



Title: Retention and access to viral load testing among key populations living with HIV in Mali

Authors: Almahdi A¹, Dembele S¹, Keita M², Sidibe F¹, Tall M³, Coulibaly K³, Traore S², Bore D⁴,

Affiliations: SOUTOURA-Bamako,Mali¹, CSLS/ MoH Mali², FHI360-Bamako-Mali³, USAID Mali⁴,

ABSTRACT:

Background:

In Mali, USAID and PEPFAR support the EpiC project to provide HIV prevention and treatment services to key populations. Retaining men who have sex with men in the continuum of HIV services is a major concern for the programs. SOUTOURA, with technical assistance from FHI360, is implementing peer navigation and case management approaches to improve ART adherence and viral load suppression rates among MSM.

Method:

SOUTOURA provides the continuum of care for MSM through three community clinics. Community clinic staff trained in peer navigation and case management approaches provide support to Key population living with HIV through therapeutic education sessions, adherence assistance and self-support groups with a special focus on unstable clients. Standard operating procedures for monitoring ART adherence, retention, viral load testing, and achieving and maintaining suppression have been implemented. Aggregate retention and viral load data report is generated from KOLOCHI (DHIS2 e-tracker) disaggregated by population type and by age from October 2020 to September 2021.

Result:

During this period, the community clinics followed 400 MSM on ART, of which 33% (131/400) were young MSM (under 25 years) and 67% (269/400) were older MSM (25 years and older). The retention rate was 90% (360/400) between 10/2020 - 09/2021. The retention rate was higher among young MSM at 95% than among MSM over 25 at 87% ($p = 0.018$). 38% (137/400) of MSM were found eligible for viral load testing, of which 84% (115/137) were tested for viral load. 77% (89/115) of MSM received their viral load result, of which 76 (85%) had a suppressed viral load result. The suppression rate was slightly higher in older MSM 98% than in younger MSM 75%.

Conclusion:

Although the implementation of a structured peer navigation and case management approach has improved retention rates, viral load suppression rates remain low among young MSM. MSM programs need to integrate the generational differences between younger and older MSM into their interventions in order to tailor service delivery to the needs of different groups:

KEY WORDS: retention, viral load, KPLHIV (MSM), Mali.

I. Introduction:

The 2019 report from the United Nations HIV/AIDS program (UNAIDS) indicates a halving of deaths from HIV infection between 2004 and 2018, with 770,000 deaths recorded in 2018 1.

The significant decrease in deaths compared to previous years is nevertheless a major and encouraging indicator of the success of HIV prevention and treatment strategies, primarily focused on antiretroviral therapy (ART).

By the end of December 2021, 75% [66–85%] of all people living with HIV were accessing treatment.

28.7 million people had access to antiretroviral treatment, an increase of 7.8 million compared to 2010 (UNAIDS report 2021)

Despite these the decrease in the HIV related deaths, the challenges for the optimal control remain significant. Indeed, the number of new infections, estimated at 1.5 million in 2021, illustrates the sustained momentum of the pandemic and the limitations of current prevention strategies.

Advances in the development of antiretrovirals (ARV) over the past decades have made available several classes of ARV molecules, targeting different stages of the virus replication cycle, ranging from entry processes into target cells to stages of maturation of virions². These advances currently make available molecules that are more potent, with reduced toxicity and higher genetic barrier to viral resistance, thereby increasing the life expectancy of persons on ARV close to that observed in the general population^{3,4}. However, current therapeutic strategies do not allow the eradication of HIV in an individual and there by necessitating life long treatment. The development and implementation of coherent, effective and sustainable strategies for access to ARV is essential to the success of therapeutic management. In the context of countries in the global South, the management of the infection is characterized by two essential factors, the large number of people eligible for treatment and lack of resources, Nearly 26 million if the "test & treat" recommendation is applied. As a result, the definition of care strategies in this context is not always guided by known "gold standard" references, but very often by pragmatism depending on the resources available. The so-called "public health" strategy recommended by the World Health Organization (WHO) for the management of HIV infection in the South stems from these practical constraints⁵.

