

15th International Conference on  
**HIV TREATMENT AND  
PREVENTION ADHERENCE**

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# **Microfinance Participation is Associated with Retention in HIV Care among People Living with HIV in Western Kenya**

# Presentation Outline



- Background
- Study Design and Methods
- Results
  - Association between participation in group microfinance and HIV treatment outcomes
  - Key Findings & Implications
- Future Directions



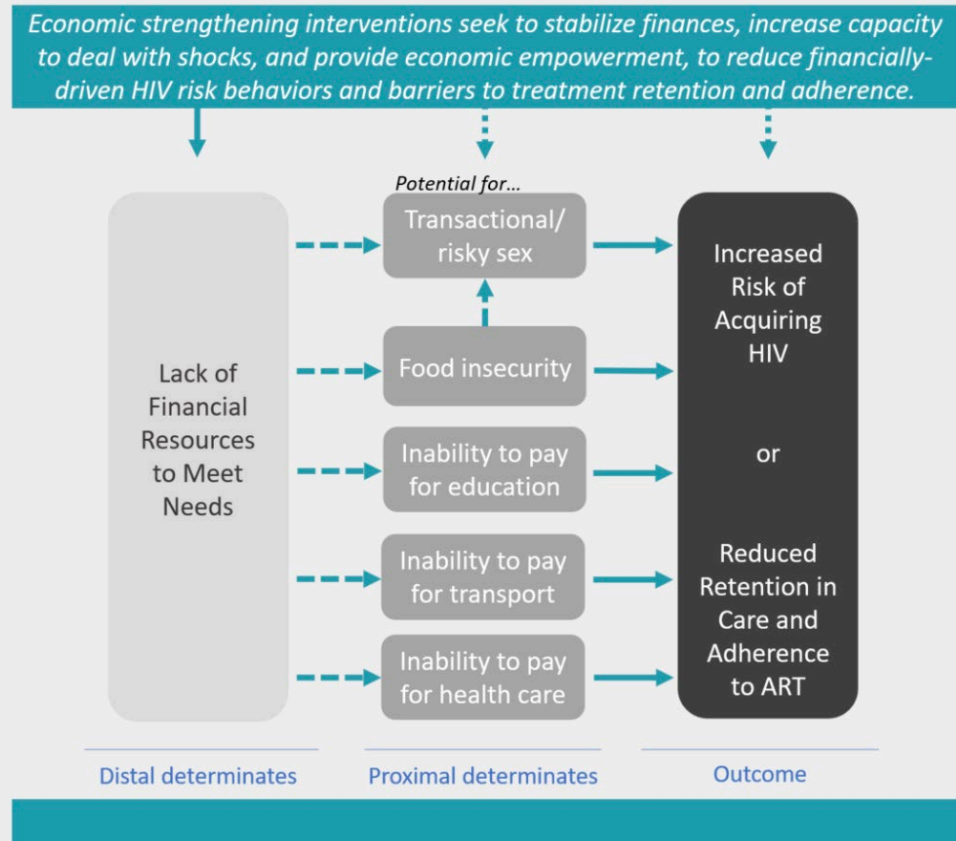
# Background

- Economic factors influence HIV treatment outcomes at all stages of the HIV care continuum.
- Economically disadvantaged People Living with HIV (PLHIV) are more vulnerable to disease progression due to greater burden in economic barriers to engaging in HIV care.

