African Population and
Health Research Center

Evaluation of the Blantyre Prevention Strategy: Program design, implementation and impact

Final Report

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List of Acronyms

ADC	Area Development Committee
AIDS	Acquired Immunodeficiency Syndrome
APHRC	Africa Population and Health Research Center
ART	Antiretroviral Therapy
GF	Gates Foundation
BPS	Blantyre Prevention Strategy
CD4	Clusters of Differentiation 4
CDC	Centers for Disease Control and Prevention
CEDEP	Centre for the Development of People
CHAI	Clinton Health Access Initiative
CHAM	Christian Health Association of Malawi
CSO	Civil Society Organization
CBO	Community-Based Organizations
DDHS	Deputy Director of Health Services
DHA	Department of HIV & AIDS
DHD	Digital Health Division
DHIS-2	District Health Information Software
DHMT	District Health Management Team
DHO	District Health Office
DHSS	Director of Health and Social Services
EGPAF	Elizabeth Glaser Paediatric AIDS Foundation
FGD	Focus Group Discussion
FHS	Family Health Services
FSWs	Female Sex Workers
GOM	Government of Malawi
GU	Georgetown University
HCD	Human Centered Design
HCT	HIV Voluntary counselling and testing
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information Systems
HPO	Health Promotion Office

HSAs	Health Surveillance Assistants
HTS	HIV Testing Services
IDSR	Integrated Disease Surveillance and Response
ITS	Interrupted Time Series
JHPIEGO	Johns Hopkins Program for International Education in Gynaecology and Obstetrics
KIIs	Key Informant Interviews
LGBTQ	Lesbian, Gay, Bisexual, Transgender and Queer
MBCA	Malawi Business Coalition against HIV/AIDS
MESH	Measurement and Surveillance of HIV Epidemics Consortium
MPHIA	Malawi Population-based HIV Assessments
MSM	Men who have sex with men
NAC	National AIDS Commission
NCRSH	National Committee on Research in the Social Sciences and Humanities
NGOs	Non-Governmental Organizations
OPD	Outpatient Department
PALMS	Prevention Adaptive Learning and Management System
PEPFAR	The U.S. President's Emergency Plan for AIDS Relief
PLHIV	People Living With HIV
PrEP	Pre-Exposure Prophylaxis
PSI	Population Service International
QI	Quality Improvement
QIC	Quality Improvement Collaborative
SBCC	Social and Behavior Change Communication
SDGs	Sustainable Development Goals
SOPs	Standard Operating Procedure
STIs	Sexually Transmitted Infections
ToC	Theory of Change
UCSF	University of California, San Francisco
USAID	United States Agency for International Development
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

Executive Summary

Background and context

Malawi faces a high HIV burden and weak healthcare systems. The Blantyre Prevention Strategy (BPS), a six-year district health systems strengthening intervention, was implemented to enhance HIV prevention. Led by Georgetown University in partnership with Blantyre District Health Services, Cooper and Smith, and UCSF HealthQual, BPS aimed to improve local system capacities for HIV prevention through leadership development, health communication, quality improvement, and data-driven decision-making. The African Population and Health Research Center (APHRC) conducted an external evaluation to determine the extent to which BPS achieved its intended objective of addressing systemic vulnerabilities hindering an effective HIV prevention response.

Methodology

The evaluation used a mixed-methods approach, including desk reviews, secondary data analysis from DHIS2, and qualitative interviews with stakeholders. An interrupted time series analysis assessed the impact of BPS on HIV counselling and testing. Ethical approvals were obtained from APHRC and Malawi's research authorities.

Key findings

Capacities built though BPS interventions for an effective HIV response

Enhanced district leadership capacity: Improved leadership through training and active participation contributed to the coordination and delivery of HIV prevention programming at the district, city and community levels. Leadership involvement was demonstrated across all levels from planning to implementation.

Improved health communication to generate demand for HIV prevention services: The BPS health communication work stream aimed "to improve the capacity of health promotion in Blantyre, ensuring that the right information is given to the right people." Community-oriented platforms known as community labs were established using a Human-Centered Design approach to facilitate the gathering of insights from HIV prevention service clients and other community members. The community labs enhanced communication among the community members, health facility staff as well as district leadership, fostering collaborative health action. Based on insights gathered from community labs, HIV prevention services including HCT, condom uptake, PrEP initiation, and retention were prioritized, and uptake improved. Health communication campaigns such as '*Konda Blantyre, Konda Moyo*' [Love Blantyre, Love Life] enhanced demand for HIV services, increasing uptake.

Quality improvement in delivery of HIV services focusing on PrEP: The PrEP Quality Improvement Collaborative (QIC) engaged health workers and community ambassadors to boost initiation and retention. QIC was launched in September 2021 and primarily

focused on strengthening QI structures at district and facility levels to build capacity for implementation and leadership. Health workers engage communities through community labs to gather insights to implement their QI projects. In the community PrEP program, ambassadors play a liaison role between facilities and communities to support demand generation, service uptake, and continuation.

Structural risk reduction through strengthening the capacity of political leaders to engage in the HIV prevention response: Blantyre City councillors were trained to address structural risks and improve HIV prevention advocacy. With this training, councillors have been actively involved in HIV campaigns and formulating guidelines for sustainability, such as HIV prevention orientation for councillors and bylaws focused on HIV risk reduction.

Data driven decision making: The Prevention Adaptive Learning and Management System (PALMS) was developed in 2021 and provided real-time, user friendly HIV data to inform planning. This system is a user-centered data management approach that enables the district, city, local stakeholders, and national-level officials to access HIV and related data through a dashboard. Through adaptive learning technologies, automated real-time data analytics, and visualizations, PALMS dashboard displays current and historical trends of key HIV indicators. According to participants interviewed, PALMS enables data access by consolidating data from different data points feeding into one data pipeline for easier visualization and informed decision-making. PALMS was described by one of the district health officers as "*a one-stop shop for data where you may have different indicators and different data points from different sources, but you see through the same platform, one dashboard which can show you everything that's going on.*" (BPS consortium district partner). The availability of data from PALMS to several users at the district level was recognized as a change for the better as information was accessible to more users even from their phones. Data access has enabled real-time and user-friendly visualization and as such the district teams, coordinators, and health workers can quickly consult and take necessary action in time.

Multi-stakeholder coordination in HIV response: The BPS fostered collaboration among government, funders and implementing partners, reducing service delivery fragmentation. From this evaluation, it is evident that collaboration and coordination were achieved between the consortium partners, local leadership, and other stakeholders in influencing the design and implementation of BPS. The intervention was responding to an already known need (high burden of HIV and weak health systems), and this made buy-in among stakeholders easy and supportive. BPS established an efficient district-led platform for effective coordination of HIV prevention response by the district, city, health facilities and community level partners.

Barriers to the uptake of BPS interventions in the district's HIV response

Design challenges: Perceived complexity in BPS terminologies for interventions and concerns about sustainability of systems such as PALMS. *"BPS from an outsider's perspective sounds complicated...because nobody here understood what this thing was"* BPS consortium HIV implementing partner.

Implementation gaps: Limited training, high staff turnover within health facilities, and inconsistent coordination among stakeholders. There were also challenges with data access and data quality due to limited involvement of district stakeholders in management of the PALMS.

External disruptions: Realities beyond the project and district health leadership control, including the COVID-19 epidemic, affected project inception and implementation. In addition, cyclone Freddie and cholera epidemic may have diverted attention from HIV prevention efforts. To a great extent the COVID-19 epidemic affected the business community and plans to engage them for in-kind and financial support for the health communication aspect were curtailed.

Impact of BPS on uptake of HIV Testing and PrEP

BPS significantly increased HIV testing, sustaining an additional 533 tests per month. Similarly, with regard to PrEP uptake, screening and initiation improved, with PrEP initiation rates rising from 19.8% in early 2021 to 65.1% in early 2024. However, attributing impact to a given set of interventions within BPS or other external factors is challenging.

Opportunities for scale-up and sustainability of BPS

BPS was widely accepted, with potential for scale-up through mentorship and integration into national HIV strategies. However, long-term sustainability depends on continued funding and technical support particularly for PALMS. BPS utilised existing structures and built the capacity of district and city officials. As such, interventions such as QI are being institutionalized and applied to other health conditions. However, the sustainability of BPS could be hindered by the need for sustained external funding and technical capacity especially for the data management system (PALMS) beyond the scope of the project. *"So the BPS model in its totality, is a high-investment model. PALMS that have been developed, I don't think there is any funding to sustain it."BPS consortium implementing partner.*

Conclusion

BPS effectively strengthened district level HIV prevention by fostering collaboration, enhancing leadership, improved the aspect of data demand and use and improving service delivery. Lessons from its implementation provide valuable insights for future programming and scale-up efforts in similar settings. The evidence in this evaluation confirms that BPS was designed and implemented in Blantyre with an overarching objective of strengthening district-level systems to improve HIV prevention. Various stakeholders were involved in different roles in both its design and implementation. The evaluation results show some key findings that may have implications for future programming.

Co-creation: The design and development of the BPS program were informed by local epidemiological data and health systems structures and context. It took a collaborative approach involving the National AIDS Commission, Blantyre District Health Services, local implementing partners in the HIV response, and technical partners with overall coordination by Georgetown University. The collaboration and coordination were cascaded into the

implementation phase and contributed to stakeholder commitment, reduction in effort duplication, and resource wastage.

Collaboration: The collaboration enabled district leaders to play an active role in the intervention, and this could have contributed to its acceptability to the local leadership and the community. The use of established structures within the district's public health and governance systems, capacity building, and mentorship for the district, health facility, and community leaders further contributed to the success. Multi-stakeholder involvement and improved coordination were also crucial.

Capacitation: The BPS contributed to capacity building at the community, health system, and leadership levels. Through the community labs initiative, the community got more engaged and demanded more services, while at the health systems level, there were activities geared towards strengthening leadership, communication, and quality of service through the quality improvement initiative and data management and use in programming. The Prevention Adaptive Learning and Management System (PALMS) improved real-time data access and contributed to data-driven decision-making. Stakeholders gained a better understanding of and use of program data in ongoing prevention efforts, for example, by identifying where new risks or hotspots were emerging. The greater impact of how the capacity built will contribute to a sustainable HIV response will best be appreciated after a longer period of follow-up.