This simplified and pragmatic strategy has made it possible to accelerate and significantly extend access to ARV in the countries of the South, in particular by offering standard lines of first and second-line ARV, and by addressing the monitoring constraints. before initiation of ARV⁶. The benefits of increasing ART coverage in countries with limited resources are undeniable. The STRATALL trial conducted in Cameroon to assess the effectiveness of the simplified monitoring approach compared to the gold standard in resource limited settings has shown its utility as well as limitations. The high rates of first-line virological failures described in care programs in the South⁸⁻¹⁰ quickly highlighted the limits of the strategy, in particular the lack of virological monitoring even though recommended since 2013¹¹. Despite this recommendation, access and routine use of the Viral load (VL) remain suboptimal in the majority of the countries of the South, even almost non-existent in certain regions, in particular in landlocked areas and rural areas. The cost, stock-outs of inputs, non-prescription and other operational problems are generally associated with lack of access ¹².

In Mali, the prevalence of HIV is 1.1% ¹³ in the general population. However, it remains concentrated in certain vulnerable groups such as men who have sex with other men (MSM) with a prevalence of 12.7%¹⁴, i.e., around 13 times that of the general population.

Access to prevention services HIV testing ARV treatment and biological monitoring of MSM living with HIV is a real challenge in a country like Mali where these populations are highly stigmatized and subject to violence. It is in this context that the non-governmental organization (NGO) SOUTOURA, with the support of technical and financial partners, has adopted various models of differentiated services for screening, treatment and biological monitoring for MSM through these community sexual health clinics positioned for this purpose. The main objective of this study was to assess the quality of retention on ARV treatment and access to community-based viral load services for MSM living with HIV through peer navigation and case management.

II. Methods:

1. Study design and setting:

The study was prospective and conducted in Bamako in Mali.

SOUTOURA implements peer navigation, positive case management and community viral load services to improve access to these services for MSM.

Peer navigation is an approach based on the use of non-professional peer educators who are MSM or of MSM living or not with HIV but having the necessary skills to help their peers to adhere to ARV treatment. They may or may not be HIV positive

Focusing on retention on ARV treatment and community-level viral load suppression through peer navigation and case management of the cohort of MSM living with HIV supervised by the SOUTOURA non-governmental organization in Mali. SOUTOURA provides the continuum of care for MSM through three community clinics. Community clinic staff comprise of a doctor, a nurse and 20 peer navigators trained in peer navigation and case management approaches. The clinic staff provide support to MSM with HIV through therapeutic education sessions, adherence counselling and self-reliance groups with a particular focus on unstable clients.

Trained peer navigators ensure community dispensation of ART through home visits at the community clinic and/or at MSM hot spots. Each peer navigator monitors 20 PLHIV and ensures their adherence with ART treatment for up to 6 months.

Through the differentiated approaches to HIV testing, peer navigators trained in testing use rapid diagnostic tests for HIV to test all eligible MSM. If the test result is positive, peer navigators ensure that the test result is confirmed with a confirmatory test and put the person on ARV within seven days of diagnosis according to the test and treat strategy.

After 6 months of treatment, the peer navigators ensure that the MSM under treatment have blood sample taken on DBS for viral load testing to determine the effectiveness ART among MSM with HIV.

A case management meeting is held whenever a PLVIH has an unsuppressed viral load. This meeting involves the peer navigator and the attending physician

During these meetings, the therapeutic education of the patient is reinforced for the adherence to the ARV treatment. The education is centered on the importance of the ARV treatment to achieve viral load suppression and how viral load

suppression prevents HIV transmission. Furthermore, the risk of HIV resistance to ARV in case of poor adherence is emphasized.