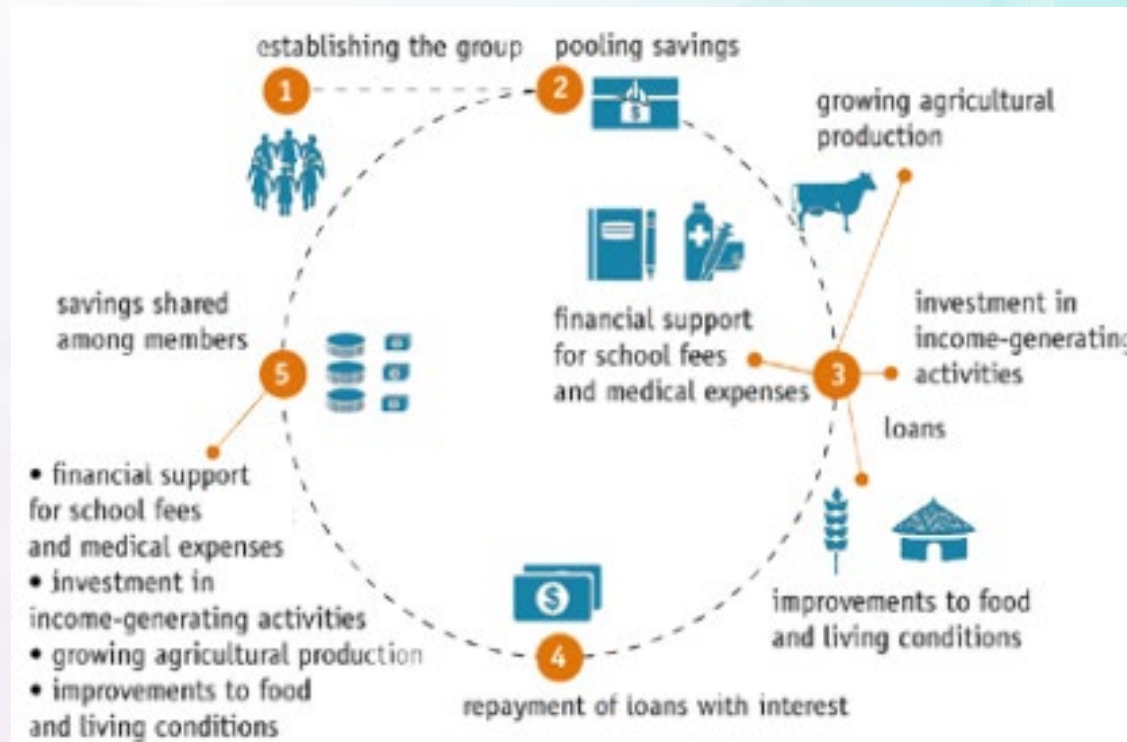


| Category                                | Specific barrier  |
|---|---|
| <b>Individual-level barriers</b>        | <ul style="list-style-type: none"><li>★ Lack of money<ul style="list-style-type: none"><li>Disclosure difficulties</li><li>Denial of HIV status and chronicity</li><li>Negative side effect of drugs</li><li>Use of alternative care</li></ul></li><li>★ Lack of food</li></ul>   |
| <b>Broader community-level barriers</b> | <ul style="list-style-type: none"><li>Stigma</li><li>Social prompting for alternative care</li><li>Bad weather</li><li>★ Poor means of transport</li><li>★ Poverty</li></ul>  |
| <b>Health system barriers</b>           | <ul style="list-style-type: none"><li>Delays in service delivery</li><li>★ Long distance to the conventional HIV Care facility<ul style="list-style-type: none"><li>Non-availability of some drugs</li></ul></li><li>★ Limited resources and personnel at health facilities<ul style="list-style-type: none"><li>Unprofessional providers</li></ul></li></ul> |

# Economic determinants of engagement in HIV care



# Group-based microfinance as a mechanism for social support and stigma reduction for PLHIV



**How microfinance groups operate in the community**

*Figure adapted from CARE International, July 2017*



# Study Objective



- To characterize the relationship between participation in group-based microfinance and retention in HIV care and mortality among individuals enrolled in an HIV care program in western Kenya

***Hypothesis:*** Patients who participate in group-based microfinance in the community will be more engaged in HIV care and have reduced mortality compared to patients who do not participate in microfinance.



