest to the doctor reveal that her baby has TB. She is devastated and even more when the doctor recommends special diet for the baby because he is malnourished. TB medication is free but the diet recommended means she has to use extra money to buy food. She is already struggling with all that is already on her plate so she decides that the child will not be taking the medicines.

The CHV noticed that Nelly missed the next appointment and began searching for her to find out why. Nelly decides to narrate her ordeal to him and after a lengthy discussion; she agrees that the child be started on treatment again. The hospital provides supplements for the child and food for the family.

It is hard to imagine these are the challenges people go through considering we are in the 21st century. You would expect that people would be more aware of this disease because information is readily available, but something is still missing- there is a gap yet to be bridged. There is need for us to educate people that TB is curable, that it is not a death sentence. Our messaging needs to be intentional and deliberate so that people will understand. I hope that soon enough, people will not have to go through so much loss because of something curable. Life is already hard enough; TB should not be making it even worse. "TB ina tiba". Let us kick out TB in Kenya. ●

**Names have been changed to protect the identity of the patients.*



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