After these adherence support meetings, a viral load test is offered after three months.

Peer navigators also use an online platform called ORA (Online Reservation Application) which allows PLHIV to schedule an appointment for ART treatment or viral load testing.

Standard operating procedures for monitoring ART adherence, retention, viral load testing, and achieving and maintaining suppression have been implemented.

Support requires the intervention of the peer navigator and the clinician to help people living with HIV who have problems with adherence. Community viral load measurement adapts perfectly to the needs of the population who do not do not attend traditional health centers. They allow a satisfactory biological follow-up of MSM PLHIV.

2. Data collection and study variables:

For the current study, aggregate retention and viral load data were drawn from reports generated by KOLOCHI16 and were disaggregated by population type and age from October 2020 to September 2021. The study variables were the number and percentage of PLHIV: on ART, having stopped their treatment, dead, having been transferred; been eligible for VL, VL samples collected, results received and the rate of viral suppression.

3. Data analysis

Quantitative variables will be described in terms of numbers and percentages.

The analysis of our data was done with the KOLOCHI16 health information system which contains the individual data of all patients followed by the NGO SOUTOURA. We used descriptive statistics to determine the proportion of MSMs with HIV who were on ART, stopped their treatment, died, were transferred; were eligible for VL, had VL samples collected, received VL results and achieved viral suppression. The viral load is considered to be suppressed when the number of virus copies is higher than 1000 per milliliter of blood according to WHO17 recommendations.

III. Ethics approval and consent to participate:

The study guaranteed the confidentiality, anonymity and rights of the participants;

The study data were obtained from the EpiC program activity report supported by USAID through FHI360 and for which the NGO SOUTOURA is a national implementing partner. USAID and FHI360 Mali approved this study.

Regarding the name of the ethics committee and the identification number, we used data from the national HIV control program in Mali called PLNS of the Ministry of Health through a project funded by USAID.

The project has been approved by the Government of Mali through the Ministry of Health MoH

The references of project are:

Prime Agreement: 102533

FHI360 PO #: COP: 1297.00558 & KPIF1297.0485

CFDA# Name: 98.001; USAID Foreign Assistance for programs overseas.

IV. Results:

During this period, the community clinics followed 400 MSM on ART, of which 33% (131/400) were young MSM (under 25 years of age) and 67% (269/400) were older MSM (25 years and older).

The retention rate was 90% (360/400); The retention rate was higher among young MSM (95%) than among MSM over 25 years old (87%); 38% (137/400) of MSM were deemed eligible for viral load testing, of which 84% (115/137) were tested for viral load.

77% (89/115) of MSM received their viral load result, of which 76 (85%) had a suppressed viral load result.

The suppression rate was higher in the older MSM 98% than in the younger MSM 75%.

Table 1: Monitoring of ARV and viral load among HIV-positive MSM from the NGO SOUTOURA project in Mali using peer navigation and case management (Oct 2020 to Sept 2021)

	<25 year		≥25 year		Total		p-value
	Number	%	Number	%	Number	%	
Number HIV+	131		269		400		
On ART	125	95.4%	235	87.4%	360	90.0%	0,018
Treatment Interruption (LTFU)	2	1.5%	17	6.3%	19	4.8%	0,382
Died	0	0.0%	4	1.5%	4	1.0%	0,431
Stopped Treatment	4	3.1%	10	3.7%	14	3.5%	0,438
Transferred	0	0.0%	3	1.1%	3	0.8%	0,446
VL Eligible	55	44.0%	82	34.9%	137	38.1%	0,395
VL samples collected	49	89.1%	66	80.5%	115	83.9%	0,123
Results received	47	95.9%	42	63.6%	89	77.4%	0,667
Viral suppression	35	74.5%	41	97.6%	76	85.4%	0,941

Table 2: Monitoring of ARV and viral load among HIV-positive MSM from the NGO SOUTOURA project without peer navigation and case management (Oct 2019 to Sept 2020)