Improved service uptake: While attributing impact to a given set of interventions is challenging, the evaluation used an innovative analysis approach to link the observed changes to the intervention-interrupted time series. Early outcome indicators of HIV Counselling and Testing showed significant and sustained uptake over the intervention period. On the other hand, PrEP, which started late, is showing great promise regarding eligibility screening and initiation.

Programmatic Challenges: The BPS faced challenges in design and implementation, including the complexity of the intervention and related terminology, perceived inadequate training, high health facility staff turnover, weak coordination, limited involvement of the private sector for in-kind or financial support and data access issues - delays in clearing data as fit for sharing by the National HIV program. Perceived limited involvement of district stakeholders in managing the PALMS may impact sustainability. External factors like COVID-19, Cyclone Freddy, and a cholera epidemic further compounded these difficulties.

This evaluation did not assess the cost associated with the BPS program as these were not available to us. As such, the evaluators are unable to comment on the potential for sustainability with regards to the costs and investments needed to replicate a similar program elsewhere.

Recommendations

1. **Co-creation and design of program:** It is plausible that co-creation and design of the program, use of local and context-specific data, engaging multiple stakeholders, leveraging existing systems, and utilizing technology all contributed to a thriving

intervention per our assessment of ongoing implementation and early outcome measures. Going forward, for the program to be sustained (with relevant adjustments according to prevailing conditions, such as available financing), a closer look at the cost implications needs to be undertaken. The current evaluation did not assess program costs due to the complexity involved in tracking costs across different work streams at the time.

2. **Greater Involvement of Stakeholders:** While the BPS initiative involved multiple stakeholders from the beginning, numerous voices, such as the private sector and other implementers, pointed to the feeling of not being involved enough. Increasing engagement with additional parties could attract more investment and have a better long-term impact.

3. **Extra Resources:** While BPS leveraged existing resources, it also introduced some new innovations, such as PALMS. For the PALMS platform to be sustained locally with minimum or no external human resources and technology investments, capacity must be built within national and district teams for effective data management. If PALMS' potential to inform near-real-time epidemic tracking is to be realized, timely availability of data from sources such as DHIS 2 should be prioritized.

4. **Sustained Learning and Action:** There is a need to build local capacity to continually conduct in depth analyses to offer insights into the program's performance.

5. **Sustaining district-level coordination of activities:** The coordination of partners for the HIV response needs to be firmly institutionalised by mainstreaming coordination activities leveraging routine coordination meetings at the district level.

6. **Sustaining capacities built for HIV response:** The district capacities built by the BPS for coordinating the HIV response, such as quality improvement in service delivery, data use in programming, and client-centered health communication, need to be sustained by established training guidelines or standard operating procedures for future training of new staff, refresher training for existing staff, and having clear transitional plans.

1. Introduction

Malawi has a high HIV burden and a relatively weak healthcare system to support a robust HIV response. The Government of Malawi, in partnership with Center for Innovation in Global Health (CIGH) at Georgetown University (GU) and local leadership of the Blantyre District Health Office is implementing the Blantyre Prevention Strategy (BPS), a six-year health system strengthening program. This report summarises results from an external evaluation by the African Population and Health Research Center (APHRC) on the implementation and performance of the BPS.

The overarching objective of BPS is to strengthen district-level health systems to improve the HIV response by augmenting the local system's capacities to detect and target risks, generate demand for HIV prevention services, efficiently deliver HIV prevention products and interventions, and ensure the effective and sustained utilization of prevention services. In brief, BPS works to improve the use of health services data in decision-making and service delivery improvement, ensure continuous quality improvement, harnessing synergies amongst various actors including mobilizing communities and stronger involvement of local leadership. The evaluation report explores how BPS was designed, its implementation processes and lessons learned as well as understanding the extent to which certain things are changing due to the interventions being undertaken under BPS.

1.1. Background

The 2023 UNAIDS report estimated that 39.9 million people were living with HIV worldwide, with two-thirds of them residing in Africa [1]. This burden is a factor in the sustained transmission of HIV despite a background of reduced incidence and expanded access to antiretroviral medicine [2]. However, progress has been made in terms of HIV prevention and treatment, with 77% of the people living with HIV (PLHIV) on treatment worldwide.

Globally, new HIV infections have significantly decreased with a 38% drop in new cases from 2.1 million in 2010 to 1.3 million in 2022 [3]. This drop, however, has not been experienced uniformly with inequalities persisting across regions, especially in Africa [1]. The Global AIDS Strategy 2022-2026 underscores the critical need to address HIV-related inequalities, ensuring no one is left behind in the fight against HIV/AIDS. According to the World Health Organization (WHO), several countries in sub-Saharan Africa have registered a decline in new HIV infections and deaths including Malawi. Despite this, Malawi still ranks among the top ten countries with the highest prevalence of HIV [4] .

In Malawi, the burden of HIV is disproportionately spread with the southern region having a higher prevalence at 14.2% compared to the northern region at 6.6% [5]. Although Malawi has made progress in reducing its HIV prevalence, the situation in Blantyre, the largest commercial and industrial city in the south of the country is still alarming where adult HIV prevalence stands at 14.2%, compared to the national average of 8.9%. Additionally, the city falls short of meeting the UNAIDS 95-95-95 targets. Approximately 85% of persons living with HIV (PLHIV) know their status, 88% of whom are on ART, and 91% of those on ART are virally suppressed, figures significantly lower than the national average. The

National HIV and AIDS Policy 2022-2027 has prioritized the prevention of HIV infections as the foremost of its eight key areas, aiming to control the HIV epidemic and eliminate it as a public health threat as per the Sustainable Development Goals (SDG 3.3.)[6].

It is with this background that the Government of Malawi (GoM) and other partners, implemented BPS to hasten the progress in reducing the HIV burden. Unlike traditional approaches that focus primarily on direct service delivery, BPS took a district-level systems-strengthening approach to increase the efficiency and reach of HIV prevention services. It aims to empower local health systems to better understand and respond to the unique HIV challenges facing high-prevalence areas in Malawi.

1.2. HIV Policy Landscape in Malawi

Malawi's HIV landscape is characterized by several key policies that have guided the country's response to the pandemic over the years. At the core of Malawi's response is the Malawi HIV and AIDS Prevention and Management Act of 2017, which outlines provisions for prevention, management, and the rights of PLHIV. This act also establishes the National AIDS Commission, which plays a central role in coordinating the national HIV and AIDS response and implementing government policies related to HIV/AIDS [7].

Over the years the GoM has made critical policy decisions relating to the national HIV response. In July 2011, the Ministry of Health, based on recommendations from WHO (WHO, 2011), introduced a novel approach known as Option B+ to eliminate mother-to-child transmission of HIV [8]. In late 2011, Malawi started implementing the Voluntary Medical Male Circumcision (VMMC) program, followed by the official launch of the national VMMC policy in 2012 [9]. In 2016, with guidance from WHO, Malawi, as was the case with other countries, started implementing the HIV test-and-treat policy, which mandated that once one is found HIV+, s/he should be put on ART regardless of their CD4 count. In 2019, Malawi adopted pre-exposure prophylaxis (PrEP) as a policy priority. It disseminated national guidelines in December 2020, which enabled public health facilities, the Christian Health Association of Malawi (CHAM), drop-in centers, and private, and NGO facilities to deliver PrEP to marginalized populations. In 2022, Malawi revised its National HIV and AIDS policy for 2022-2027 to include the implementation of long-acting PrEP; the initial introduction of Cabotregravir (CAB LA) began in limited implementation science study facilities in 2024. The policy aims at accelerating access to prevention, treatment, care, and support for epidemic control.

The country's prevention efforts spearheaded by the Department of HIV/AIDS focus on raising awareness and fostering behavioural changes among populations. The GoM has also put in place measures to mitigate the impacts of the HIV scourge, such as school bursaries for affected children, social cash transfers, and workplace initiatives providing financial assistance to civil servants living with HIV. Through the 2017 HIV and AIDS Prevention and Management Act, the National AIDS Commission (NAC) has been reconstituted to a statutory corporation improving its effectiveness and relevance. Enhancing multi-sectoral and multi-disciplinary coordination at national, district, and community levels has led to a more sustainable and efficient response.

The complexity of competing public health priorities, emerging epidemics, and the changing funding landscape has somewhat slowed down progress in HIV/AIDS prevention and treatment. To build resilient and sustainable HIV response at the country level, there is a need to address some of the intractable health systems bottlenecks in the HIV prevention cascade. However, delivering complex systems interventions that partly aim at changing systems and how they work is likely to face challenges such as limited capacity, acceptability among stakeholders, accountability, and long-term commitment.

1.3. The Blantyre Prevention Strategy (BPS)

The vision for BPS is to support the development of a programmatic management strategy that enables district-level and national leadership to implement a highly effective HIV prevention program. BPS has two main aims namely: i) to catalyze locally-led development of an optimized system for rapid and sustained uptake of HIV prevention interventions and products and ii) to ensure sustained implementation and performance of prevention measures by embedding key functions within district-level systems, leveraging multi-sectoral capabilities, and an adaptive learning framework to create a regionally replicable model. These aims are mutually reinforcing, with the first focused on the scientific and programmatic elements needed to deliver interventions, and the second focused on the integrated systems approach that is to be taken to implement these elements.

The BPS was developed through a collaboration between GU's Centre for Innovation in Global Health, and the GoM to address systemic vulnerabilities hindering an effective HIV prevention response. The program has closely aligned with existing partners such as PEPFAR, Global Fund, UNAIDS, and Fast-Track Cities to complement and strengthen existing investments and ensure sustained performance. The BPS, rooted in a systems-based approach, aims to improve HIV response by leveraging district-level systems and supporting the development of a programmatic management strategy involving the district-level and national leadership for effective coordination of the HIV prevention program.

The BPS aims to institutionalize HIV prevention as a cohesive, effective, and sustainable country-led response with coordinated external support. It focuses on building the capacity of local stakeholders to innovate more effective and locally relevant prevention delivery systems. The strategy also supports the optimal deployment of new and existing HIV prevention technologies and interventions by correctly identifying and targeting service end-users through innovative data-driven actions, user insights, and quality improvement systems, promoting their use at all levels (Table 1). Furthermore, it leverages multi-sectoral strategies that extend beyond the health sector. It also promotes local government planning and community-driven approaches that enhance the uptake of HIV prevention interventions. The primary strategies involve enhancing the capacities of the local system to detect and target risks, generate demand for HIV prevention services, efficiently deliver HIV prevention products and interventions, and ensure the effective and sustained utilization of prevention services.

