Appraisal of the Risk Stratification and Case Management Approach for Enhancing Retention in HIV Care and Treatment Among Recipients of Care in Malawi

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Fighting for an AIDS-free generation

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Background

In pursuit of eradicating the AIDS epidemic, the global community established the 95-95-95 targets. These objectives outline the ambition that by 2030, 95% of individuals living with HIV will be aware of their HIV status, 95% of those aware will receive antiretroviral therapy (ART), and 95% of those on treatment will attain viral load suppression (VLS) (1). However, the successful attainment of the third 95%, particularly regarding VLS, significantly hinges on ensuring continuous engagement in care. Sustained engagement in care, known as retention in care, is pivotal for optimizing both individual health and broader public health outcomes within the HIV care continuum (2). Retaining individuals in care facilitates treatment adherence, monitors treatment progress, prevents and manages complications, and addresses various challenges encountered in the HIV care process by providing tailored support services (2,3).

The progress achieved in combating HIV faces a growing obstacle posed by suboptimal retention in care, notably through cases of loss to follow-up (LTFU) (2,4). Inadequate retention in care and non-adherence to treatment correlate with substandard VLS, drug resistance, heightened morbidity, increased risks of complications, elevated transmission probabilities, and mortality (2). Various factors contribute to poor retention in care and LTFU, falling into several categories: HIV-related issues such as physical comorbidities and decreased functionality; demographic factors like gender, age, pregnancy, and marital status; socioeconomic and educational levels; social factors such as stigma, discrimination, and disclosure of HIV status; and health system challenges such as distrust, confidentiality, distance, transportation costs, negative experiences, strained relationships with health workers, and limited drug accessibility (2,3,5–7). Over time, numerous interventions have aimed to enhance retention in care, bolster treatment adherence, and decrease LTFU, particularly within the critical first year of treatment initiation when LTFU rates tend to be higher. These interventions include establishing youth-friendly clinics, sending text message reminders, employing community and household strategies, providing transportation assistance, and implementing conditional cash transfers (3,8,9). Nevertheless, following evaluations, the outcomes of these interventions have exhibited a mixed impact.

Despite the substantial strides Malawi has made towards meeting the 95-95-95 targets, there are further opportunities for progress, including tackling emerging concerns. For instance, the 2020 Malawi Population-Based HIV Impact Assessment (MPHIA) survey disclosed an 8.9% adult HIV prevalence and an 87.3% VLS prevalence among HIV-positive adults (10). Similarly, with an estimated annual incidence of 20,000 new HIV cases, concerted efforts are needed to ensure their enrollment and retention in care, given that LTFU predominantly occurs among newly initiated clients. In 2021, supported by PEPFAR and CDC, the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) Malawi extended assistance to 304,300 individuals receiving HIV care across 179 health facilities. To optimize the outcomes of EGPAF Malawi's program, an intervention involving risk stratification and case management was devised and implemented to enhance retention rates and diminish LTFU.

Rationale for the Risk Stratification and Case Management Approach

Evidence demonstrates that the risk stratification and case management approach offers critical opportunities to improve retention in care and to increase efficiency in the context of low-income settings with limited resources (3,11). Equally important is that the risk stratification and case management approach allow for tailoring interventions according to client risk levels. Such client-centred interventions are likely going to be more effective in improving retention in antiretroviral therapy (ART) care and reducing LTFU (11). Existing evidence informed the implementation of the risk stratification and case management approach in EGPAF-supported facilities in Malawi in view of improving retention and treatment adherence outcomes for target beneficiaries.

Implementation of the Risk Stratification and Case Management Approach

The Risk Stratification Tool

The risk stratification (RS) tool was developed by EGPAF Malawi to assess the risk of attrition from care among newly diagnosed HIV clients linked to care in EGPAF-supported facilities. By identifying and categorizing attrition risk levels of HIV clients newly initiated into care and treatment, the RS tool allowed for tailored case management to avert disengagement or LTFU. The RS tool development relied on analysis of reasons for defaulting among HIV clients enrolled in care and review of relevant literature (4–6)critical for better treatment outcomes and prevention of drug resistance. HIV treatment among adolescents living with HIV (ALHIV on LTFU and retention predictors. Healthcare providers including adherence support officers (ASOs) and psychosocial counselors are expected to use the RS tool during an interview to initiate ART. Specifically, the tool assesses **four broad factors** in view of determining appropriate risk categories – Core, Individual/Attitudinal, Socioeconomic, and Structural factors. Each of these four factors have several items which are scored "Yes" or "No" (Yes=1, No=0), except for the Core factors; an affirmative "Yes" to any Core factor item categorizes the patient as having a high attrition or LTFU risk.

