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**Efficiencies for Clinical
HIV Outcomes (ECHO)**

Differentiated Service Delivery Models Technical Brief

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Differentiated service delivery (DSD) models respond to clinic wait-times, patients missing appointments, and the need for patient privacy. ECHO's goal is to take a patient-centered approach that matches patients to the DSD model that works best for them with the goal of reducing losses, increasing early retention, and boosting reintegration to care—all while aligning with local policies as given by the Mozambican Ministry of Health.

Introduction

In the first year of the Efficiencies for Clinical HIV Outcomes (ECHO) project, more than 50,000 new patients became active on antiretroviral therapy (ART). However, these initial bursts of referral-to-treatment linkages were offset by a worrying number of ART patients dropping out of treatment each month. ECHO recognized that retention would be a significant challenge across its supported facilities in Sofala, Manica, Tete, and Niassa provinces, and sought to both leverage and create innovative methods for reaching patients, reducing treatment losses, and improving retention and reintegration. ECHO's TX_ML indicator, which shows the number of patients on ART who had no contact with a provider since their last expected appointment, dropped by roughly 2,000 patients in the first two quarters of ECHO's second fiscal year and has continued to decline throughout the project's lifespan. To achieve these outcomes, the project took a client-centered approach—understanding the barriers that patients face to remaining on treatment, developing and scaling up services that could help them overcome these barriers, and then ensuring each patient is connected with the model that best fits their unique needs and medical history.

When the project launched, differentiated service delivery (DSD) models had limited uptake. One model, *Grupos de Apoio e Adesão Comunitária* (GAAC, Community Support and Adherence Groups), was moderately popular but required patients to self-

organize. It also required extensive interpersonal contact between GAAC group members to distribute medicines – a practice that was ill-advised as the COVID-19 pandemic ramped up. In partnership with the Ministry of Health, ECHO continued and scaled up a variety of DSD models that have increased the number of patients staying on treatment. These models include intensive and non-intensive models; the former require monthly visits to health facilities while the latter allow patients with stable health conditions to visit facilities less often. Intensive models include the Family Approach, One Stop Shop, private pharmacy pick-ups, and extended service hours, while less intensive models include three- and six-month drug distribution and community-based distribution by APSs (*Agentes Polivalentes de Saúde*). The models may also be combined as appropriate for each patient. For example, a family may take advantage of the Family Approach while also enrolling in a two-month, three-month or six-month schedule. All have shown varying degrees of impact and positive feedback from patients and providers alike, and each allow health providers to offer their patients a more convenient way to access care. If they are or become ineligible for a model at any point, there are algorithms in place to get them on a different model that suits them. These safeguards as well as data from ECHO's implementation and lessons learned are discussed below.

Success Story:

Safeguards Built Into Multi-Month Distribution

ECHO has safeguards to ensure that patients on multi-month distribution remain on treatment despite not visiting the health facility. This greatly helped in the situation of Maria, an HIV-positive patient who did not go to the health unit to pick up her antiretrovirals for an extended time. Instead, she sent her daughter to pick up the medication for her. When her daughter arrived to health unit to pick up the medication for her mother, the clinic noticed that her mother had not been to an appointment in a long time and told her that because it has been a long time since her mother had not been adhering to appointment they would not give her daughter the medication and instead made a home visit to check in on Maria's condition. When they arrived at the patient's home, they discovered that she had not been visiting the clinic because she was gravely ill. Immediately they evacuated her by motorcycle to the health unit, where she received assistance and returned home. This intervention was possible because health clinic staff are instructed to maintain in contact with patients even if they are on multi-month distribution or send a confidant to pick up their medication.

Family Approach and One Stop Shop

The **Family Approach** model was one of the first DSD models to launch in Mozambique. The grounding principle of the approach is that families should be able to complete most of their medical visits during just one day and in one appointment. Facilities coordinate visit scheduling so that parents and children can get care and treatment services during the same visit. The **One Stop Shop** is a related model that may also be used in combination with the Family Approach. Through One Stop Shops, patients can not only consolidate their visits into one day, but also into one 'entry door.' Prior to any of these DSD models, a family might need to make several trips to their health facility over the course of several weeks, spending 4-6 hours at a time at the facility and shuffling around to several different offices to get their needs met. Now, they can consolidate visits into one day for each family member and receive the majority of care from a single trusted doctor.