Table 1: Summary Table of BPS interventions

01	Targeting and detecting high risk populations.	• Establishment of a data pipeline to improve access and use of data • Visualisation of data on PALMS • Rolling out Integrated Disease Surveillance Response for HIV pilot
02	Creating Demand for HIV prevention	• Ensure prevention services are tailored to the users needs using a human centered approach. • Establishing a robust health communication approach responsive to district and national priorities.
03	Delivery of quality prevention services	• Building capacity for quality improvement among district health teams • Promoting uptake of PrEP through quality improvement
04	Sustained and effective use of HIV prevention services	• Identifying structural barriers to uptake of HIV prevention at facility and community level. • Training and empowering local and community leaders to address structural barriers to HIV prevention.
05	Strengthening leadership and governance	• Promoting district leadership, ownership and coordination of the HIV prevention response • Capacity building for district and city council and health facility leadership.

Over the past four years, implementation efforts have focused on reinforcing key components, including bolstering governance capabilities, fostering technical leadership, cultivating multi sectoral partnerships, promoting community engagement, and optimizing data systems. Figure 1 is the BPS Theory of Change (ToC).

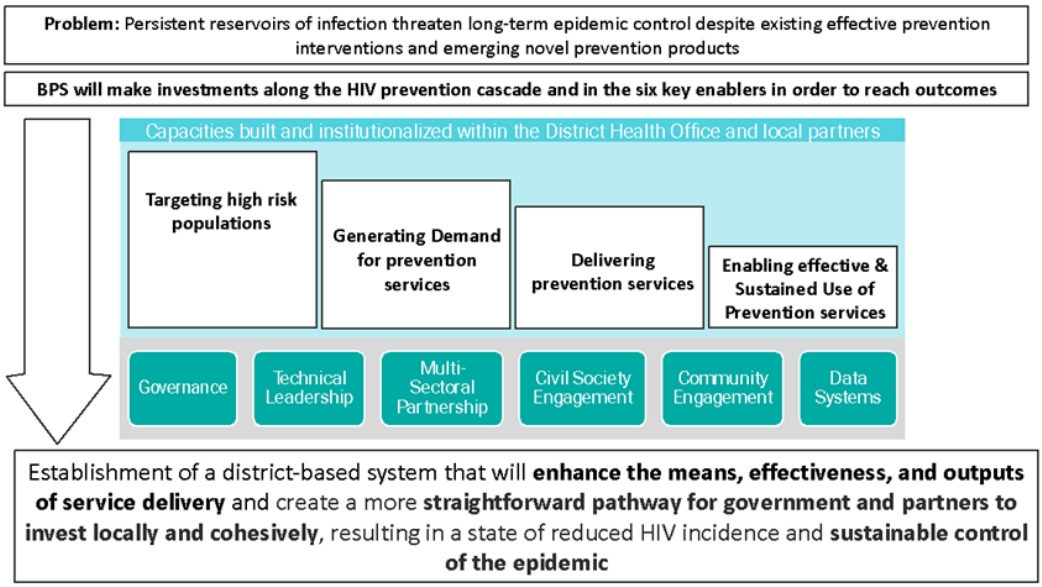

Figure 1: BPS Theory of Change

To objectively assess BPS's performance, an independent evaluation was commissioned and conducted by the African Population and Health Research Center (APHRC). The evaluation looked into program design, program implementation process and outputs/outcomes, outcomes, and the potential for sustainability.

2. Objectives and Evaluation Questions

The Blantyre Prevention Strategy was implemented in Malawi with the primary objective of addressing systemic vulnerabilities that hinder an effective HIV prevention response in the city of Blantyre. This external evaluation sought to determine the extent to which the strategy has achieved its intended outcomes, focusing specifically on assessing whether it affected HIV intervention uptake and/or attracted donor investment in the local community.

Main evaluation questions

1. To what extent did BPS enable the district of Blantyre to develop and adopt the core functions and capabilities required for a functioning HIV prevention program as intended in its design?
2. To what extent did BPS build capacity for the district to coordinate, lead, and own its HIV prevention approach?
3. To what extent did BPS affect HIV intervention uptake?

Specific objectives and evaluation questions

BPS Design evaluation objective

To assess contextual factors and appropriateness of choices in the design of BPS that would contribute to capacitating district systems, leadership, data use to oversee the HIV response.

Evaluation questions

1. What were the contextual factors considered during the design of BPS?
2. Who was involved (and their roles) in the design and implementation of BPS?

BPS Implementation evaluation objective

To assess the HIV prevention-focused health system strengthening program elements deployed through BPS and the extent of their implementation

Evaluation questions

1. To what extent were the health system-strengthening interventions implemented under BPS co-designed with district and national stakeholders?

2. In what ways were the processes BPS implemented to facilitate the implementation of planned health system interventions effective in supporting more district-led HIV prevention programming?
3. How did BPS support the development, improvements, and/or adoption of updated policies, guidelines, by-laws, and other tools informed by project learning?
4. What were the barriers and enablers to achieving intended BPS results/outcomes? How were they addressed during the co-design and implementation phases?
5. What evidence shows sustained multi-stakeholder engagement at the various stages of HIV prevention - planning and community involvement?

Objectives for evaluation of outcomes and sustainability

To assess the extent to which BPS supported the improved access to and use of appropriate HIV prevention interventions in the district.

Evaluation questions

1. How have the district and city's capabilities in governance and technical leadership improved since the start of the project?
2. To what extent are data from PALMS and other sources being used to inform HIV prevention programming- planning, resource allocation, implementation, and evaluation
3. To what extent are district-led quality improvement initiatives regularly used in practice compared to before BPS?
4. To what extent has BPS improved access to and use of HIV testing in the district as a secondary outcome?
5. To what extent has BPS program elements impacted access and uptake of PrEP?

3. Methodology

This evaluation was conducted in Blantyre, a city in the southern region of Malawi. We utilized a mixed methods approach funneled in three interrelated work packages, as discussed below.

Desk review

We conducted a summative desk review of available documents, guidelines, strategies, and policies on HIV prevention in Malawi. The documents reviewed included the National Health Policy, the National HIV/AIDS Strategic Plan 2020-2025, the Health Sector Strategic Plan 2022-2027, the HIV/AIDS response guidelines, BPS program activity reports and data, evaluations, and annual reports. The objective of the desk review was to gain insights into the context under which BPS was being implemented, the various commitments from stakeholders, partnerships, and their level of involvement.

Secondary data analysis

We utilized existing data on HIV prevention from Malawi's DHIS-2 platform. Authorization to access data was obtained from Malawi's Ministry of Health. We analyzed the aggregated HIV Counselling and Testing (HCT) uptake data and pre-exposure prophylaxis (PrEP) uptake data from Blantyre. For HCT data, we used data generated between January 2016 to June 2024 and for PrEP, we used data generated between the quarter one of 2021 to quarter one of 2024. Population figures used as denominators in this analysis were obtained from the National Statistical Office, Malawi, by approval in writing to the Commissioner for Statistics.

Study design and analysis

This study utilized a single-group, uncontrolled interrupted time series quasi-experimental design to estimate the effect of BPS interventions on HCT uptake. This approach was deemed appropriate because the intervention (BPS) was implemented at the population level and was non-randomized. The intervention created a distinct interruption point, dividing the timeline into pre-intervention and post-intervention periods. All participants in the post-intervention period were exposed to the intervention. The pre-intervention data served as the comparison group, while the post-intervention data represented the intervention group. The primary outcome was HCT uptake, measured as the count of individuals receiving HCT services before and after the BPS rollout.

We also performed a descriptive analysis of HCT uptake, and PrEP uptake using frequencies and percentages. To demonstrate trends in the outcomes, we plotted HCT and PrEP uptake against time.

We analyzed count data on HCT uptake and compared the period before and after the rollout of BPS, adjusting for autocorrelation and over-dispersion. We hypothesized that the post-intervention trend would have remained unchanged had the intervention not happened. The model was based on a time series of monthly numbers of people who

went for HCT in Blantyre from 2016 to 2024. We assumed the series of monthly counts to follow a Poisson distribution, so we applied the Newey-West Poisson regression analysis to account for both heteroscedasticity and over-dispersion and employed robust standard errors to obtain reliable confidence intervals (CIs). Effect sizes were estimated at a 5% level of statistical significance. The regression model was *apriori* specified and comprised of the pre-BPS trend, the immediate effect of BPS on the outcome, and the sustained effect of BPS on the outcome: $Y\ (\text{outcome}) = \beta_0 + \beta 1\text{Treatment (BPS)} + \beta_2\text{Time} + \beta_3\text{Time}$ after the treatment (BPS).

To test the overall effect of BPS, a post-estimation test on the trend was carried out by using the model coefficients, accounting for both the pre-existing trend and the change in trend due to the intervention. The statistical significance of this post-intervention trend was then evaluated using the standard error of their linear combination and calculating the corresponding z-statistic and p-value. This allowed us to conclude if BPS had a significant effect on the pre-existing trend in HCT service utilization. Analysis was done using Stata version 18 (Stata Corp, College Station, TX) and R (Core Team 2021).

Qualitative interviews

To gain a better understanding of BPS, its implementation, and outcomes as well as help put meaning and context to the learning from the desk review and secondary data analyses, we conducted qualitative interviews with key informants with intimate knowledge of the HIV response landscape in the country and the district as well as the implementation of BPS. The participants included funders of HIV prevention programs, national, district and city-level stakeholders as well as implementing partners for various HIV prevention programs within Blantyre and Lilongwe. (Table 2). The selection of participants was done in consultation with NAC at district and national level as well as the BPS consortium. The research team developed qualitative interview tools guided by the evaluation questions and these were translated into Chichewa (Annex 1). Our local consultant, working with the research assistants, supervised the translation of the tools from English into Chichewa. Respondents were interviewed in the language they were most comfortable with. Field data collection and analysis occurred between July and October 2024. Interviews were audio recorded, transcribed into MS Word, and imported into Dedoose software for collaborative coding and analyses guided by a jointly developed coding framework. Thematic analysis was done and emerging themes on design, implementation, outcomes, sustainability and recommendations were identified continuously, and narratives used to support the findings.

Ethical clearance was obtained from the APHRC Internal Review Board and the National Committee on Research in the Social Sciences and Humanities (NCRSH) of the National Commission for Science and Technology in Malawi (REF: NO. NCST/RTT/2/6). Consent from participants was sought before participation in the interviews. Table 2 are characteristics of the study participants.