Factors that may lead to disengagement in care	Items	Scoring
"Core" factors	1. Fear of HIV disclosure 2. Denial 3. Experience or fear of drug side effects 4. Alcohol and/or substance abuse	An affirmative "Yes" to any item = high risk
Individual/Attitudinal factors	1. Has no or minimal knowledge on HIV/AIDS treatment 2. Has minimal communication skills 3. Has mistrust in the efficacy of ART and/or related misconceptions 4. Presenting with physical illness 5. Presenting with or has fear of drug side effects 6. Has religious/cultural beliefs about ART which could affect adherence 7. ART health beliefs (has no confidence/self-efficacy in taking ART) 8. Not ready to have ARVs daily 9. Not ready to disclose 10. Has shame and guilt 11. Has anxiety/stress/depression/emotionally stable	Yes = 1 No = 0 Maximum score in category = 11
Socio-Economic factors	1. Any ART-related stigma from self or community 2. Not ready to disclose to partner/family 3. Presence of marital discord 4. Unstable family arrangement/family dynamics 5. Any social norms not supportive of ART 6. Lack of family 7. Low-income status/no economic activity 8. Presence/Concerns over intimate partner violence/ Gender-based violence/Domestic violence	Yes = 1 No = 0 Maximum score in category = 8
Structural factors	1. Long distance to the health facility 2. Drugs not always available at health facility 3. Poor relationship/fear of healthcare provider 4. Dissatisfaction with quality of care	Yes = 1 No = 0 Maximum score in category = 4

Figure 1: Risk stratification tool with scoring aid

Client scores are sorted into three risk categories – high risk (total score of 16–23 or a Yes in any of the items on the Core factors), moderate risk (total score of 8–15), and low risk (total score of 0–7).

Total Score for "YES"	Risk Category	Case Manager	Package
0-7	Low risk	• Expert client • MoH Clinician or Nurse	• Health education • Adherence counseling • Peer-led case management • Phone and physical tracing • Monthly phone contact
8-15	Moderate risk	• Adherence Support Officer (ASO) • Site Clinical Coordinator/Linkage Nurse • MoH Nurse	• Motivation counseling • ASO-led case management • Biweekly phone contact • Psychosocial Support Group (PSSG)/Male ART Adherence Clinic (MAAC)
16-23 (or any Yes score in the core factor section)	High risk	• ASO • Psychosocial Support (PSS) Counselor	• Motivation counseling • Enhanced (weekly) phone support • PSS/ASO-led case management • PSSG/MAAC

Figure 2: Overview of risk score categories and corresponding case management interventions

Case Management Strategy

The risk categories from the RS tool allowed for tailored, patient-centered case management interventions to ensure continued client engagement in HIV care and treatment. Depending on the level of attrition or LTFU risk, clients on ART were placed on different case management interventions referred to as "packages." The frequency of client engagement for the case management packages varied across the risk categories – weekly for high risk clients, biweekly for moderate risk clients, and monthly for low-risk clients. For each risk category, a case management team was assigned to provide appropriate intervention packages that included health education, motivational counseling, enhanced phone adherence support, and enrollment in peer-led support groups. A key feature of the case management strategy was the development of a personalized treatment plan based on barriers to retention.

The case management team included psychosocial support counselors (PSSC), adherence support officers (ASO), clinicians, nurses, and expert clients. PSSC's are certified following two years of formal training, ASO is a professional cadre with in-service counseling training, and expert clients are HIV-positive lay cadre with on-the-job training to support enrolled clients. The team was also trained on standard operating procedures (SOPs) that EGPAF developed to guide case management packages.