This is more convenient and enables more personalized care, as providers gain insight into the bigger-picture needs of the family unit while spending additional time understanding their patients' symptoms and concerns. ECHO has helped the provincial health directorates in Sofala, Manica, Tete, and Niassa to roll out a variety of One Stop Shop and similar extended models, approved by the Ministry of Health, that target key groups with specified interventions that respond to their unique needs. At maternal, neonatal, and child health (MNCH) One Stop Shop locations, for example, women are enrolled in a service that supports them throughout their pregnancy and delivery. This and the At-Risk Child One Stop Shop both aim to reduce the risk of mother-to-child transmission and determine whether a child has safely matured past infancy without contracting HIV while nursing. Other options, like One-Stop models for adolescents and youth and tuberculosis (TB) models for those with HIV and TB co-morbidities, target categories of patients with key services they are likely to need at each visit based on their unique health background.

ECHO expanded the model substantially to now cover six different entry points. The One Stop model has also enabled health facilities to provide more thorough care, and patients can also combine this model with others, adding to the efficiency of a single facility visit. In one health facility, CS Eduardo Mondlane, completion of TPI (Prophylactic Treatment with Isoniazid – a medication which reduces the risk of patients developing TB) increased from 30% to 65.8% within six months of implementing the One-Stop model. Importantly, patients can have their viral load collected at each One Stop entry point—a change from a time when waiting for VL collection at the facility’s lab could take hours longer than the initial consultation itself.

Multi-Month Distribution

Prior to 2020, three-month drug distribution was an existing but under-utilized model in Mozambique with strict eligibility criteria. In the face of COVID-19 concerns about overcrowded health facilities, the Ministry of Health expanded eligibility to a large group of patients: those without comorbidities, with suppressed viral load, who had been on antiretrovirals (ARVs) for at least six months. This amounted to a flood of patients now eligible for the service that many had long-requested—the ability to pick up a multi-month supply of medicines at one time, eliminating the need for constant monthly visits to far-flung health facilities. All ECHO-supported health facilities now have multi-month distribution models and enroll as many as 329,049 patients (80% of TX_CURR). Six-month drug distribution (6MDD) is also scaling up as more people demonstrate long-term health stability and become eligible to transfer away from 3MDD to this even more convenient model. After the most intense stages of COVID-related restrictions, multi-month distribution still has benefits for busy families that do not have time or means for frequent clinic visits. Additionally, multi-month distribution helps decrease the patient load in health facilities, giving providers more time so that they can focus on quality over quantity, dedicating more time to each appointment.

Three- and six-month drug distribution each respond to important patient needs. Many adults and families frequently travel throughout the year. For example, the fishing industry in Sofala pulls men away from their homes seasonally; further inland, workers travel to nearby Zambia and Zimbabwe for employment.

One-Stop Shop Entry Points

- **MNCH:**
Pregnancy through delivery
- **At-Risk Child:**
Birth through HIV status revelation
- **Pediatric:**
Babies and children with known HIV-status, as well as caretakers
- **SAAJ:**
Young people 15-24 years
- **TB:**
Recently diagnosed TB patients living with HIV
- **Adult men and women:**
Cases of chronic disease and 0-6 months on treatment

Others simply live in distant communities, making it challenging to frequently visit facilities for medicine supplies. This results in high defaulting rates, which are substantially relieved when patients can get their families’ medicine well in advance. Depending on their eligibility and national DSD guidelines, patients may also combine multi-month distribution with select DSD models, like One Stop Shops.

ECHO’s integrated assistance to health providers at the facility level has helped build these models into provider care flows. Providers identify patients as eligible during clinical consultations and mark them as eligible in their file, then as an extra precaution, case managers double-check the patient’s history, review viral load test results, and place a reminder in the patient’s file, which their provider will use to formally enroll the patient in three- or six-month distribution. While more accessible than in past years, requirements are still strict for enrollment in these models.

For six-month distribution, it is essential for providers to confirm that patients have a demonstrated ability to maintain their treatment regimen consistently and aren't at a high risk for defaulting. One limit to this strategy is that it cannot be extended for HIV comorbidities, as patients with comorbidities will need to continue monthly visits to health units. For example, an HIV-positive patient with a chronic disease or tuberculosis would need to continue to pick up their medication regularly while using multi-month distribution for their antiretrovirals.