Table 2: Characteristics of participants in the qualitative interviews

Category	Description	Target Number (KIIs or FGDS)	Achieved (KIIs or FGDS)
Funders	Gates Foundation, PEPFAR, UNAIDS	4	4
BPS consortium national level	NAC, DHA, DHD	5	4
BPS consortium city level	City health officials (2), City councillors 1 FGD(8)	2 KII and 1 FGD	2KII and 1 FGD
BPS District level	District health officials	7	7
BPS supportive partners	Georgetown University CIGH, Cooper/-Smith, PSI, FHS, HealthQual MESH Consortium, Pakachere	15	13
Other HIV prevention partners	Coalition on Health, CHAI, Umunthu, CEDEP, Lighthouse	8	5
Total		41	35 KIIs and 1 FGD

4. Results

4.1. Design considerations for the BPS program

In this section, we present results from the synthesis of the literature exploring the contextual factors that the GU and partners considered in designing the BPS program, the range of stakeholders involved and their roles, and the appropriateness of the proposed interventions to improve HIV outcomes.

HIV epidemiology

Malawi being a high HIV incidence country, ranking 9th in Africa, was considered a high-priority country for HIV prevention interventions. Before BPS started, Blantyre had the highest HIV prevalence according to the 2020 and 2015/16 MPHIA as well as the 2015/2016 Malawi Demographic and Health Survey. Blantyre district offered a unique context being the commercial hub for the country with a high population density and mobility and reservoirs of new infections. In response to this challenge, the government requested the funders and implementing partners to address HIV prevention, especially tracking reservoirs of new infections. This challenge needed a different approach that was localized, specific to the context, and responsive to the urgent need to reduce HIV incidence in the district.

> *"We could not apply a one-size-fits-all in responding to HIV and AIDS prevalence so these particular sites that were being considered as boiling or hot spots for the pandemic needed particular attention so as not to impede the national progress that has been made" (BPS consortium district partner)*

In addition, there was a need for a model to pave the way for the introduction of novel HIV prevention approaches. Malawi lagged in the introduction and implementation of the PrEP which was only actualized in December 2020. Obstacles for PrEP – included lack of information on PrEP, stigma, and pill burden for oral PrEP.

Need for a coordinated HIV response

Participants mentioned that before BPS there was a lack of coordination in the HIV response. Partners in HIV response were working independently and achieving less. The HIV response was mainly NGO driven and the district lacked ownership of the HIV response. There was a need for a coordinated monitoring and evaluation system, to improve access and utilization of data related to different aspects of HIV response (including health, social, and economic aspects) and a common platform to access HIV-related data.

> *"We had stakeholders in all these categories, but the coordination was just not there, everyone was running their show, …. so we needed to find a common link or hub to coordinate the entire HIV response at the district level, at the program management level, at the health facility level, even at the community level" (BPS consortium district partner)*

> *"There was a challenge with "silo data use". Few people had access to HIV data. There was limited collaboration. HIV data was not routinely available to the potential users at the clinic level". (BPS Supportive partner).*

Need for locally led and tailored HIV response

The design of the BPS program was motivated by the decentralization policy for Malawi that needed actualization and strengthening. For an effective decentralization process, there was a need for capacitation or empowerment of district leadership to coordinate the HIV prevention response, which was mainly externally driven at the time the BPS was being designed.

A supportive environment for implementation

Another factor that informed and supported the BPS design was the supportive environment for implementation, which was realized through previous partnerships. There was existing collaboration and good working relationships between intended implementing partners, the government leadership and the community. In addition, there was ongoing data systems support to the Ministry of Health's Digital Health Division (DHD) by Cooper/Smith – Including the *Kuunika* project. In addition, PEPFAR, Global Fund, NAC, and the local government already had a history of collaborating with implementing partners before BPS was conceptualized.

4.2. Evidence for multi-stakeholder involvement in the design and implementation of BPS

Stakeholder contributions in Design and implementation

The design and implementation of the BPS involved a wide range of stakeholders at multiple levels—from community to international partners—ensuring a collaborative and inclusive approach. Table 3 differentiates the roles of the different stakeholders between the design and implementation phases, with varying degrees of involvement as rated by the participants. The BPS consortium and partners.

Table 3: Stakeholder involvement in the design and implementation of BPS

Stakeholder category	Role in the design	Role in implementation
BPS consortium district and city partners	Participated in the initial consultation meetings regarding the design and suitability of BPS components	Provided oversight of all health facilities and coordinated HIV prevention activities. Participated in the implementation of BPS intervention including capacity building for city councillors

BPS consortium Supportive partners (i.e. UCSF-HealthQual, Cooper/Smith, PSI)	Conceptualisation of the design and conducting of stakeholder engagement with MoH and district-level partners	Provided oversight and advisory roles on the implementation of all work streams
Other BPS consortium HIV implementing partners (e.g. FHS, PSI, Pakachere)	Participated in consultative meetings and pre inception activities for the project.	Involvement in Structural risk mapping, network model and health communication
National level partners DHA/NAC/DHD	Participated in conceptualization, proposal development and multi-sectoral coordination.	Provided oversight and advisory roles on the program's progress.
Funders including Gates Foundation, PEPFAR	Contributed to the conceptualization of the design for a locally driven initiative.	Provided funding, general guidance, and support.
Community	Consultations made at the design phase with community representatives such as Blantyre Civil Society Network and Malawi Network of AIDS Service Organisation (MANASO)	Active engagement in feedback mechanisms, health communication campaigns, and data collection. Local leaders, community-based organizations, and individuals were trained to raise awareness, encourage HIV prevention, and identify high-risk groups.

Key

Moderate to high number of stakeholders involved

High or most stakeholders involved

BPS steering committee and consortium coordination

A steering committee, composed of representatives from key national ministries and supportive partners, was established to guide the overall policy direction of BPS. Chaired by the Secretary for Health, it ensured strategic decisions were made in alignment with national health policies. The BPS consortium itself consisted of supportive and local partners, district and city health teams, and local HIV prevention entities, each contributing their expertise to specific work streams, such as data pipeline management, quality improvement (QI), and health communication campaigns. Collaboration between these diverse actors

enabled effective implementation across various levels, with the DHO playing a critical role in facilitating coordination and oversight as represented in Figure 2. One participant from the DHO stated, *"Collaboration from the government was essential. Multi-partner collaboration as well...including community leadership in the different catchment areas."*

UCSF's HealthQual led the quality improvement workstream, focusing on enhancing quality improvement (QI) capabilities to strengthen HIV prevention, particularly in implementing PrEP. The district health communication unit, supported by FHS/PSI, led the demand creation and health communication workstream. Pakachere implemented structural risk mapping, targeting high-risk groups like female sex workers, encouraging PrEP enrolment, and training health councillors to use data platforms and run health campaigns.

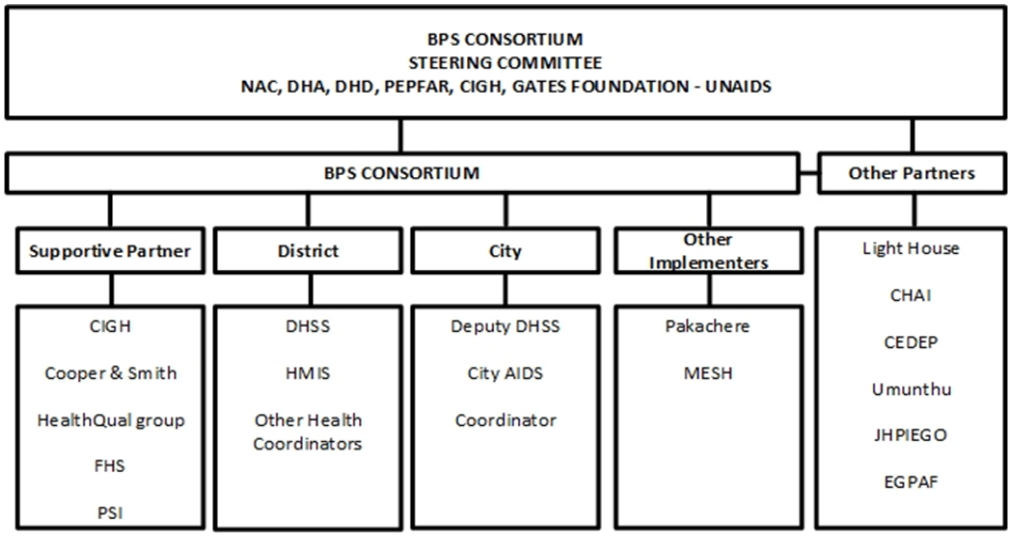

Figure 2: The BPS consortium and partners

Data-driven decision-making and coordination

Data-sharing and regular coordination meetings between stakeholders were reported to be essential in adapting strategies and improving HIV prevention efforts. As one district-level partner noted, *"Because of the monthly Blantyre coordination team meetings, we always share reports on whatever we have done the previous month...we are now able to identify our problems."* Monthly coordination meetings enabled real-time data exchange, ensuring that all partners remained aligned and informed about progress and challenges.

Collaborative decision making and community engagement

A defining feature of BPS was its bottom-up decision-making approach, which integrated community feedback and local needs into national-level strategies. This was highlighted by one BPS consortium partner from the district level, stating that, "The implementation now is coming in because the problem has been identified from downwards and it is being lifted to the national level." Stakeholders at facility, district, and national levels ensured that interventions were adapted to local contexts. Community engagement mechanisms,

including exit interviews and strengthened feedback systems within facilities, allowed local populations to voice their concerns and influence the program's direction. The inclusion of community feedback channels reflected the project's commitment to listening to local voices, as evidenced by one community leader saying, *"Pakachere helped develop what we called the 'Councillors Handbook on HIV/AIDS Issues,"* helping local leaders better advocate for and engage with their communities.

Collaboration with government, private sector, and community actors

The collaboration between government entities, the private sector, and community leaders was vital in the implementation of BPS. However, beyond the BPS consortium involvement of other stakeholders such as the private sector was limited and this limited the contribution to the community mobilization component of the intervention. One BPS consortium partner stated, "*They wanted to engage with the private sector as one of the key sectors that could provide resources for HIV prevention response."* The collaboration with non-governmental entities ensured that programs across different health sectors were aligned and resources efficiently mobilized. A BPS HIV implementation partner emphasized, "*Collaboration from the government was essential. Multi-partner collaboration as well...including community leadership in the different catchment areas."* Government offices and community-based organizations worked closely to ensure HIV prevention efforts were well-coordinated and tailored to local needs. The involvement of the private sector helped bridge resource gaps, while the network model—incorporating health providers, NGOs, CSOs, and political leaders—effectively addressed specific community health challenges.