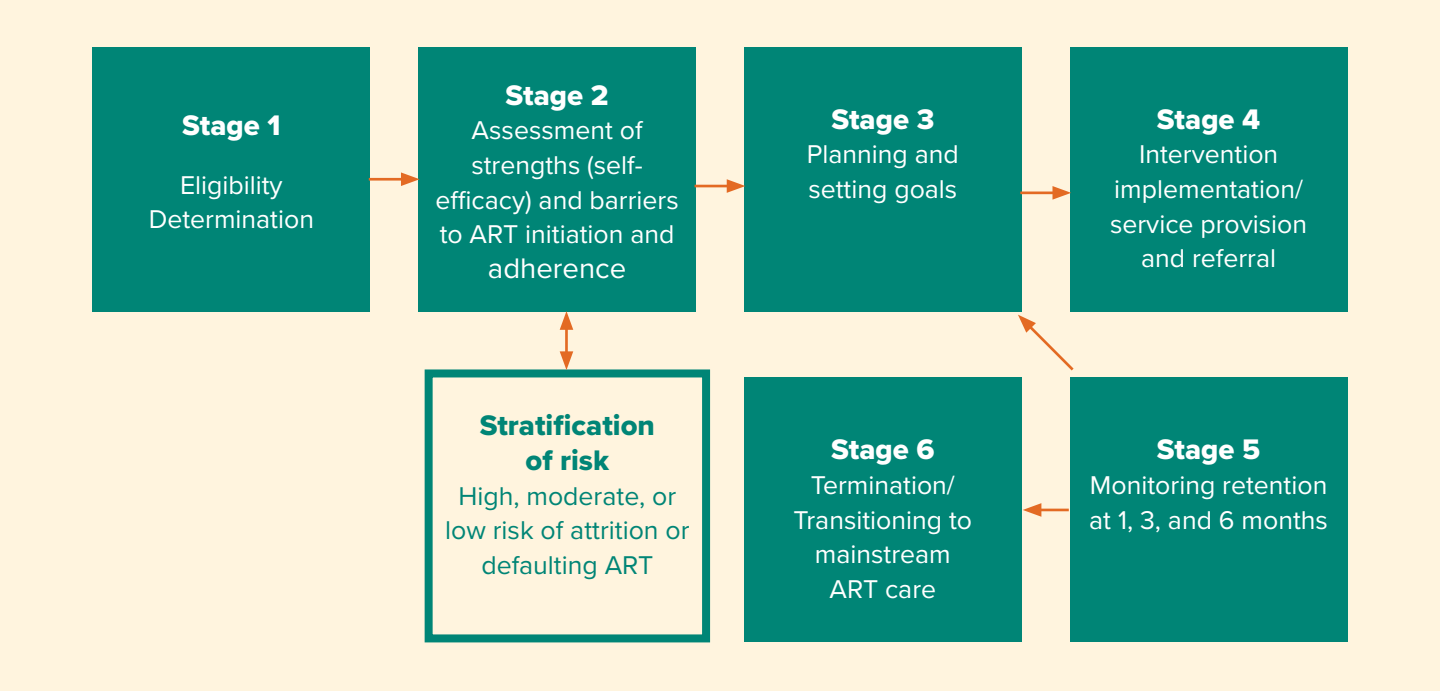

Figure 3: Stages in case management – client navigation

Evaluation Method

We evaluated the risk stratification and case management intervention in 10 EGPAF-supported facilities with high HIV burdens within the districts of Blantyre and Zomba in 2023. These facilities encompass Limbe, South Lunzu, Ndirande, Chilomoni, Zingwangwa, Bangwe, Matawale, Pirimiti, Domasi, and St. Luke's. The evaluation employed a pre-/post-study design, categorizing participants into two groups: a) a pre-intervention group, consisting of clients initiating ART before the program's implementation (June – November 2019), and b) a post-intervention group, comprising clients initiating ART after the program's execution (June – November 2021). Participant recruitment followed a 1:2 sampling approach, enrolling at least two participants in the post-study phase for every one participant in the pre-study phase.