# METHODS

# Study Setting

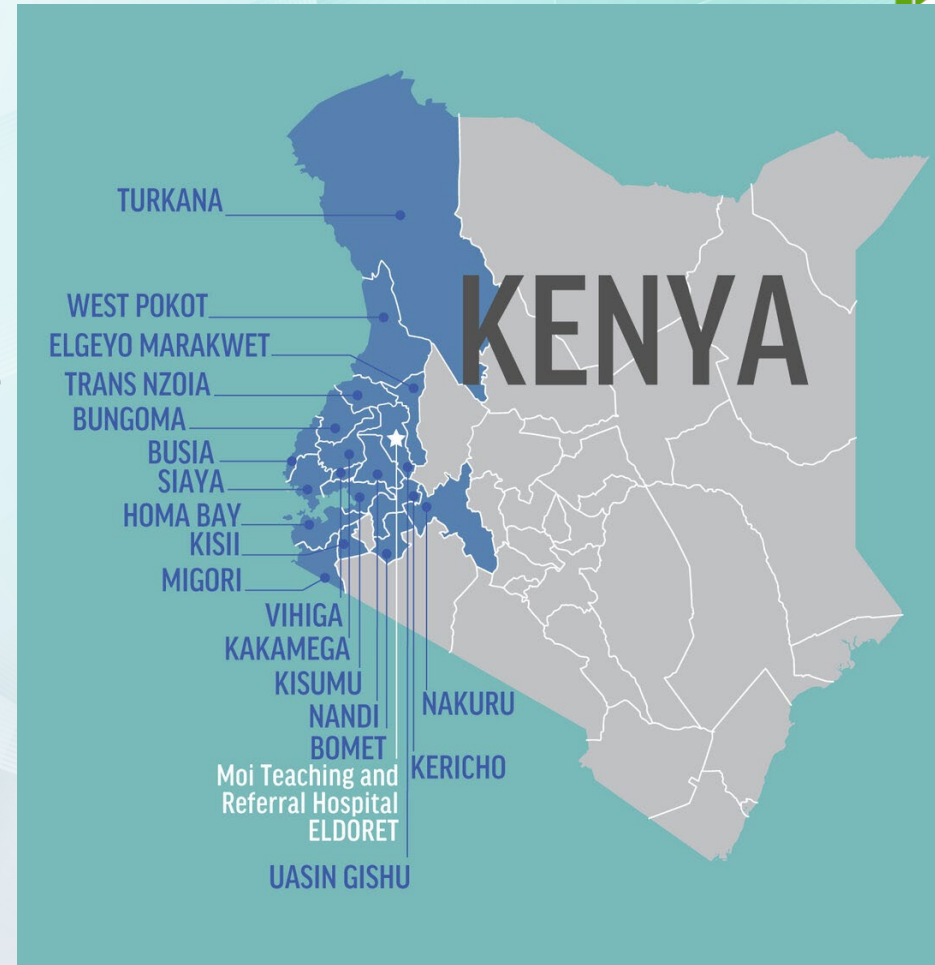


The **Academic Model Providing Access to Healthcare (AMPATH)** is a partnership between Moi University, Moi Teaching and Referral Hospital and a consortium of North-American universities whose mission is to deliver care, train medical professionals, and advance research beyond clinical care to create opportunities for education, employment, and financial support.



# Study Setting

- AMPATH provides care to over 165,000 PLHIV across 800 clinical sites.
- AMPATH's Group Integrated Savings for Empowerment (GISE) program follows the client-driven model of Village-Level Savings and Loan Associations.
- Members of community-led GISE groups:
  - Mobilize and manage their own savings,
  - Provide interest-bearing loans, and
  - Contribute to an emergency social fund.