4.3. Capacities built through BPS interventions for an effective HIV response

Study participants highlighted several outcomes resulting from the implementation of the BPS program activities and the different workstreams across all levels.

4.3.1 Leadership and Governance

The district's capacity was enhanced to lead and coordinate HIV prevention programming at the district, city and community levels. Leadership capabilities were demonstrated across all staff involved in the implementation at the administrative, health facility, and community levels. As a result, there was a well-coordinated HIV response stemming from collaborating and embedding the various program components within the district system as highlighted by one of the participants.

> *"What I would say for now, within Blantyre, we have improved that kind of coordination in the district and the district has the capacity now to lead a program that is well coordinated, that coordinates the different components that were otherwise fragmented or they were in different silos but all you see now is the continuum of service in terms of how they are doing their planning." (BPS consortium implementing partner).*

Notably, councillors were empowered through training, a transformative process that greatly enhanced their engagement with their communities, allowing them to deliver appropriate and informed HIV prevention messages.

The BPS also leveraged existing structures and streamlined the leadership by instituting various working groups to coordinate work stream activities. Examples include the project management team, the district coordination team, and the national steering committee to give direction in implementing and monitoring activities in the district and across partners. These structures provided policy and technical guidance, and support, coordinated implementation at the district level, facilitated communication across the partners, and strengthened implementation in the work streams. Streamlining the leadership improved governance structures that improved program implementation.

The involvement of the leadership at the district, city, and community levels promoted ownership in implementing the work streams and enhanced fidelity and accountability in the entire operations of the program. The leadership and partners worked in unison and demonstrated greater accountability for HIV prevention in the district which was not the case previously. Importantly, the leadership adopted the multi-sectoral approach to foster collaboration, coordination and problem-solving to forge ahead as an entire system.

> *"As a district, and as the district health office, we can coordinate all the partners in the district that are implementing HIV and AIDS interventions with our leadership. It is one of the things that has come up because of the BPS and working with community structures we believe is part of governance, the Councillors the community structures, and ensuring that we have taken the lead in implementing." (BPS consortium district partner)*

Key enablers for improved leadership and governance

A Strengthened subnational health system for better health outcomes

This project aimed at strengthening the Blantyre Health System, and the expectation was that this could contribute to better health outcomes. One BPS consortium partner attested to this by saying, "*...the big lesson is that it is possible to capacitate a subnational [health] system to work cohesively and collaboratively on HIV prevention toward shared goals and objectives."* In this evaluation, key informants at the district level mainly reported that there was an increase in the uptake of HIV prevention and other services and that HIV prevalence in Blantyre has significantly gone down, and the district no longer has the highest HIV prevalence as it has been the case over the past two decades. A key informant at the Blantyre City Council emphasized that even if health outcomes may not be realized in the short term, strengthening the health system has been achieved with potential longer-term impact. The Blantyre DHO has actually started sharing the results from the BPS with other districts, such as Zomba and Lilongwe, as well as at the international level, such as during the 2024 International AIDS Conference.

Decentralization of health services delivery

Many informants, including at the district and national levels, as well as from the funders and PIs narrated that the success of the BPS was that the project was district-led, and led by a responsible government office namely the Blantyre's DHO. One participant expressed their thoughts saying,

> *"The biggest lesson for me is seeing how district leadership can establish support that can sustain these program elements that can have a big impact on the district … it is an ongoing structural intervention that is agile and acts as a learning for others who work in this field to possibilities of district-led leadership in HIV prevention programming." (BPS Supportive Partner)*

A key informant at national level explained that districts who are the owners of the projects should interrogate a project that is delivered to them before accepting it. They should be part of the core team designing the project as was the case with the BPS: the District Health Office among other stakeholders was involved in the design and led the implementation of the BPS. They were also in the forefront of sharing the outcomes of the BPS at national as well as at international level. Many informants added that Blantyre was a model in the way it was responding to HIV prevention emphasizing the importance of district leadership in such interventions.

The use of established structures

The BPS did not create a parallel implementation structure but embedded skill sets in existing structures when implementing the interventions. The project was embedded within the DHO, and staff members from this office at district, health facility, and community level Health Surveillance Assistants [HSAs] were implementing this project with support from the district and national stakeholders and support partners. The BPS ensured that staff at different levels in Blantyre owned the program and its interventions for independence and continuity in the implementation. For example, the QMD-established QI structures at district level were used for QI. One partner referred to the QI structure, saying,

> *"I talked about the QI structure, and everything being done was attached to a QI structure established by the Ministry of Health. The unique thing and new in Blantyre in terms of QI was the addition of mentors that have since been assimilated into the quality improvement support team of the district, as an additional resource." (BPS Implementing partner)*

Capacity building and mentorship

One major lesson from the BPS is that it has built the capacity of stakeholders including the government. Participants reported that the BPS built the capacity of the DHSS and the wider District Health Management Team (DHMT), the coordinators, the in-charges of the health facilities and other stakeholders including the city council.

BPS adopted a strategic approach to training that emphasized relevance and responsiveness to local challenges. Training sessions were not generic but were specifically tailored to

address identified gaps, such as challenges in data management. By working closely with district health teams to design these training programs, BPS ensured that the content was practical and directly applicable to the team's needs. This targeted approach to capacity building created a positive learning environment and helped participants develop skills that were immediately useful in their work. The emphasis on practical training also motivated health officers and other stakeholders, as they saw how new skills could improve their daily operations and address the real challenges they faced. This was noted by a national level member of the BPS consortium, who shared, *"The specific trainings were not just being done for the sake of training... responding to the people's needs or the gap that was there,"* illustrating how the focus on targeted training empowered teams to manage their responsibilities more effectively.

> *"I think the other one could be capacity building and mentorship because if we were not trained on QI, we couldn't have known the techniques, what are the things that we can do but it's because of the training that we got, we are able now to set projects on our own, we can evaluate the project and see how the project has gone on, sustainability because of the training that we got." (BPS non-consortium implementing partner)*

Even though staff in the DHO's office can be transferred to other districts or other health facilities, their training will help them to implement similar interventions elsewhere. The DHO's office is in the process of developing manuals or SOPs explaining the way BPS is being implemented and the roles of different cadres so that even if officers are transferred, they will be able to read these manuals or SOPs and understand what they can do.

4.3.2 Demand creation and Health communication

The BPS investment in the health communication work stream aimed "*to improve the capacity of health promotion in Blantyre, ensuring that the right information is given to the right people."* Community-oriented platforms called community labs were established using an HCD approach to collect HIV prevention service clients and other community members' insights on barriers to service access and uptake. Insights from the community labs were shared among the community members and leadership, and health facility staff, fostering collaborative health action and feedback loops. By gathering community insights through the community labs, critical HIV prevention services such as HCT, condom uptake, PrEP initiation, and retention were well-targeted, and uptake improved.

> *"So, with HIV prevention messages, a lot of people have been coming to get tested. Not only at facilities, but also testing has been happening in the communities, in the hot spots, like the moonlight testing. So now testing for HIV is not only to link them to start ART, but also, when you are HIV positive there are these preventive measures … that you can take. So, the HTS uptake has been very very good". (BPS consortium district partner)*

Health communication campaigns such as '*Konda Blantyre, Konda Moyo*' [Love Blantyre, Love Life] were vital in reaching targeted populations and bringing HIV prevention services closer to them. According to informants, such campaigns improved the delivery of services such as ART, HCT, and PrEP. These campaigns increased self-initiated demand for HIV testing due to improved knowledge of HIV prevention. The distribution of PrEP in the communities is reported to have contributed to an increase in uptake. Other strategies included personalized health communication using community labs, peer educators, and PrEP ambassadors.

> *"Before, we would only have general information. We would say 'Come for HIV testing', there would just be a community radio program saying 'People, you are encouraged to come to the facility to have your HIV testing done.' With the BPS, we are saying that there are specific populations that also have specific needs. We do target different populations by using smaller campaign programs. Working with the champions in those areas has also helped to increase HIV testing." (BPS consortium district partner)*

4.3.3 Quality Improvement

The BPS worked collaboratively with the Quality Management Directorate (QMD) in the Ministry of Health to make the QI structure efficient to help strengthen the delivery of health prevention services within Blantyre District. Instead of attempting to conduct QI interventions across all HIV prevention services delivery domains in the district, the implementers chose to use the PrEP program as an exemplar of how QI can make a difference.

The PrEP Quality Improvement Collaborative (QIC) launched in September 2021, primarily focused on strengthening QI structures at district and facility levels to build capacity for implementation and leadership. Health workers engage communities through community labs to gather insights to implement their QI projects. In the community PrEP, ambassadors play a liaison role between facilities and communities to support demand generation, service uptake, and continuation.

> *"With the Quality Improvement insights from community labs, we found out that we have low numbers of people taking PrEP because people were not comfortable taking PrEP from the ART clinic. That made us move PrEP from not providing PrEP as ART only but to integrating with other services which helped us in some facilities to increase uptake and continuation of PrEP". (BPS consortium district partner)*

The DHO and health workers with support from FHS, engaged communities through community labs to gather insights which informed their QI projects at health facilities.

QI initiatives were informed by several data sources, including observations of facility staff, monitoring indicators from PALMS data to identify gaps in service provision, examples from other facilities shared during learning sessions, and change ideas from the community. A variety of QI activities were incorporated into the facilities with the adoption processes

emphasizing the improvement of services offered for different populations in the facilities and the communities. As the change ideas were implemented, the QI support team actively provided support supervision to ensure that QI practices were continually used. The ideas that worked were used to monitor and improve prevention services. Additionally, the contributions of the QI activities were monitored by reviewing the data during meetings.

High PrEP uptake was reported, particularly in the BPS supported QIC facilities and drop-in centers where the change ideas were implemented. A BPS consortium national level partner recounted by saying that with the *"Quality improvement approach it was very clear that where there was quality improvement in uptake and the continuation of PrEP, uptake was much higher than when there was no quality improvement".* The health workers role in offering quality services to PrEP clients significantly enhanced the quality of PrEP services. A site visit by the consortium members and evaluation team to two facilities and one of the drop-in centers in Blantyre showcased how QI projects were implemented and contributed to increased PrEP uptake. Some facilities also picked up QI processes and methodologies, and some partners were applying them to their work in other parts of the country.