There is also concern that multi-month distribution could make patients less accessible and may lead to more patients defaulting. However, viral load coverage and suppression data for patients on multi-month distribution is encouraging. Viral load suppression is also part of the 6MMD eligibility criteria, which sets the stage for strong outcomes among this cohort. Although patients were visiting medical facilities less frequently to pick up their medication, they remained adherent to their antiretroviral regimen. Viral load coverage levels at eight health facilities in the province of Manica, as an example, were stronger for patients on 6MDD than other distribution models.

6MDD is in a piloting stage, and its expansion largely depends on a facility's ability to maintain sufficiently high levels of ARV stocks. ECHO supports health facilities to become eligible for this model and to date has focused on those with the highest volume of patients undergoing treatment. In the health facilities that offer six-month distribution, ECHO provides and oversees several interventions including support for provincial medicine deposits in the process of inserting monthly reports and respective quantification. Additionally, ECHO staff aid in the creation of a weekly spreadsheet to monitor the availability of stocks at the health units and the deposit level. ECHO also participates in the monthly distribution process of medications to pharmacies and holds a post-distribution meeting to assess the level of requests made. ECHO's integrated teams also help in monitoring consumables (items that are frequently used and need to be replaced periodically) at the health unit level.

The model is being scaled up, and already 80% of patients on ART use a form of multi-month distribution as of the end of 2023.

Success Story: Multi-Month Distribution to Seasonal Workers in Sofala

One of the four provinces ECHO operates in is Sofala, a coastal province that is characterized by the fishing industry. During the fishing season, men in Sofala remain away from land for more than a month while fishing in the high seas. During this period HIV-positive men do not have access to ARV's. Thus, these men have benefitted greatly from the multi-month distribution model, because they have access to sufficient medication for the period when they are far from home and can continue to adhere to treatment.

As of early 2024, all 149 facilities are offering 3MMD models to eligible patients. Overall, this approach reduces overflow conditions in facilities and gives providers more time to dedicate to each appointment. Additionally, they lift the burden of long visits on busy families. Because of this, the strategy has been recognized by the government and is continuing to be used in health units across Mozambique even after the easing of pandemic restrictions.

Community Distribution Approaches

Like multi-month distribution, community distribution rose in popularity in response to the COVID-19 pandemic and the need for social distancing.

It also arose as an ‘emergency model’, with the aim of ‘rescuing’ patients at elevated risk of drop-out. ECHO supports two primary community distribution models: 1) community ARV distribution by providers and 2) APS-supported community distribution.

Provider distribution involves clinicians traveling by car or motorbike with either another clinician or lay counselor, using contact and address information provided by facility staff and community-based organization (CBO) partners. Clinicians offer viral load sample collection, drug distribution, and general health consultations. During these consultations, clinicians may provide referrals to further treatment and encourage patients to return to their local health facilities. This model is designed for patients who, due to work, travel, or family commitments, cannot come to their local health facility to pick up their monthly medicine supply. It also provides privacy for patients who may fear that visiting a clinic would reveal their HIV status.

Community health workers like counselors and mentor mothers, funded by community-based organizations (ECHO-supported) and APSs, which are funded by provincial health divisions, also play a leading role in community distribution models. However, the distribution of medicines by APSs has been declining in recent years. APSs primarily support the process by verifying patient eligibility, conducting outreach with patients in advance of the meeting, and occasionally participating in direct medicine distribution.

At their core, both community distribution models are led by healthcare providers and government-employed health actors with varying levels of support from community-level actors. Technical staff check lists of absent patients and place calls to them, asking basic health questions and arranging a convenient location to pick up ARVs, like a workplace or a patient-chosen private location. If eligible, their health provider may also try to enroll them in another DSD model.

The goal of these community distribution models is to prevent patients from ‘slipping through the cracks,’ keep them from going off treatment in the short term, and ultimately bring them back to the facility for a full consultation. Community-based models have been particularly effective in preventing defaulters from becoming dropouts and reintegrating patients who default on treatment or are lost to follow-up.



However, one drawback is that the community distribution is not permitted to coincide with the community distribution model per Ministry of Health guidelines. Additionally, community distribution is not ideal for children, who require more frequent assessments such as weighing and nutritional evaluation. The model is also not meant to be long-term, with restrictions on repeated enrollment in community distribution considering the ‘rescue’ nature of the models as well as their costs.