# Preliminary findings



- 1787 MF participants who were alive and active in MF in 2018
- Matched to 5379 controls who were alive and not in MF in 2018
- Propensity score matching based on sex, age at enrollment, year of enrollment and clinic site

As of Feb 2019:

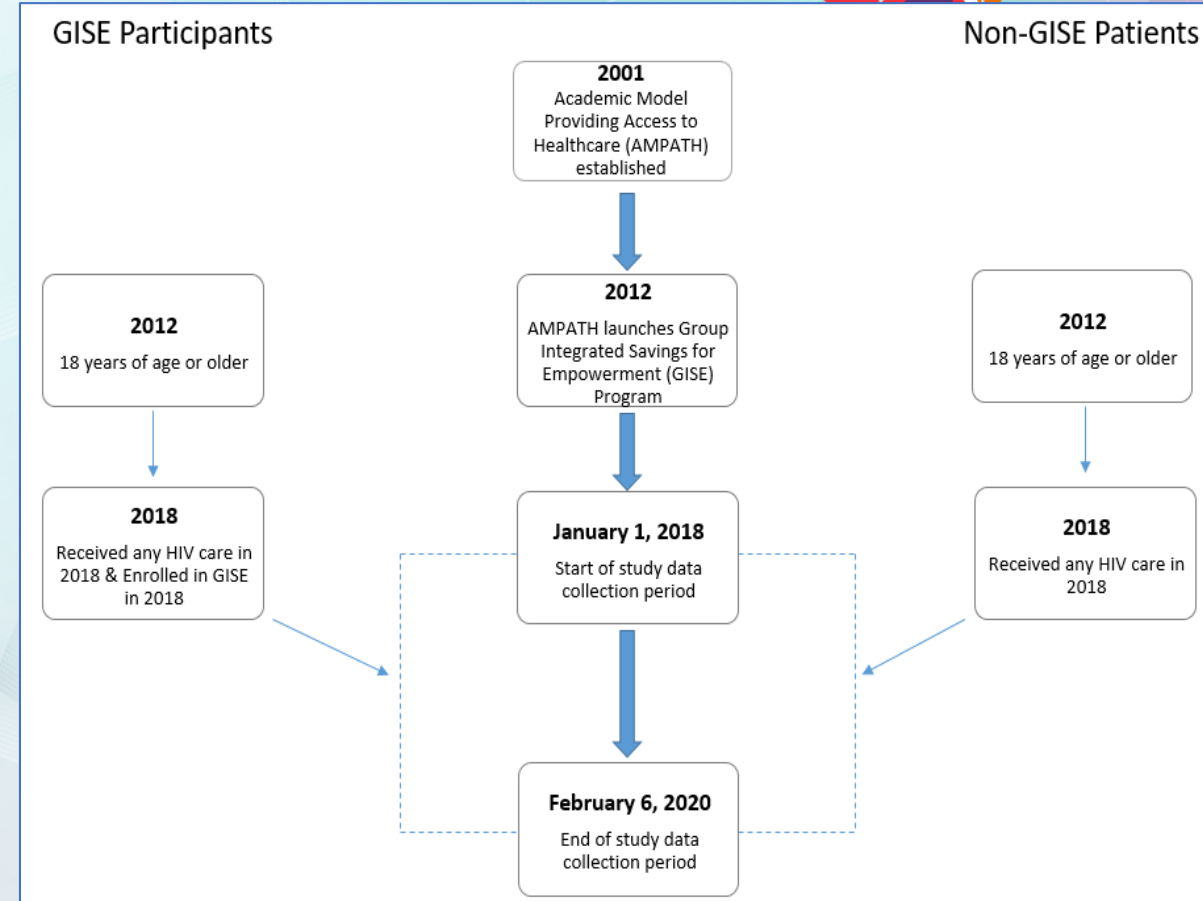
- ART initiation
  - 94% of those in MF vs. 74% of controls
  - Adjusted\* OR = 4.35, 95% CI: 3.45-5.48)
- Retention (visit w/in 180 days)
  - 66% MF were retained vs. 35% of controls
  - Adjusted\* OR = 3.28 (95% CI: 2.89-3.72)

\* Adjusted for matching variables and baseline travel time to clinic, educational attainment, household SES, and WHO stage