4.3.4 Structural risk reduction

This work stream specifically targeted Blantyre City Councilors who were previously not engaged in HIV prevention programming. The goal of this work stream was to build and strengthen sustainable knowledge, skills and ability of Ward Councilors for Blantyre City and District Council to support HIV prevention intervention by addressing structural risk factors.

Pakachere, a local NGO that promotes social and behavior change communication (SBCC) and capacity development, was engaged to train councilors on how to engage with their communities and leverage available resources to support more targeted HIV prevention efforts within their wards. This approach involved the ward councilors, leveraging their political capital to address structural issues that create vulnerabilities among the community members to acquiring HIV and inhibit their ability to access services. Community engagement was the central point for sharing information and raising awareness of HIV prevention. One BPS consortium implementing partner supporting the structural risk reduction component noted that the ward councilors recognized their role in HIV prevention, and actively contributed by *"their involvement and using available platforms to raise awareness about the different HIV prevention technologies, condom use, and PrEP awareness".* The ward councilors were trained on HIV messaging and viewed as ambassadors for HIV prevention. Through the training, councilors gained a greater understanding of the HIV context in Blantyre and Malawi as a whole. Their understanding was demonstrated when they were speaking about factors facilitating HIV transmission and their knowledge of pertinent issues in the HIV response including key populations such as FSW, LGBTQ, and MSM, different HIV prevention technologies such as PrEP, and the ability to raise awareness about PrEP, and treatment literacy such as treatment as prevention. The councillors were also trained to interact with data from PALMS and were allowed access to the data.

> *"One of the councilors was able to identify some spikes in their ward in terms of ART default rates and was able to conduct awareness where HIV self-test kits*

were distributed, and some people who were no longer adherent were sent back to the clinic". (BPS consortium supportive partner)

Furthermore, some councilors were even involved in resource mobilization for their communities to address poverty and reduce risky behavior. They also provided input in drafting the Blantyre city bylaws, to regulate community-driven activities fuelling high risk community behaviour to prevent the spread of HIV. They also developed a training manual to onboard incoming ward councillors in case of any changes within their office. The training was expanded to include District Ward Councilors in August 2023.

4.3.5 Use of PALMS data for planning

The local HIV response was characterized by inefficiencies in data processing, management, and use, hindering an effective HIV response. To mitigate these challenges, the BPS implementing partners developed the Prevention Adaptive Learning and Management System (PALMS) in 2021, a user-centered data management approach to enable the effective monitoring of the BPS activities for improved HIV service delivery and uptake in Blantyre. Through adaptive learning technologies, automated real-time data analytics, and visualizations, PALMS provided user-friendly dashboards that displayed current and historical trends of key elements in the HIV prevention cascade.

PALMS was described by one of the district health officers as "*a one-stop shop for data where you may have different indicators and different data points from different sources, but you see through the same platform, one dashboard which can show you everything that's going on".* (BPS consortium steering committee partner). PALMS was used to highlight trends in indicators that were not doing well, and decisions were made to improve services focusing on the poorly performing indicators in the district. "*The PALMS has been where QIs have been drawn from, where demand creation has been drawn from, where everything else is being centered on the data part".* (BPS consortium implementing partner). Another participant said, *"Mostly, our decisions are based on data. In terms of activities, we are not just implementing activities for the sake of implementing them, but we go back into the system and check what the data tells us. We are using data in decision making, monitoring that data, and providing the feedback".* (BPS consortium district partner). The availability of data from PALMS to several users at the district level was recognized as a change in how data has previously been accessible at the national level only. Data was accessed by the users from the facility and even from their phones as well. Data access has enabled real-time visualization, and the district teams, coordinators, and health workers quickly consulted and took necessary action on time.

Many informants that participated in this study at national, district and facility levels in Blantyre narrated that the BPS project designed PALMS which makes data available to different stakeholders including at facility and community levels. This data is being used to design precision interventions and identify population groups that should be targeted with HIV prevention and other interventions.

> *"The first thing we learned was the promotion of the use of data in whatever intervention we were planning to be backed up by data. Don't just say 'That's okay, I want to do ABC', why do you want to do that? So, every time you want to make a decision, if you want to plan, you should use data. It should be evidence-based, that is the first lesson. The second one, when you are coming up with an intervention, please provide those interventions to the affected population, not to anyone else. We need to save the resources. That is the second lesson learnt". (BPS consortium district partner)*

> *"I think that the data piece is important that you need to know where your epidemic is and where you're doing well and where you're struggling and who's being most affected to be able to target those new interventions or to be able to make those changes gather the insights that you need". (BPS Supportive Partner)*

The evaluation team visited some health facilities in Blantyre and there was evidence that these facilities can generate data, analyse this data, and then make decisions as also narrated by one of the NGOs based in Blantyre.

> *"The PALMS [is important] because, for once we have seen health facilities generating data, sitting, analysing the data, and then making decisions…. at the facility level, which has improved. We have seen … trends in HIV, among who? Where are these people found? I think using that, making analysis of the information, and then using that to say, can we target this population to make sure we address these respective issues? I think that has been a learning point". (BPS consortium implementing partner).*

At community level, through the network model committees health services providers can discuss with communities using available data and these communities can participate in the decision-making process and contribute to finding a solution for a problem they are experiencing. The use of data in making decisions is therefore a big lesson from the BPS which should be adopted nationwide.

4.3.6 Improved coordination and stakeholder engagement

Stakeholders mapping and involvement: One of the lessons learnt from the BPS is the need to involve all the relevant stakeholders. Before the implementation of the BPS, a comprehensive mapping of community-based organizations (CBOs) working in the district was conducted in order to know and understand what HIV prevention interventions each of them was supporting. This exercise helped the district understand where CBOs were operating and what they were doing. It informed outreach to these groups during various activities, including Konda Blantyre, Konda Moyo campaigns and creating the network model committees.

> *"We have also learnt that we need to involve all the stakeholders at various stages of the project because when you involve them towards the end of the project it becomes a competition. We need to involve everyone at all the stages". (BPS consortium district partner)*

The BPS's inclusive approach engaged partners across multiple levels, from local government and national health bodies to community leaders, civil society organizations, private sector entities, and implementing organizations. This comprehensive involvement ensured that all stakeholders had a vested interest in the project's outcomes, creating a sense of ownership that led to increased engagement and commitment. The partnership model extended beyond the traditional health sector to include various agencies and groups that could influence health outcomes at a community level. This multi-stakeholder collaboration allowed the program to address HIV prevention through a holistic approach rather than isolated, vertical interventions. By drawing on the expertise and resources of each partner, BPS was able to create systems that were responsive to local needs, thereby increasing the relevance and effectiveness of its interventions.

In addition to engaging diverse partners, BPS also prioritized capacity-building sessions where stakeholders could learn from one another. These collaborative learning opportunities enhanced the skills of various teams, promoting an exchange of knowledge that further motivated stakeholders to invest in the program. A BPS consortium district partner explained, *"At the district level, the Blantyre coordination team meeting brought together consortium members and district coordinators to discuss progress and plan the way forward. The team reported to the program management group, which included Ministry of Health directors, the DHAs, the National AIDS Commission, and other health representatives. The steering committee, comprising top officials like the Blantyre city CEOs and district commissioner, along with PEPFAR and health secretaries, provided further policy guidance.,"* indicating how the collaboration empowered local teams to take ownership of health interventions and ultimately promoted a supportive environment for change.

While this is the case, a few organizations mentioned that they joined later when the BPS was being implemented to address specific emerging issues.

> *"Number one, they [BPS] should try their best to involve all relevant stakeholders from the beginning. They should also make sure that the role of each stakeholder is known from the beginning ……. I don't mean in terms of money, but we should know that this one will help with this and that. And when the reviews are being done all the stakeholders should be there not doing it as if we are hiding something because if we hide, we will not know how the performance has been." (BPS consortium district partner)*

Improved Coordination of Stakeholders: Several key informants reported that there was very poor coordination at the beginning of implementing the BPS interventions. Each organization just came in and implemented their own interventions and the DHSS in the district would not know. With strengthened district leadership, there is improved

coordination among the different stakeholders in the district including between city and district councils which was not the case previously: there is now strong coordination between the two DHSSs for the District and City. They co-chair the PMT and BCT and other meetings they have together. This has also led to an improved coordination of HIV prevention interventions in the district which was not the case initially.

> *"So In terms of integration between the district and the city, we hold one Blantyre Coordination team meeting, where the district and the city are represented. In terms of chairing that meeting, we have the director of health [and social] services for the district chairing and the co-chair is the city. So, when it comes to the response, the coordinator, the HIV coordinator for the district, is always available in the district activities. " (BPS consortium district partner)*

Strengthening coordination among the different stakeholders including between city and district council is one of the outcomes from this project. In addition to this, NGOs and other implementing partners for example cannot just go to Blantyre and start implementing HIV interventions: they need to plan and implement together with councils.

> *"In terms of partner coordination, I think it's coming out now, they are now being mandated to sign MOUs with councils okay so we don't sign those MOUs until they have come and planned it with us ". (BPS consortium district partner)*

4.3.7 Effect of BPS uptake of HIV prevention services (HTS and PrEP).

This section captures the results of the secondary data analysis, where we sought to quantify the effects of BPS on HCT uptake in Blantyre. A hundred data points on totals of individuals tested between January 2016 to April 2024 were used for this analysis.

Figure 3 shows that HCT uptake in Blantyre was decreasing by approximately 223 per month (β_1 -223, 95% CI: -227.69 to -168.22). With the initiation of BPS, the trend immediately improved as HCT uptake rose to 1056 individuals per month (β_2 1055.60, 95% CI: -1904.60 to 4015.81). The sustained or long-term effect of BPS was 533 individuals who undertook HCT per month (β_3 533, 95% CI: 397.81 to 667.15).

The calculated post-intervention linear trend, represented by the "Treated" variable, that is the combined effects at specific time points after the intervention was 309.52 ($p < 0.001$). This statistically significant trend suggests that the intervention successfully changed the HCT uptake, resulting in a positive increase over time. The 95% confidence interval for the treated post-intervention trend was 186.47 to 432.57 which suggests that the findings are robust.