This evaluation utilized a secondary analysis of routinely collected patient-level data sourced from electronic medical records systems (EMRS) and paper-based case management registers in the specified health facilities. The participants were monitored for a minimum of 12 months to assess the outcomes. Data analysis was conducted using STATA version 16, employing statistical tests such as the Mann-Whitney U test and survival analysis to compare retention outcomes between the pre- and post-intervention periods at both six- and twelve-month intervals following ART initiation. Furthermore, Cox proportional hazard analysis was employed to evaluate factors associated with retention in care among newly-initiated ART clients over the 12-month period in the post-intervention group.

Key Beneficiaries of the Risk Stratification and Case Management Approach

The primary beneficiaries of the risk stratification and case management intervention are newly diagnosed HIV clients linked to care in EGPAF-supported facilities. Beyond clients who are newly initiating ART, returning clients following treatment interruption and those with high viral load results are also beneficiaries of the intervention.

Additionally, the cadre of healthcare providers who implemented the intervention at the facility level received comprehensive training, adding to the overall push for health workforce development in Malawi.

For the Malawi Health System, findings from the evaluation of the risk stratification and case management approach have policy and practice implications for initiatives to improve client retention and treatment adherence, the health workforce, and financing in view of program scale-up across Malawi.

Impact Statement

"The adoption of a risk stratification and case management approach has resulted in notable advancements in enhancing early patient retention on antiretroviral therapy (ART). Before implementing this strategy, our program experienced a considerable number of treatment dropouts within the initial six months of ART. However, we now observe a substantial decrease in the occurrence of patients discontinuing care during the early treatment period. The case management approach provides personalized care by acknowledging and addressing the unique challenges faced by each patient in collaboration with them. EGPAF has successfully applied this approach to other client groups, including children with high viral loads, yielding comparable positive outcomes." — Shalom Dunga, Senior Technical Advisor, EGPAF Malawi

Results

A total of 1,466 participants were included. For the pre-intervention phase, 491 participants were included, 60% of whom were female and 40% of whom were male. For the post-intervention phase, 970 participants were included; 63% were female and 37% male.