# Sampling Refinement



- Patients enrolled in AMPATH-supported HIV care
- Inclusion Criteria (non-MG patients):
  - 18 years of age or older in 2012
  - Received HIV care in 2018
- Inclusion Criteria (MF patients):
  - 18 years of age or older in 2012
  - Received HIV care in 2018
  - Enrolled in MF as of 2018
- MF participants matched using propensity score nearest neighbor methods to control patients on: age, sex, geographic location of initial clinic visit, and year of enrollment in HIV care
- Data prospectively abstracted from AMPATH medical records (AMRS) from 2018-2020





# Primary Outcomes



## **Retention in HIV care at 24 months**

Patients were considered to be retained in care if they attended  $\geq 1$  clinical HIV care visit(s) within the 6 months preceding the end of the follow up period on February 6, 2020, and not retained in care otherwise.

## **Death**

Death was determined from medical records data in AMRS.

# Analytic Approach



- Differences between MF and non-MF participants were assessed with:
  - Pearson's chi square tests (categorical variables)
  - Analysis of variance tests (continuous variables)
- Individual logistic regression analysis was conducted for each of the outcomes
  - Adjustment variables included: age, sex, initial clinic visit location, enrollment year, educational status, availability of electricity and water in the home, travel time to the clinic, WHO disease stage



# RESULTS



# Sociodemographic characteristics



- Total participants: 3609 (1203 in MF; 2406 not in MF)
- 78% female
- Median age: 37 years (interquartile range: 31-45)
- 90% had ever attended school
- 15% had running water and electricity in their homes

## Sample characteristics by group



- No differences between the MF and control groups by sex, age, year of enrollment, clinic geography, educational attainment and WHO stage at baseline
- GISE participants were less likely than controls to report traveling >2 hours to get to their clinic (8.3% vs. 11%,  $p=0.04$ ), more likely to report electricity and running water in the home (17% vs. 11%,  $p<0.001$ ), and a slightly higher average number of people in the household (5.5 vs. 5,  $p<0.001$ ).

# HIV treatment outcomes by group



|   | MF<br>(N = 1203) | Control<br>(N = 2406) | p-value |
|---|------------------|-----------------------|---------|
| Initiated ART (%)                           | 99.9             | 99.7                  | 0.21    |
| Number of years on ART, mean (SD)           | 10.7 (2.7)       | 10.7 (2.9)            | 0.92    |
| Years in HIV care, mean (SD)                | 11.6 (2.4)       | 11.6 (2.4)            | 0.71    |
| Months since last HIV care visit, mean (SD) | 2.7 (4.2)        | 3.2 (5)               | 0.003   |
| Retained in care @ 24 months                | 92               | 89                    | 0.003   |
| Death, n (%)                                | 12, 1%           | 45, 2%                | 0.05    |



# Main findings



|                         | Retention in Care                               |   | Death  |   |
|-------------------------|---|---|--|---|
|                         | Unadjusted<br>Odds Ratio<br>(95% CI)<br>N= 3609 | Adjusted*<br>Odds Ratio<br>(95% CI)<br>N=3339 | Unadjusted<br>Odds Ratio<br>(95% CI)<br>N=3609 | Adjusted*<br>Odds Ratio<br>(95% CI)<br>N=3339 |
| <b>MF participation</b> | 1.44 (1.13 – 1.85)                              | 1.31 (1.01 – 1.71)                            | 0.53 (0.27 – 0.97)                             | 0.57 (0.28 – 1.09)                            |

\* Adjusted for matching variables, years in care and baseline travel time to clinic, educational attainment, household SES, and WHO stage

# Limitations



- Study design does not account for unmeasured confounding that would bias the estimate of MF participation; lack of randomization
- Under-ascertainment of death
- Dependent on clinical data
- Generalizability concerns

# Key Findings and Implications



- Taken together, the prospective findings confirm our retrospective analysis that suggests MF participation improves retention in HIV care.
- Interventions, such as MF, that can address the complex socioeconomic drivers of vulnerability among PLHIV may help close the gap in achieving the UNAIDS 95-95-95 target by 2030
  - Growing poverty and inequality in SSA
  - COVID-19 pandemic and disruptions
- Community-based models of engaging patients are increasingly important as health systems expand to achieve HIV control targets





# FUTURE DIRECTIONS

# *Harambee* Cluster Randomized Trial



***Hypothesis:*** Integration of HIV and community-based non-communicable disease (NCD) care with group-based microfinance will improve viral suppression (VS) and retention among PLHIV in Kenya via two mechanisms: improved household economic status and easier access to care.