Finally, CBOs play a crucial role in creating demand for community distribution and other DSD models by engaging with the community, raising awareness about available services, and encouraging patients to participate. They assist in verifying patient eligibility and conducting outreach with patients in advance of the meeting, but they do not directly distribute medicines. The role of CBOs in demand creation supports the overall success of DSD models by ensuring that patients are informed and motivated to engage with the services provided.

Decentralized Distribution in Pharmacies

In June 2020, Mozambique rolled out a national model for the decentralized distribution of ARVs through private pharmacies. This model links networks of three public health facilities to six or seven private pharmacies, which offer three-month supplies of ARVs to patients. Clients can select private pharmacies based on personal preference, including location.

The referral process begins with a clinical consultation, where patients are offered the option of ART dispensing in a private pharmacy. The facility pharmacy then dispenses the ART and refers the patient to a private pharmacy for the next pick-up through an electronic system. At the private pharmacy, ART is dispensed, and the transaction is registered in the electronic system. The facility updates the patient's electronic medical records to reflect the drug pick-up.

This model aims to streamline service delivery and reduce congestion at public health facilities. Patients benefit from the convenience of selecting a pharmacy based on location, reducing travel time and associated costs. The decentralized approach also helps maintain privacy for PLHIV who may feel stigmatized visiting public health facilities. Overall, the pharmacy model is an innovation in improving ART access and adherence, ensuring continuity of care while alleviating the burden on public health systems.

Data Results of Each Differentiated Service Delivery Model

Family Approach	As of Quarter 5 2023, 40% of children in treatment in the province of Sofala were included in family approach, enabling their families to get their needs addressed together.
One Stop Shop	Between October 2019 and August 2020, an analysis by ECHO's Innovation, Learning, and Adapting team of 6 health facilities that had implemented the One Stop model with comparable facilities in the province of Manica. It found that in 4 cases, the 99 day retention of patients was better in those that implemented the One Stop model, in one case the retention was the same in both facilities, and in one case the facility that did not implement the One Stop model had better 99 day retention.
Multi-month Distribution	An internal analysis by ECHO's Innovation, Learning and Adaption team in April 2023 found that in eight health facilities across all four provinces viral load coverage was higher in patients enrolled on six-month distribution.
Community Distribution	Community distribution is used across provinces to reintegrate patients who default on treatment or are lost to follow up. In Quarter 4 of 2023, of the 64,946 patients who defaulted or were lost to follow-up (per ECHO's definition) in the health facilities with community dispensation, 60% benefited from the model. In the province of Niassa, 99.7% of those who had defaulted or were LTFU were reintegrated through community dispensation.
Decentralized Distribution (Pharmacy)	This model, starting in June 2020, enrolled 1,773 people. By October 2023, 48% remained, with 96% having a viral load test result and 98% achieving viral suppression. Of those who left the decentralized model, 94% joined other differentiated service delivery models, primarily 6MMD, demonstrating high VL suppression rates but a preference for more convenient models over time.

Problem-Solving

One recurring issue was that people enrolled in community distribution models occasionally missed appointments, which reduced VL coverage as they weren't having samples collected during their medication distribution visit nor were incentivized to go to facilities. Now, health facilities are using a policy that does not allow two consecutive medication distribution visits and focuses on engaging patients to come to facilities to collect VL.

ECHO has also found that the decentralized distribution model in private pharmacies was less popular because of issues with stigma around HIV. More interruptions in treatment were found to occur in patients enrolled in decentralized distribution at pharmacies than any other DSD model. In response, ECHO offers more private and anonymous locations to pick up medication, as well as the 3MDD and 6MDD option, which decreases how often medication pick-up is necessary. The private pharmacy model has shown limited capacity to keep patients in treatment, and the project responded accordingly to scale down this approach.

One of the two community distribution strategies, APS distribution in the community implemented by the Mozambican Ministry of Health staff will not continue receiving financial incentives to keep this program going, so APS staff enrolled in the model are rapidly declining. In response, ECHO is scaling up CBO-led community distribution to balance this decline.

Although ECHO has had success with demand-creation for 6MDD, not all facilities can implement this model as consistent supply of medicines and other consumables is a requirement for offering the model. ECHO's Integrated Teams support several supply chain activities to address this challenge, but given limited stocks nationwide, the approach remains limited to a select number of facilities selected by the Ministry of Health.