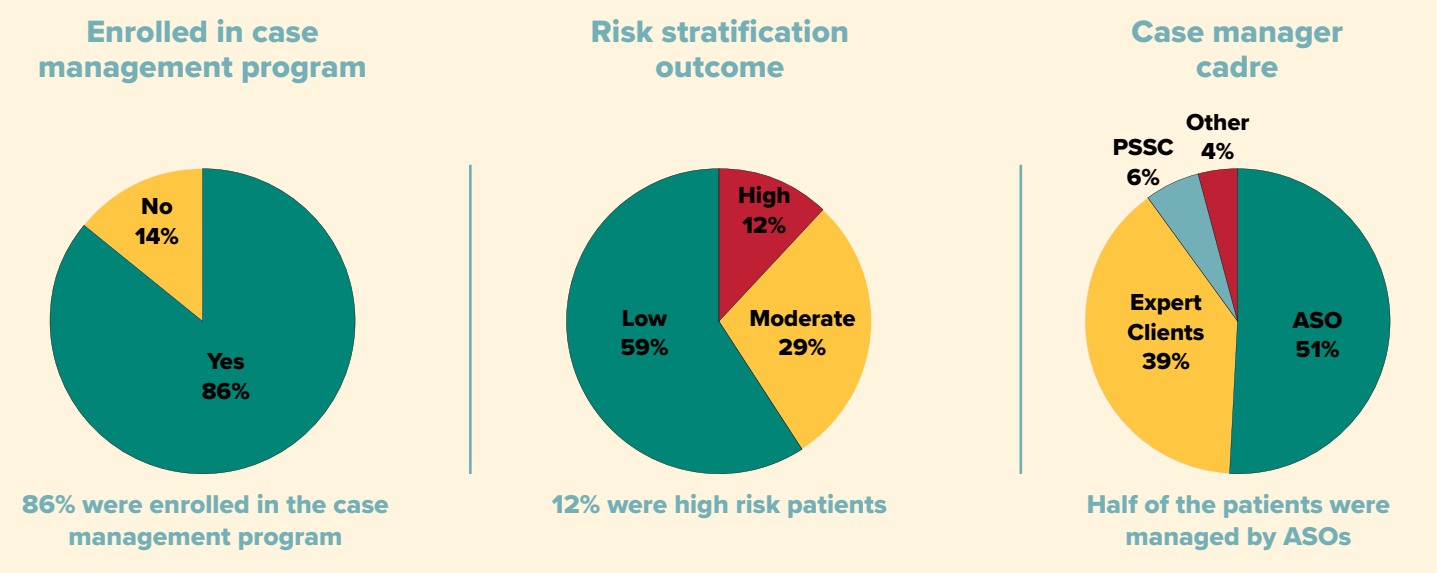

Figure 4: Enrollment into the case management intervention

Key Outcomes

- Of the 970 participants in the post-intervention phase, 837 (86%) participants were enrolled into the case management intervention, and 133 (14%) chose not to enroll.
- Among those enrolled, 520 (62.1%) were female, 298 (35.6%) were aged 25-34 years, 793 (94.9%) were at Stage 1/2 of the WHO Clinical Staging, 497 (59.4%) were classified as low risk, and Adherence Support Officers managed 429 (51.3%) clients.
- Clients in the post-intervention period were less likely to drop out of care over 12 months than those in the pre-intervention period (HR: 0.74, 95% CI 0.62-0.90, p-value 0.002).
- Overall, improvements in retention outcomes were observed among the post-intervention group compared to the pre-intervention group at both six and 12 months.
- Clients in the post-intervention group who did not enroll in the program were nearly three times more likely to drop out of care over 12 months than those who enrolled (HR: 2.98, 95%CI 2.25-3.93, p-value <0.001)
- Females in the post-intervention group were more likely to drop out of care over 12 months than males (HR: 1.33, 95%CI 1.02-1.72, p-value 0.04)
- Adolescents and young adults exhibited a higher likelihood of discontinuing care within the first year compared to older age groups (adjusted Hazard Ratio 1.68, 95% CI 1.09-2.57).

