The Three-Box Model: An Innovative Strategy to Ensure Those Living with HIV Remain on Lifesaving and Lifelong Treatment in Tanzania

In Tanzania, approximately 1.7 million people are living with HIV. Of these individuals, 84% knew their status, and 82% were on ART in 2020. Among pregnant women living with HIV, an estimated 84% received ART for prevention of mother-to-child transmission (PMTCT) in 2020. Significant strides have been made in reducing the number of AIDS-related deaths in the country; between 2010 and 2020, there was a 49% reduction in AIDS-related deaths, and there has been a 35% drop in new HIV infections. However, in Tanzania, only 82% of persons living with HIV are accessing treatment, well below the UNAIDS target of 90%, pointing to critical challenges in access and/or continuity of treatment that can result in increases in HIV-related morbidity and mortality.[1]

To prevent interruptions in treatment (IIT) and improve continuity of treatment and viral load suppression among all patients on ART, the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), in partnership with the Tanzania Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDGEC) and with funding from the United States Agency for International Development (USAID), developed the ***Three-Box Model***. The model was designed to rapidly identify and trace patients who missed clinic visits and reduce the number of clients experiencing an IIT in high-volume facilities throughout the supported regions of the USAID Boresha Afya North/Central Zone project in Tanzania.

This model utilizes three boxes stationed in a health facility to monitor and track client visits within the care and treatment or PMTCT clinic. One day prior to a clinic day, providers pull clients' care and treatment file folders and place them on a waiting table in the medical records room. These files are picked up upon entry to the clinic by clients expected and handed over to their treatment counselors as they are treated. All files left on the waiting table at the end of the day belong to clients who missed their clinic visit and are moved to Box 1 by the end of the day.

These files are picked up by facility providers (lay or clinical health workers on duty the following morning) and cross checked with the pharmacy departments to first ensure the clients are not behind on treatment pick-ups. These providers then call the clients directly to counsel them and ensure return to care or that their ARVs are picked up elsewhere. The files of the clients who had a discussion with providers and promised to come have their files are left in Box 2, until they come to the clinic on the newly agreed date and time. The files of those who could not be reached by phone are moved to Box 3, ready for follow-up by a home visit team within the same week of missing a clinic visit. The community health volunteers are handed these lists once per week as a general procedure, but volunteers can visit a facility anytime and pick up these lists for home visiting. It is a general rule that each Friday volunteers will provide feedback to the facility about the status of clients on previous lists and pick up a new list for follow-up again at home. All files for clients not yet visited after they are noted as missing remain in Box 3 or the special allocated cabinet.