	<25 year		≥25 year		Total	
	Number	%	Number	%	Number	%
Number HIV+	75		89		164	
On ART	40	53%	63	70%	103	62,80%

Treatment Interruption (LTFU)	5	12,50%	33	52%	38	36,80%
Died	1	2,50%	1	1,50%	2	1,90%
Stopped Treatment	4	10%	12	19,04%	16	15,50%
Transferred	0	0%	0	0%	0	0%
VL Eligible	30	75%	23	36,50%	53	51,40%
VL samples collected	10	33%	5	21,70%	15	28,30%
Results received	5	50%	5	100%	10	66,66%
Viral suppression	2	40%	1	20%	3	30%

V. Discussions:

The primary objective of this study was to assess the quality of ARV treatment retention and access to community-based viral load services for MSM living with HIV through peer navigation and case management.

During the implementation period, these strategies resulted in 90% of HIV-positive MSM being placed on ARV treatment, compared to 62.8% placed on treatment before October 2020.

The programs (USAID) using pair navigation and case management have a better retention rate on ARV (90%) of HIV-positive MSM than the Global Fund-funded program in Mali with an overall retention rate of 87%.

Retention rates were significantly higher among younger MSM than older MSM (95% versus 87%). This is due to the fact that younger MSM were more accessible and adherent to treatment more quickly than older MSM. This is explained by the stigmatizing context of the country which makes older MSM more hidden because of their bisexuality, making them difficult to access.

On the other hand, older MSM take their ARV treatment regularly than younger MSM, which explains why viral load suppression is higher among older MSM.

We also observed that community-based viral load collection by peer navigators through dry blood sampling achieved 84% viral load collection, in contrast to routine strategies which achieved 28.30% viral load¹⁸.

Pair navigation and case management also achieved a better viral suppression rate with 85% compared to only 30% with routine strategies.

The effectiveness of these differentiated service models has been amply demonstrated for the delivery of HIV services, as indicated by a randomized clinical trial entitled Linking Inmates to Care in LA (Los Angeles) (or "LINK LA") conducted in the United States in Los Angeles in 2012 among people living with HIV incarcerated in U.S. correctional facilities.

This study showed that peer navigation improved viral suppression compared to 12 months¹⁵.

Global fund-supported HIV programs at the community level in Mali do not integrate biological monitoring of PLHIV and do not use peer navigation and case management approaches, so there is no viral load data in this program.

Peer navigation and case management approaches allow people living with HIV to remain on ARV and achieve sustained viral load suppression. This is an excellent strategy for differentiated HIV services that address the specific needs of PLHIV, especially in the context of stigma.

These approaches have been highly valued by the Malian Ministry of Health, which has integrated them into its national HIV strategic plan in an effort to control the HIV epidemic.

In terms of limitations, this study did not reveal the specific treatment needs of older MSM.

Conclusion:

Implementing the peer navigation and case management approaches allowed us to achieve significant results in terms of retention on ARV and provision of viral load services compared to other programs that do not use these approaches.

Although the implementation of a structured peer navigation and case management approach has improved retention rates, Viral load suppression rates remain low among young MSM.

MSM programs need to better integrate the generational differences between younger and older MSM into their interventions in order to better tailor service delivery to the needs of different groups

Declaration:

This study was approved by the sectoral cell for the fight against HIV, tuberculosis and viral hepatitis (CLS VIH, TB hepatitis viral), which is the national management body for HIV programs in Mali.

All MSM participants were of legal age and informed consent was obtained for participation in the study.

Conflict of interest:

No conflicts of interest

Data availability:

The datasets supporting the conclusions of this article are included within the article.

Data from the study are available in the Epic program reports with Fhi360 and the activity reports of the NGO SOUTOURA.

Infolink database; Ibadon database; KOLOCHI (e-Traker).