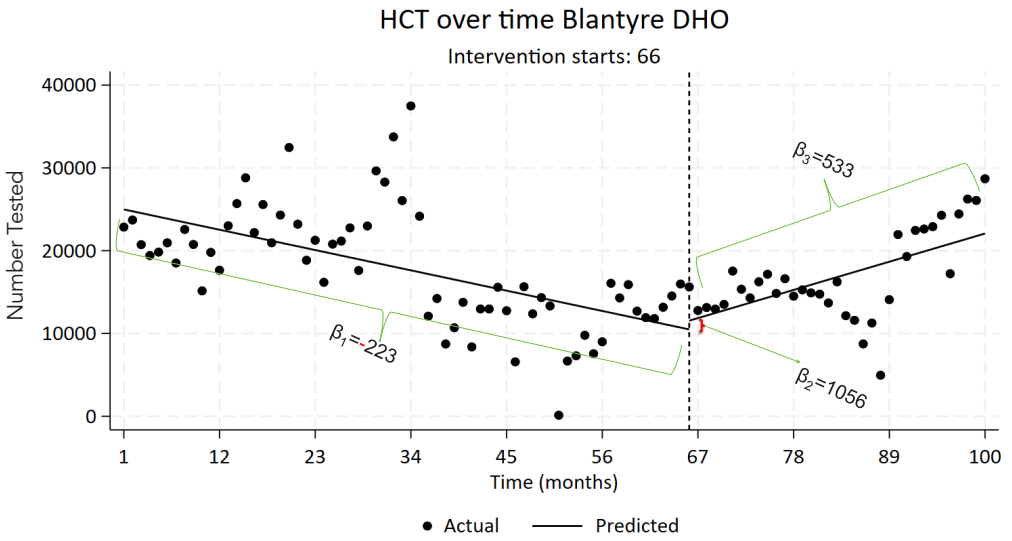

Figure 3: Trend in HCT uptake before and after BPS in Blantyre district

PrEP uptake

The descriptive analysis of PrEP uptake showed an upward trend following its rollout in January 2021 after the official issuance of the National Guidelines in December 2020 by Malawi. In Blantyre district, a sustained and consistent increase in screening for PrEP eligibility and initiation was observed. The proportion of clients who initiated PrEP rose from 19.8% in the first quarter of 2021 to 65.1% in the first quarter of 2024 (Figure 4). A higher proportion of females than males were screened and initiated on PrEP: 68% versus 32% respectively. From the analysis, it was unclear if the observed trend in uptake of PrEP may be attributable to BPS or other external factors.

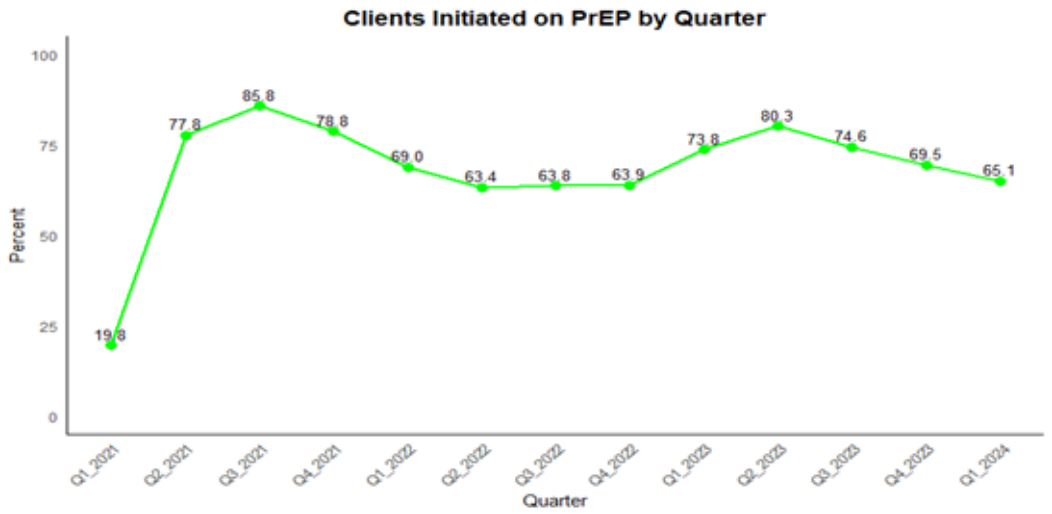

Figure 4: Proportion of PrEP uptake in Blantyre district, 2021 to 2024

From the qualitative evaluation, participants noted that reviewing indicators from PALMS enabled tracking of the improvements in HIV prevention strategies, and gathering insights from the community labs provided direction for HIV prevention activities. Notably, from the record available in PALMS reviewed by participants there was an increase in the uptake of HIV prevention services such as HCT as well as condom provision, PrEP initiation, and continuation. Improved uptake of HIV prevention services was mainly achieved through targeting, particularly among key populations and the youth, customized campaign strategies.

In addition, the integration of HTS into other outpatient departments at the health facilities was reported to have reduced stigma associated with HIV and increased the demand for HTS, including self-testing and injectable PrEP. The scale-up of PrEP provision was extended for the key populations, with organizations working in the HIV field and drop-in-centers being the distribution points. HIV testing, the pathway to accessing prevention services, and the QI collaborative, also played a big role in increasing access and uptake of PrEP. A participant described how integration has improved uptake of PrEP by saying,

> *"The way we have approached integration of services under the QI collaborative has been really an important step because now integrating PrEP into STI has really pushed the numbers, the risk population is being identified at the facility level and this has also improved HIV testing, because of taking different entry points like the OPD, the STI clinic so really identifying these people as being at risk has actually improved HIV testing". (BPS consortium implementing partner).*

4.4. Challenges and opportunities in implementation of BPS

In this section we discuss barriers experienced in implementation of BPS as well as opportunities for scale up or sustainability of BPS for effective HIV response.

4.4.1 Barriers in BPS implementation

BPS implementation was reported to have faced several significant challenges. These barriers ranged from logistical issues, such as training deficiencies and high staff turnover, to more complex systemic obstacles like limited funding, data quality concerns, and competing health priorities. This report outlines these key barriers, providing insights from relevant stakeholders to highlight the depth of these challenges and their effect on BPS implementation.

Inadequate training and mentorship

A key barrier to effective BPS implementation was the inadequate training of staff at health facility level and the absence of continuous mentorship and supervision prior to the start of the project. In some facilities, personnel missed initial training sessions, or overtime forgot essential components of what they had been trained on. This inconsistency in training levels resulted in varying levels of competency among the staff, meaning that some staff were

not fully equipped to implement the strategy as intended, likely undermining the effective execution of the strategy. One nurse from the DHO noted, *"What they will need maybe is just some sort of mentorship...others like the focal person and the data personnel, they are capable of doing things on their own."* This highlights the need for the DHO to provide mentorship and supportive training mechanisms to ensure staff are well-prepared to carry out their roles.

High Staff Turnover and Geographical Spread of Facilities

Another major obstacle to BPS implementation was the high staff turnover at the health facility level, which disrupted continuity and consistency in program delivery. Staff frequently moved between facilities, often transferring from areas where BPS was operational to those where it was not yet implemented. This movement complicated efforts to ensure consistent training and application of the strategy across all facilities. A DHO nurse stated, *"people are too mobile... when we are moving from here, we go there, and the facilities now they are many... We managed to develop a network model in 19 facilities, but only 10 facilities were trained."* This staff mobility, coupled with the lack of resources, made it difficult to ensure that all facilities were fully prepared to implement BPS as intended.

Challenges in data access and quality

Data access was mentioned as one barriers to effective monitoring and evaluation of BPS activities. The fragmented nature of data collection and the reluctance of some partners to share essential data created challenges in tracking progress and assessing the strategy's effect. Moreover, concerns about data quality were prevalent, as highlighted by the same participant, *"There are inconsistencies... mainly because of data incompleteness."* The PALMS uses data sources from DHSI2 and DHAMIS which are provided by the government and as such there is need to strengthen capacity of the district health facilities to provide more complete and transparent data sources to improve both the access to and quality of data collected during BPS implementation. This was also emphasised by participants at national level who highlighted the need for supporting data reviews at facility level.

Impact of other epidemics and natural disasters

The onset of epidemics, particularly COVID-19, Cyclone Freddy in year 3, and cholera outbreaks in year 2-3, also disrupted implementation BPS activities. Public health priorities shifted to address COVID-19, and restrictions were put on in-person coordination meetings and travel, delaying some planned BPS actions for close to a year. A participant from a BPS consortium supportive partner recounted, *"The greatest challenges...were probably more along the lines of when Cyclone Freddy hit or COVID or cholera outbreaks."* This may have affected progress of the BPS.

Complexity of the BPS package

A major concern raised by stakeholders was the perceived complexity of the BPS program. While the systems approach of the strategy was recognized for its comprehensive nature, it was also seen as overly complicated, which contributed to resistance and lack of buy-in

from some stakeholders in the first year or two of the project. One participant from a BPS consortium HIV implementing partner noted, *"BPS from an outsider's perspective sounds complicated...because nobody here understood what this thing was."* This complexity, coupled with ineffective communication, led to misunderstandings and less enthusiasm towards the program by some partners who found it difficult to grasp the objectives of the strategy.

One of the factors that led some national level stakeholders such as policy makers including members of the steering committee not to fully buy into the BPS was that the design was not well understood right from the beginning.

> *"For me, when BPS was starting, I would not lie to you, I was like, my goodness, what are these people trying to do? Because as I said, I was there in the first conversation, and it sounded super complicated. But over time, things were changing." (BPS consortium implementing partner)*

Inconsistent coordination

Coordination meetings, which were intended to be held quarterly, were often not conducted consistently. This inconsistency made it difficult to ensure timely decision-making and feedback, leading to delays in the implementation of BPS activities. A member of the consortium steering committee mentioned, *"It was supposed to be quarterly but some quarters we are not meeting."* The irregular scheduling of these meetings, coupled with poor communication about meeting times (the TOR for steering committee specified that meeting were to be held bi annually but some participants thought it was quarterly), made it challenging for key stakeholders to attend. This lack of consistent engagement hindered collaboration and the exchange of crucial feedback, undermining the program's implementation.

BPS had to overcome the above challenges to implement the planned activities. It is imperative to address communication challenges, institute a clearer stakeholder engagement, and a more flexible approach to managing external crises.