ClinicalTrials.gov Identifier: [NCT04417127](https://clinicaltrials.gov/ct2/show/study/NCT04417127)

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# References



1. Rachlis, B., Naanyu, V., Wachira, J. et al. Identifying common barriers and facilitators to linkage and retention in chronic disease care in western Kenya. BMC Public Health 16, 741 (2016). <https://doi.org/10.1186/s12889-016-3462-6>
2. Naanyu, V. et al. "Qualitative exploration of perceived benefits of care and barriers influencing HIV care in trans Nzoia, Kenya." BMC Health Services Research 20 (2020): n. pag.
3. Swann M. Economic strengthening for HIV prevention and risk reduction: a review of the evidence. AIDS Care. 2018;30(sup3):37-84. doi:10.1080/09540121.2018.1479029
4. Nadkarni S, Genberg B, Galárraga O. Microfinance Interventions and HIV Treatment Outcomes: A Synthesizing Conceptual Framework and Systematic Review. AIDS and Behavior. 2019;23(9):2238-2252. doi:10.1007/s10461-019-02443-6
5. Liu N, Iribarren S, Ciapponi A, Pearce P. Microfinance-based interventions for health outcomes in persons of low socio-economic status. Cochrane Database of Systematic Reviews. October 2011. doi:10.1002/14651858.CD009393
6. Kingori C, Haile ZT, Ngatia P. Depression symptoms, social support and overall health among HIV-positive individuals in Kenya. Int J STD AIDS. 2015 Mar;26(3):165-72. doi: 10.1177/0956462414531933. Epub 2014 Apr 22. PMID: 24759561.
7. Allen H. Village Savings and Loans Associations — sustainable and cost-effective rural finance. Small Enterprise Development. 2006;17(1):61-68. doi:10.3362/0957-1329.2006.009
8. Dimitrov D, Moore JR, Donnell DJ, Boily M-C. ACHIEVING 95-95-95 MAY NOT BE ENOUGH TO END THE AIDS EPIDEMIC IN SOUTH AFRICA. In: Conference on Retroviruses and Opportunistic Infections. Boston, Massachusetts; 2020:1.
9. Igulot P, Magadi MA. Socioeconomic Status and Vulnerability to HIV Infection in Uganda: Evidence from Multilevel Modelling of AIDS Indicator Survey Data. AIDS Research and Treatment. 2018. doi:10.1155/2018/7812146
10. Harries AD, Suthar AB, Takarinda KC, Tweya H, Kyaw NTT, Tayler-Smith K, Zachariah R. Ending the HIV/AIDS epidemic in low- and middle-income countries by 2030: is it possible? F1000Research. 2016;5:2328. doi:10.12688/f1000research.9247.1
11. Mercer T, Gardner A, Andama B, Chesoli C, Christoffersen-Deb A, Dick J, Einterz R, Gray N, Kimaiyo S, Kamano J, Maritim B, Morehead K, Pastakia S, Ruhl L, Songok J, Laktabai J. Leveraging the power of partnerships: Spreading the vision for a population health care delivery model in western Kenya. Globalization and Health. 2018. doi:10.1186/s12992-018-0366-5
12. Namey E. (2018) The state of the evidence for household economic strengthening approaches for HIV outcomes. FHI360.
13. CARE International, July 2017: [https://www.carefrance.org/ressources/themas/1/4154f26-6402-Rapport\\_final\\_web\\_EN.pdf](https://www.carefrance.org/ressources/themas/1/4154f26-6402-Rapport_final_web_EN.pdf)