Funding source:

This research was conducted on the EpiC project funded by USAID through Fhi360 and implemented by the NGO SOUTOURA in Mali.

Author contributions:

AA and KM conceived the research; TM, KC, KM, BD contributed to the data analysis, AA, DS, SF wrote the manuscript.

Acknowledgements:

We would also like to thank all the authors and partner organizations involved in conducting this research as well as the individuals who participated in the study.

We also thank USAID and PEPFAR for their financial support for this study and CSLS-TBH for his coordination.

VI. Bibliographic references:

1. UNAIDS.UNAIDSDATA2019.https://www.unaids.org/sites/default/files/media_asset/2019-UNAIDS-data_enpdf. 2019.
2. De Clercq E, Li G. Approved Antiviral Drugs over the Past 50 Years. *Clin Microbiol Rev* 2016; **29**(3): 695-747.
3. Ghosn J, Taiwo B, Seedat S, Autran B, Katlama C. Hiv. *Lancet* 2018; **392**(10148): 685-97.
4. Williams BG, Lima V, Gouws E. Modelling the impact of antiretroviral therapy on the epidemic of HIV. *Curr HIV Res* 2011; **9**(6): 367-82.
5. Gilks CF, Crowley S, Ekpini R, et al. The WHO public-health approach to antiretroviral treatment against HIV in resource-limited settings. *Lancet* 2006; **368**(9534): 505-10.
6. WHO. WHO recommendations for clinical mentoring to support scale-up of HIV care, antiretroviral therapy and prevention in resource-constrained settings. https://www.who.int/hiv/pub/guidelines/clinicalmentoringpdf?ua=1_2006.
7. Laurent C, Kouanfack C, Laborde-Balen G, et al. Monitoring of HIV viral loads, CD4 cell counts, and clinical assessments versus clinical monitoring alone for antiretroviral therapy in rural district hospitals in Cameroon (Stratall ANRS 12110/ESTHER): a randomised non-inferiority trial. *Lancet Infect Dis* 2011 ; **11**(11): 825-33.
8. Liegeois F, Vella C, Eymard-Duvernay S, et al. Virological failure rates and HIV-1 drug resistance patterns in patients on first-line antiretroviral treatment in semirural and rural Gabon. *J Int AIDS Soc* 2012; **15**(2): 17985.
9. McMahon JH, Elliott JH, Bertagnolio S, Kubiak R, Jordan MR. Viral suppression after 12 months of antiretroviral therapy in low- and middle-income countries: a systematic review. *Bull World Health Organ* 2013; **91**(5): 377-85E.
10. Messou E, Chaix ML, Gabillard D, et al. Association between medication possession ratio, virologic failure and drug resistance in HIV-1-infected adults on antiretroviral therapy in Cote d'Ivoire. *J Acquir Immune Defic Syndr* 2011; **56**(4): 356-64.
11. WHO. March 2014 supplement to the 2013 consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Recommendations for a public health approach. https://apps.who.int/iris/bitstream/handle/10665/104264/9789241506830_engpdf 2014.
12. Roberts T, Cohn J, Bonner K, Hargreaves S. Scale-up of Routine Viral Load Testing in Resource-Poor Settings: Current and Future Implementation Challenges. *Clin Infect Dis* 2016; **62**(8): 1043-8.

13. EDSMV (Demographic study of the populations and health of Mali), 2018
14. IBBS (Biological and behavioral surveillance survey), 2020.
15. Effectiveness of Peer Navigation to Link Released HIV+ Jail Inmates to HIV Care (LINK LA), 2012.
16. KOLOCHI, DHIS2 e-tracker, fhi 360, Project EpiC, Bamako, Mali, 2021.
17. Amprod sahel activity report, Bamako, Mali, 2019-2020.
18. Report of the activities of the sectoral unit for the fight against HIV, tuberculosis and viral hepatitis in Mali, Bamako, Mali 2020.