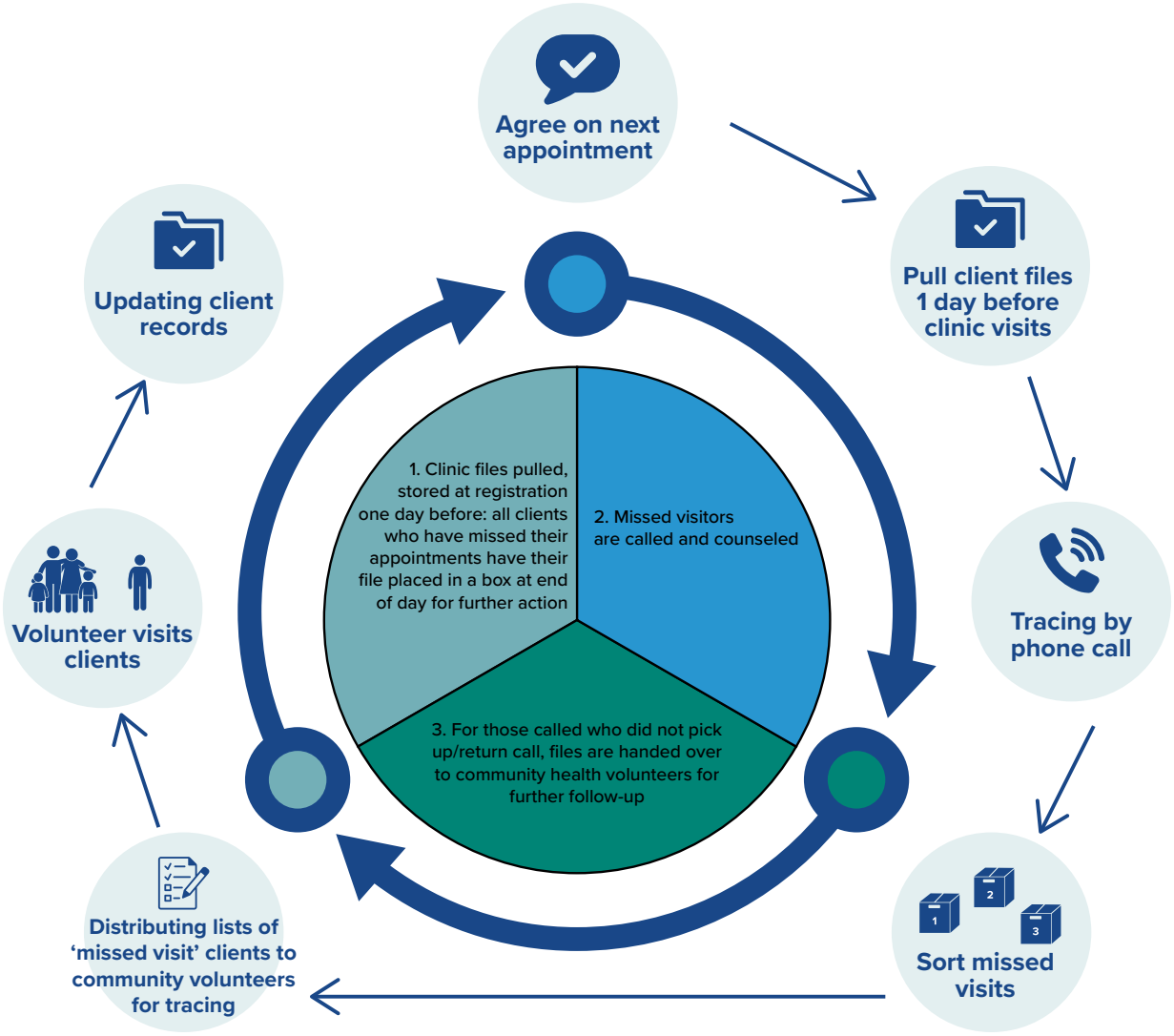

Figure 1. The *Three-Box Model* functions in a cyclical pattern to ensure active follow-up, client tracing, and ease of treatment access

The files of those who are still experiencing an IIT after ten days are distributed to existing community implementing partners (IPs), with a copy of the list kept at the facility site for reference and updating when the tracing outcome results are available. Community IPs are given ten days for tracking and reporting back the tracing outcomes to the facility. After three tracing attempts over a period of four weeks after a missed appointment, clients who are still not traceable are identified as experiencing an IIT. All files of IIT clients are kept in the same location; they are reviewed quarterly for a period of one year by the site retention team with support from project staff. Facility providers can thus quickly locate files and are able to easily re-engage clients who reappear.

Setting and Context

From November 2016 to September 2018, the model was piloted in the Tabora Region as a quality improvement (QI) intervention in two high-volume facilities with a high number of clients experiencing an IIT. It resulted in significant improvement in the tracing of missed clients and a reduction in IIT, leading the project to scale-up this intervention as a program optimization approach (POA). From October 2018 to Sept 2020, the model was scaled up to 165 high-volume facilities across five supported regions. This innovative approach followed the same steps used from orientation to scale-up at the target facilities.

Reduction in Client Waiting Time

Pulling files prior to the clinic day for high-volume facilities has reduced waiting time for clients, as missing files were traced elsewhere before the clients arrived for care and treatment services in the first place. Time taken by staff to trace clients who missed a clinic appointment reduced from 30 days to 1 day; previously, missed clinic visits were only noted by facility staff during reporting time when cross-checking the previous month's and current month's performance. With the Three Box Model approach, staff and volunteers can identify missed clinic visits on the same day, and staff start tracing these clients on the same day or the next day

Reduction of Interruption in Treatment

On reviewing 4 Annual Progress Report Submitted to USAID, we realized that there is a significant increase of clients resuming to treatment from 39% (APR18) to 83% (APR21) as well as significant reduction of IIT from 41% (APR18) to 11% (APR21). Amount tracing outcome there is also a significant reduction in percentage of clients died or transferred out to other facilities for care and treatment after IIT, 6% (APR18) to 1% (APR21) and 14% (APR18) to 5% (APR21) consecutively as seen in figure 2. The volume of clients to be traced reduced from above 32,000 to below 14,000 and this is due to missed vists roots cause analysis and intervention using other models.