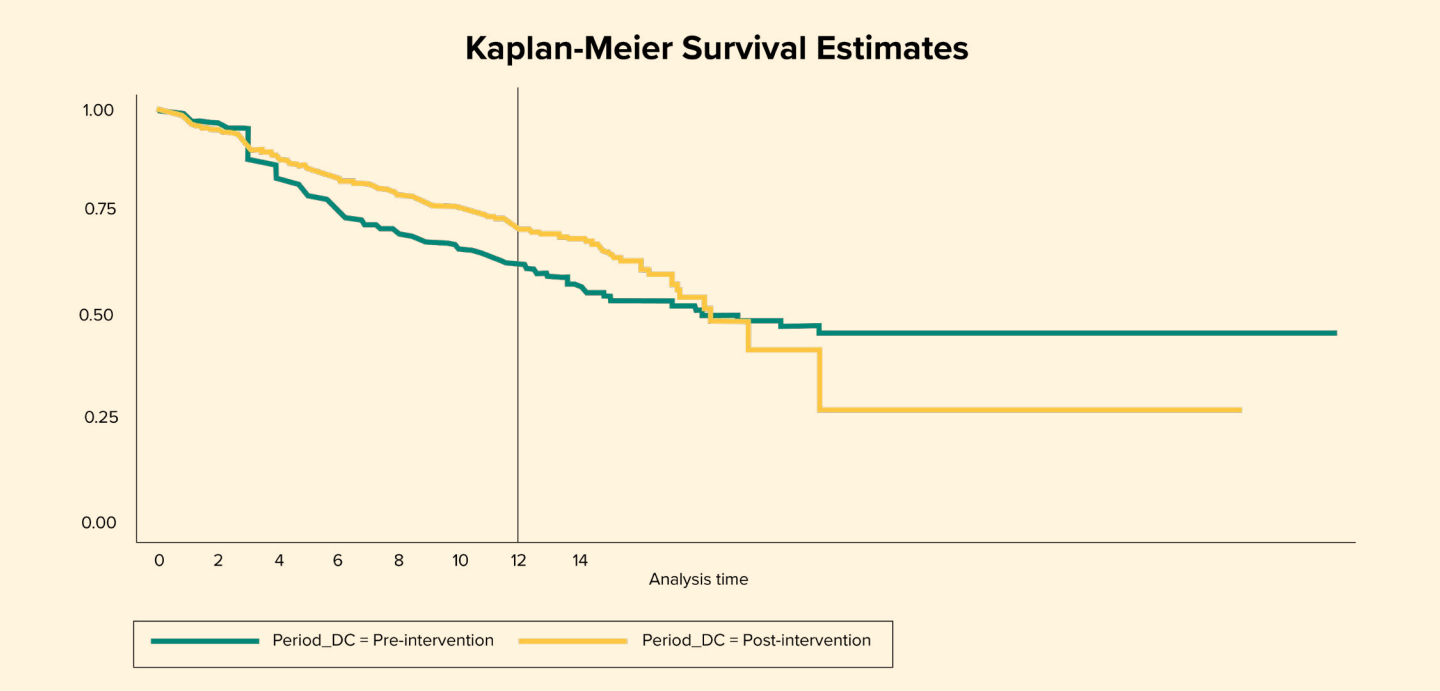

Figure 5: Retention among newly-initiated ART patients in the pre-intervention period compared to those in the post-intervention group over one year (HR: 0.74, 95%CI 0.62-0.90, p-value 0.002)

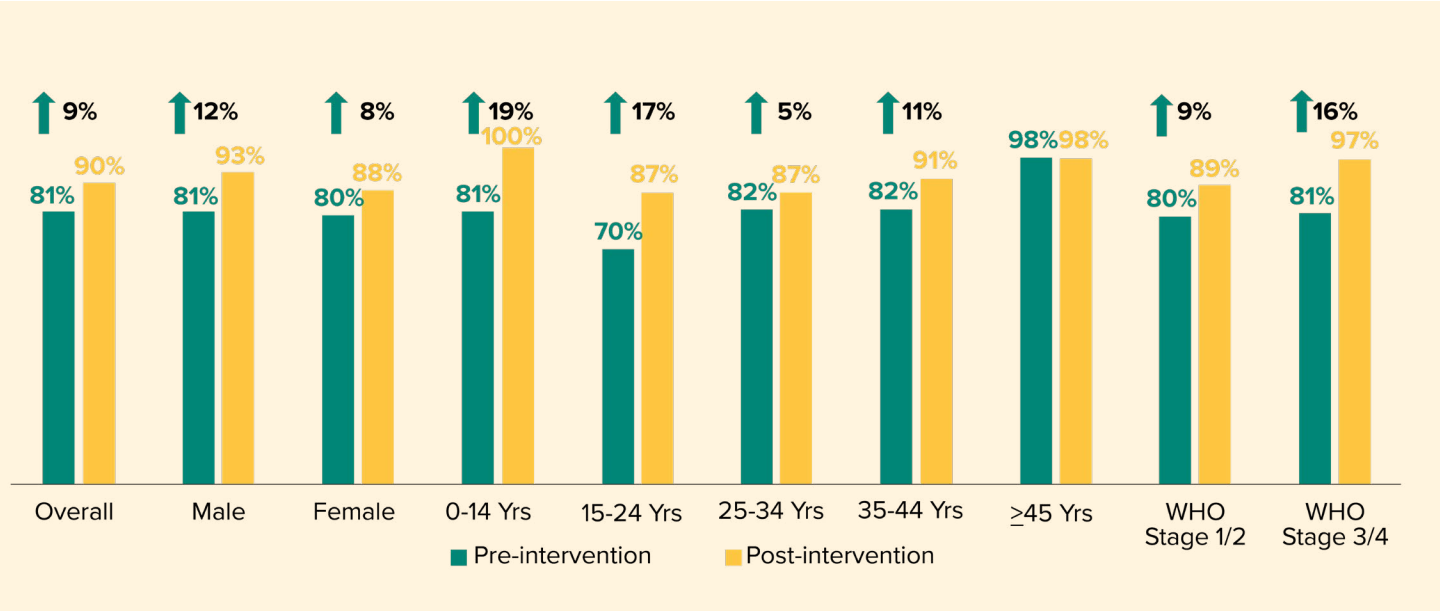

Figure 6: Retention of HIV clients in treatment six months post-initiation of ART (pre and post case management intervention)

Lessons Learned

Key lessons from the evaluation of the risk stratification and case management approach:

- The intervention was pivotal in improving overall retention outcomes—clients in the post-intervention period were less likely to drop out of care over 12 months than those in the pre-intervention period.
- Health workers, including those within lower cadres and expert clients, can effectively implement case management programs when sufficient training and supervision is provided.