Results

ECHO's Innovation, Learning, and Adapting (ILA) team has been important in monitoring the success of these differentiated service delivery models. Their work includes analyses of productivity at health clinics and by province. One example of their work is a study on the success of the One Stop model in the province of Tete.

After the ILA team compared three-month retention of lactating and pregnant women between health facilities in the province of Tete, they found that retention was stronger in health facilities implementing the One Stop model than comparable facilities that did not implement the program. Additionally, since implementing the One Stop model, ECHO's ILA team found that patient retention has increased at all but one health facility across Manica, Niassa, Tete, and Sofala, and TPI (Prophylactic Treatment with Isoniazid, for prevention of TB in HIV patients) has increased in all health facilities.

Since the implementation of the One Stop model which made adherence to appointments easier for patients, ECHO's patient retention has improved. As of June 23, 2023, the three-month retention rate for patients in all provinces was 98%. In comparison, the three-month retention rate for patients in all provinces in March 2020 was 74%.

Since the implementation of community distribution, the indicator TX_ML (treatment mortality and loss to follow-up) has been dramatically reduced from 12.2% in Quarter 1 of 2020 to 5.3% at the end of 2023. In comparison, the indicators TX_NEW (new patients on antiretrovirals) and TX_CURR (retained patients on treatment) have remained high.

Overall, DSD models have greatly improved patient flows at facilities. Patients used to spend up to 4 hours at clinics, and staff were overworked. They now have better motivation because they aren't working so intensely and can provide a better standard of care for patients.

Sustainability

The sustainability of multi-month distribution is based on facilities' ability to maintain sufficient stocks of ARVs. ECHO supports health facilities to become eligible for this model and ECHO provides and oversees several interventions, including stock reinforcement, training pharmacists on stock management, and constant monitoring of medication stocks. ECHO's Integrated Teams have a fundamental role in training and giving technical assistance to pharmacy technicians. As part of technical assistance to health units, ECHO staff carry out on-the-job training using virtual platforms to disseminate new standards relating to stock management as per MISAU guidelines.

Community distribution sustainability hinges on effective engagement and responsibility among various stakeholders, including providers, government actors, and community organizations that lead demand creation. There are two distinct community distribution models: ARV distribution by providers and outreach and distribution by government-employed APSs. The decline in ARV distribution by APS is mainly due to staff dropout rates, often related to additional incentives sought by APS workers beyond government stipends. In parallel, ECHO also continues to support local community-based partners in enhancing their engagement with the community and reinforcing demand for these DSD models broadly. Simultaneously, ECHO collaborates closely with health facilities and providers to strengthen their capacity and commitment to maintaining effective ARV distribution systems.

- **Strategic policy adjustments:** ECHO's shift towards the mobile clinician model and extended medication dispensing options reflects a strategic policy adjustment to optimize service delivery and resource utilization. These policy changes are pivotal in enhancing the scalability and sustainability of differentiated service delivery models within the broader health system framework.
- **Monitoring:** Frequent communication between health facilities and provincial monitoring staff at weekly meetings to track service uptake and needs are crucial for effective monitoring of DSD models. These meetings also focus on identifying all patients who could be enrolled in a DSD model to maintain patient retention.

Lessons Learned

- **Patient-centered care and convenience:** Introducing home visits by community actors after initial consultations has significantly improved medication adherence and patient satisfaction. This approach addresses individual-level barriers such as transportation challenges and stigma, thereby enhancing engagement in treatment.
- **Adaptation of service delivery:** Mobile brigades (large, fully stocked medical vehicles) were previously sent out into the community to implement community distribution but brought multiple challenges. Adding other modalities to the costly mobile brigades model not only improves service accessibility but also optimizes resource allocation, reflecting an institutional commitment to sustainable healthcare delivery.
- **Addressing stigma and preference:** ECHO found that some DSD models faced challenges, such as at pharmacies, due to HIV-related stigma. To mitigate this, ECHO supported the expansion of medication pick-ups at private and anonymous locations, along with extended multi-month dispensing options (3MDD and 6MDD). This strategy not only enhances privacy and convenience for patients but also promotes community acceptance of HIV services, thereby improving uptake and retention in care.