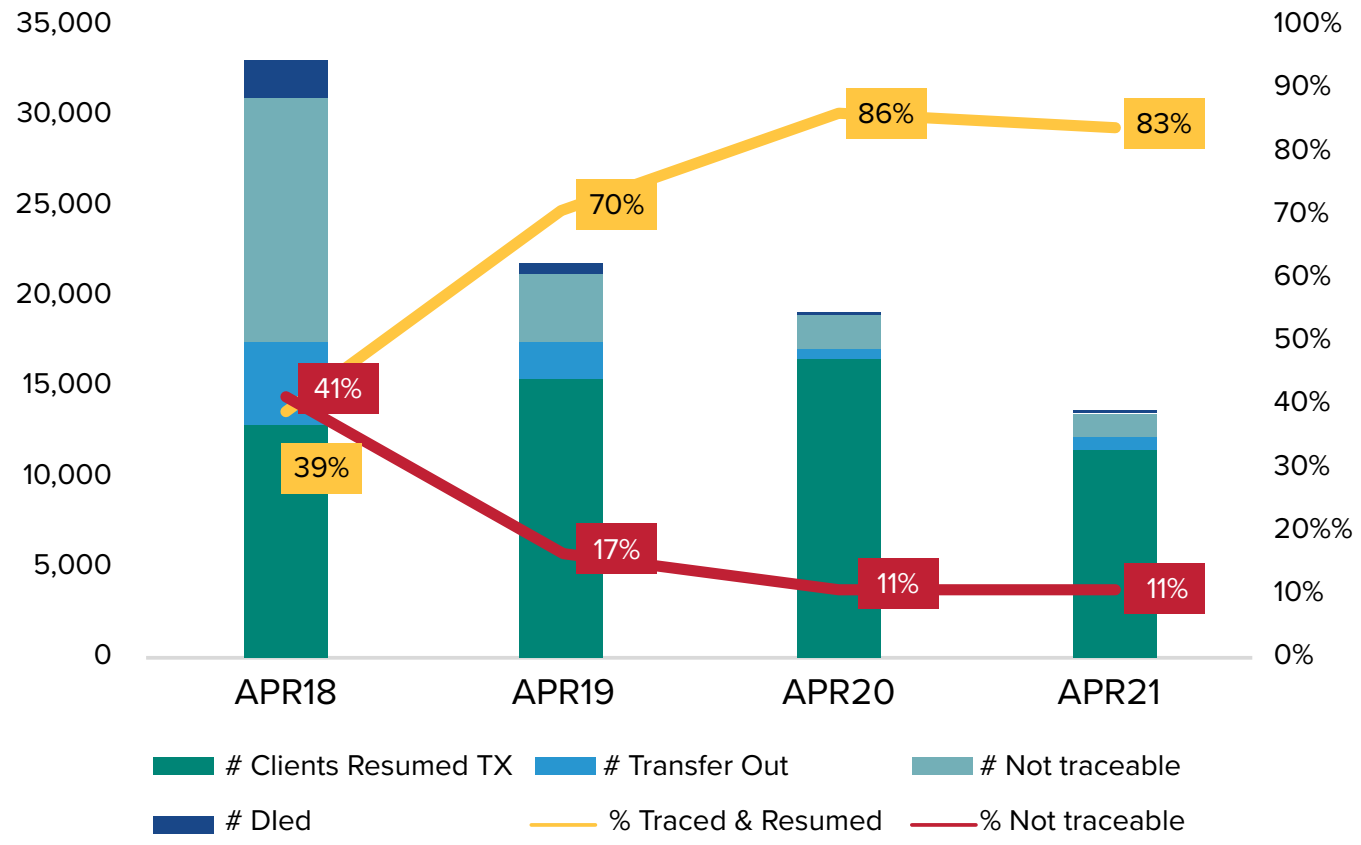

Figure 2. Missed VIsits Tracing Outcome Trend of 4 Years

Health Care Worker and Volunteer Satisfaction with Systematic, Clear, and Timely Mechanism to Identify Clients Missing Appointments.

Initially, there was no clear and timely mechanism at health care facilities to identify clients who had missed their clinic visits. Facility staff were only able to see which clients had missed their appointments at the end of the month when they were producing reports. Health care workers in

Tanzania are extremely busy and often overwhelmed with clinic and other facility work on a daily basis, so tracking down these clients and providing the follow-up themselves was onerous; this challenge was considered in the design of the Three Box Model. Additionally, community health volunteers were happy to expand their work in the community and at the facility level

"Prior, we couldn't really see our contribution at the facility but now after the introduction of the Three-Box Model, our role has been made clear to us and our clients as we now follow-up on our clients through phone calls. When we call, we introduce ourselves to them as calling from the clinic and this makes them see us as part of the clinical team at the clinic."
— Lay Counsellor, Mawenzi Hospital

Increased Health Care Worker Accountability

As described earlier, files are pulled from the box/shelf one day before a client visits. There are times when a misplaced file needs to be identified, and that time is taken by the health care worker to search other departments or, in rare instances, to create a new file. Previously, in these situations, clients were told to wait while their files were chased down. As this work now occurs the day prior, clients gain access immediately, and visits are much more streamlined.

'At each clinic day, we have someone on duty to sort the files of clients for their given appointment. Those that had missed their visits will be traced the same day or next day. This is something we were not doing before.'
– Nurse supervisor, Majengo Health Centre

Conclusion and Way Forward

The Three Box Model approach has shown effectiveness in preventing IIT throughout the country, as many partners have adopted it in their HIV programming. Clarifying roles around routine activities among clinic staff as well as maintenance of clinic visit schedules and follow-up set up by these facilities will further improve client continuity of treatment through the Three-Box Model and without over-burdening already burdened health care providers by engaging lay health workers to support the model.

Keys to Succeed in Implementing this Model: community health worker availability, facilitylinked adherence groups (FLAGs) or other psychosocial support groups, dedicated facility documentation process and diligent site retention focal person.

Call to Action: National authorities should provide guidance to facilities to monitor appointments using the Three-Box Model, as it has proven to be a useful, easily implemented tool to monitor IIT and centralize clients' treatment information, also addressing the issue of self-transfers and transit clients who tend to collect drugs from other facilities without feedback to the primary facility.

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1. Joint United Nations Programme for HIV and AIDS (UNAIDS). United Republic of Tanzania, 2020. Accessed: https://www.unaids.org/en/regionscountries/countries/unitedrepublicoftanzania. Date of access: October 25, 2021.

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