- Non-enrollment in the case management program was identified as a critical factor that may correspond with dropping out of HIV care and treatment among clients newly-initiated into ART.
- A key source of concern was adolescents and young adults in the post-intervention group being more likely to drop out of care compared to older clients.

Future Directions

Key areas for future consideration:

- Addressing core issues underlying non-enrollment into case management interventions is required for greater program effectiveness.
- There is a need to develop and implement context-specific and tailored interventions that address the diverse needs and expectations of adolescents and young adults. Furthermore, mixed-methods studies exploring the reasons for increased risk of attrition or LTFU among adolescents and young adults newly-initiated into ART is needed.
- Further studies are required to validate the risk stratification tool and evaluate the cost-effectiveness of the case management program in view of scaling up the intervention.

Photo: Eric Bond/EGPAF, 2022

References

1. UNAIDS. Understanding Fast-Track: Accelerating Action to End the AIDS Epidemic by 2030 [Internet]. 2014. Available from: https://www.unaids.org/sites/default/files/media_asset/201506_JC2743_Understanding_FastTrack_en.pdf

2. Stricker SM, Fox KA, Baggaley R, Negussie E, de Pee S, Grede N, et al. Retention in Care and Adherence to ART are Critical Elements of HIV Care Interventions. AIDS Behav. 2014;18(5):465–75.

3. Kang SA, Cardona C. Interventions that can improve the retention in care among patients with HIV: A review. Am J Hosp Med. 2022;6(3). Available from: https://medicine.missouri.edu/sites/default/files/ajhm/Interventions_improve_retention_Review.pdf

4. Nimwesiga C, Taremwa IM, Nakanjako D, Nasuuna E. Factors Associated with Retention in HIV Care Among HIV-Positive Adolescents in Public Antiretroviral Therapy Clinics in Ibanda District, Rural South Western Uganda. HIVAIDS Auckl NZ. 2023;15:71–81.

5. Tweya H, Feldacker C, Estill J, Jahn A, Ng'ambi W, Ben-Smith A, et al. Are They Really Lost? "True" Status and Reasons for Treatment Discontinuation among HIV Infected Patients on Antiretroviral Therapy Considered Lost to Follow Up in Urban Malawi. PLOS ONE. 2013;8(9):e75761.

6. Bulsara SM, Wainberg ML, Newton-John TRO. Predictors of Adult Retention in HIV Care: A Systematic Review. AIDS Behav. 2018;22(3):752–64.

7. Makurumidze R, Mutasa-Apollo T, Decroo T, Choto RC, Takarinda KC, Dzangare J, et al. Retention and predictors of attrition among patients who started antiretroviral therapy in Zimbabwe's national antiretroviral therapy programme between 2012 and 2015. PLOS ONE. 2020;15(1):e0222309.

8. Clouse K, Mongwenyana C, Musina M, Bokaba D, Long L, Maskew M, et al. Acceptability and feasibility of a financial incentive intervention to improve retention in HIV care among pregnant women in Johannesburg, South Africa. AIDS Care. 2018;30(4):453–60.

9. Casale M, Carlqvist A, Cluver L. Recent Interventions to Improve Retention in HIV Care and Adherence to Antiretroviral Treatment Among Adolescents and Youth: A Systematic Review. AIDS Patient Care STDs. 2019;33(6):237–52.

10. Ministry of Health and the National AIDS Commission. MALAWI POPULATION-BASED HIV IMPACT ASSESSMENT (MPHIA 2020-2021). 2022. Available from: https://phia.icap.columbia.edu/wp-content/uploads/2022/03/110322_MPHIA_Summary-sheet-English.pdf

11. Adams JA, Whiteman K, McGraw S. Reducing Missed Appointments for Patients With HIV: An Evidence-Based Approach. J Nurs Care Qual. 2020;35(2):165–70.

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