4.4.2 Opportunities for scale-up and sustainability of BPS

BPS program acceptance by implementers

Most participants at both the district and national level appreciated the BPS program. They were of the view that the program interventions should continue being implemented in Blantyre and that the interventions should be scaled up to other districts as well. There was evidence of scale up of BPS components to Lilongwe and Zomba as informed by participants. Councillors, for example, appreciated the fact that the BPS program involved them in the project as this was not the case previously. One of the councillors during a Focus Group Discussion emphasized that the people at the community level have been given hope with the interventions being implemented under the BPS. He emphasized that it is important that these interventions are sustained as people's expectations have been raised.

"People are still looking up to me. That's why I feel we need to find ways of sustaining these efforts even after partners have pulled out. There has to be a way, either through the government or ourselves, to adopt these programs and sustain them even after the projects have ended." (City Councillor)

The expectation is that since the councillors have been trained, the city council should be able to mobilise resources so that they should continue working when the BPS is phased out. However, they argued that they would still require funding in order to continue implementing interventions in their wards. One councillor argued that he is responsible for about 36,000 people in his ward and cannot reach all of them hence the need for funding. The city council therefore should explore how they can mobilise financial support for councillors as they implement such interventions in addition to other interventions they are involved in. Many informants, however, shared how the BPS, especially some of its components, can be scaled up and sustained beyond the project period.

Replicate BPS to other districts and disease programmes

There are many lessons that have been learned from the BPS and several informants suggested that these lessons should be comprehensively documented focusing on what is working well in the implementation of the BPS and shared with or replicated in all districts in Malawi.

"They should just do BPS in all the districts. I hear they have started in Lilongwe so it should just be all the districts. I think that's the only way because learning from how Blantyre has been good so if they scale it up to all districts I think the whole of Malawi, things are going to be good. I think they should also learn not to rely on the other funders because, after capacity building, people can be doing them on their own." (BPS consortium implementing partner)

"Yah, and I am also thinking to say if this can be replicable, can be done in all the districts in Malawi, and even beyond Malawi. I think it can produce better results, as we have done, and that can also help to sustain the gains that we have achieved in Blantyre." (BPS consortium district partner)

So far while BPS aimed at strengthening the district health system focusing on HIV prevention, there were some informants who said that when scaling up it should also focus on other health programmes.

"The recommendation I can make towards BPS, now it is high time, apart from only looking into HIV issues, we should also replicate it to other programs. The same approach we are using for HIV prevention, we can replicate it into other programs. Although we have started, I think we should do more on it." (BPS consortium district partner)

In order to scale up, the government should integrate the good practices in BPS in their policies, plans, budgets and funding. In Blantyre this has already been done as BPS interventions have been included in the district implementation plans. However, some informants said that other districts should do a SWOT analysis and adopt the BPS interventions according to their local context and not take BPS entirely. This is because districts are unique.

Investing in data management at health facility level

The data that is in PALMS is obtained from more than a dozen data sources, including the national DHIS2 and DHAMIS systems into which health facilities in Blantyre report data from their registers. There are data review meetings conducted at health facilities to make sure that data that is generated is of high quality. While the pulling of data into PALMS is a great idea, some key informants especially at national level felt that the investment should actually go to the health facilities to clean the data before uploading that data to the DHIS2.

> *"…… I think for us, it is not important to have data on a phone if it is garbage in, garbage out. It has to be clean data, credible data so we don't think that the investment should be in pulling data even if it's wrong data on PALMS for people to read because they will just be reading wrong data. We feel that the investment should be in the health centers, so the teams should be able to come up with clean data and they should be able to do data quality audits and then push it into PALMS. So it's a good investment but not good enough. It is only good enough if we start the data source, at the source." (BPS steering committee member)*

One of the HMIS officers in Blantyre said tha t while data quality checks are supposed to be done every quarter these are not done consistently due to limited funding and they would like such an activity to be done consistently to ensure that data quality is high.

> *"... Data quality checks are enough to have at least twice a year. This is not to have 2 years without data quality checks. All along we are saying PALMS is there receiving data, PALMS is there telling us red flags in some indicators. We go to facilities for mentorship and supervision which are different with data quality. You check with the registers and the system that; 'is it speaking one language?' we check a lot." (BPS consortium district partner)*

Involve the private sector

The private sector has not been much involved in the implementation of the BPS. There were some informants at national and district level including the private sector who reported that the private sector was not mobilized and that, as such interventions are being scaled up, the GoM should make sure that the private sector, through the MBCA, is actively involved.

Financial sustainability

> *"So the BPS model in its totality, ….. is a high-investment model. It's a high-investment. It requires a lot of resources, but it makes me wonder if it could be implemented in a lighter version, in a manner that perhaps does not need the level of investment that. I speak this from a financial sustainability point of view." (BPS consortium implementing partner)*

Sustaining access to PALMS

A key informant from the supportive partners reported that Cooper-Smith is working with the DHD to develop a guide for the transition management and administration of PALMS to the DHD. Almost all informants in this evaluation liked PALMS but the major concern was that it would require resources to expand this to other districts. Some national-level informants were concerned that while PALMS has been accepted, adopted and is being used in Blantyre, the DHD at the Ministry of Health Headquarters doesn't have the money to scale up PALMS to the national level. The system further requires maintenance and upgrading.

> *"Yeah, great questions. I think as a first step for PALMS over the next one to two years it really needs to be transitioned over to be nationally owned and run within DHD within the Ministry of Health, that will be a critical step to make sure that BPS components can be adapted and replicated to other districts because it will mean that PALMS is housed centrally and available for other districts to use and to use for data-informed decision making which is like, a big component of BPS and something that has to be made possible for the other elements to be successful and then for other districts I think it's important that they have strong local leadership within the district and city if it's relevant." (BPS supportive partner)*

> *"Another lesson is I think, sustainability approaches should also have been built in because now here, all these PALMS that have been developed, I don't think there is any funding to sustain them….". (BPS steering committee member)*

> *"Even the transport skills, the maintenance of the system, eventually we wanted Digital Health Department, we are in the final year of the project, those skills haven't been transferred yet to digital health, they can't be, what if Georgetown leaves today, we will not be able to maintain it." (BPS consortium partner)*

These fears however were allayed by Cooper Smith saying that processes were underway to handover the PALMS system to the DHD.

"In terms of the data pipeline, we are moving towards handing it over to the digital health division. I know that the digital health division already has some challenges in terms of HR to continuously support the data pipeline. We are yet to see how they are going to reposition themselves to support the data pipeline. So we believe that DHD will take a lot of responsibility to support the data pipeline and make sure that there is available data." (BPS consortium implementing partner)

While financial sustainability might be a challenge, several key informants said that the BPS has strengthened systems in Blantyre and these capacities will continuously be used. There were several suggestions made by informants which could contribute towards financially sustaining the BPS interventions for example including these interventions being included in the district implementation plans.

"So the financial sustainability is where the implementing partners are coming in and they are being encouraged to be part of the district implementation plans, the One Plan, One Budget initiative[under the HSSP III national health sector plan]. So this initiative is bringing in all the players in one basket. This means even the interventions under the demand creation and health communication activities that require finances will still be able to benefit because of the One Budget, One Workplan. Because we are now pouring all the resources in one basket." (BPS consortium implementing partner)

"The good thing is that this One Budget, One Plan is being implemented like across the country. So that is something that you are confident to say that it is going to sustain most of the interventions in the health sector." (BPS consortium implementing partner)

Local funding for BPS interventions

Stakeholders including the government should explore other ways of getting funding for similar interventions. One informant working for an NGO which was a member of the consortium proposed that one way of looking for resources for HIV prevention for example is to write joint proposals with the city councils which in most cases just waits for their funding from government or revenue collection and this is in most cases inadequate.

"Mmmh, not in details, but I remember in one of the meetings, it was mentioned in passing that for [the] future we could be thinking of writing a joint proposal together with the city council on addressing the structural risk reduction, but I think we did not push it as much." (BPS non-consortium implementing partners)

A key informant working for the city council was of the view that stakeholders should incorporate issues of HIV prevention in their plans when they are requesting funding from donors. City councillors suggested that Malawi should allocate 15% of the national budget

to health as recommended by a declaration [1] the country signed: since the country signed this declaration it has never allocated 15% of its national budget to health. If the government did this it would be a good start.

Institutionalization

The BPS mostly used local staff and existing structures to implement the BPS. The members of staff at the DHO including at health facilities have been trained and they are now implementing these interventions as part of their work and not as a BPS project.

> *"Yeah, I think there is a sustainability element to the work that BPS has been doing mainly because the work streams were housed in the Ministry at district level. The capacity that was being built was being built amongst Ministry's staff members and departments. The only worry is that at government level there could be attrition, people get in and out of jobs. And if we are dealing with the current HPO here, if the HPO moves to Salima district then we've lost, yes, the Malawi health system retains the HPO but Blantyre would have lost this HPO." (BPS consortium implementing partner)*

While initially the BPS project trained members of staff, this task has been taken over by the MoH and other stakeholders at the health facility level for example one key informant working for FINESS reported that at first those engaged in human centred design were being trained by the DHO as part of the BPS, and now the champions are the ones who are responsible for conducting training for facility leads implying that the facilities are able to do things on their own including running the community labs.

One issue that was also emphasized was that the officers at district, facility and community level are permanent members of staff of the Ministry of Health who are already on the payroll.

> *"Some, yeah, some I don't think. Yeah, so for the district-led programming, which directly involves the district leadership, the coordinators, I think that's very sustainable because those people are already on the government payroll, they are already in the system, they are not going out with BPS, so even BPS goes out today, the district coordinators are remaining because they are part of the government system. So they came and used the available system, which is great and very sustainable. For the use of the community leaders, because those leaders are still available in Blantyre, even when BPS leaves they are still available, that's very sustainable". (BPS supportive partner)*

At the city council, one key informant mentioned that city councilors may not have the capacity to understand data including graphs and he therefore suggested that the city council should dedicate a person who can be able to understand health data and should be given the responsibility to explain these issues to them daily so that they understand among other things data on HIV.

Several informants recognized that as civil servants they can be transferred anytime. Therefore, as part of institutionalization, the BPS has developed or they are developing tools, SoPs, manuals, and ToRs for various cadres involved in the implementation of the BPS interventions so that even if they are transferred whoever takes over from another district can be oriented accordingly and start working. This development of these tools is really for a smooth transition.

> *"I think what we need to do okay, number one is to have clear TOR's about all these structures that I have talked about. We must be clear about what is the role of an HSA? What's the role for the guys at the facility level in this? What is the role of a quality management platform at the facility level in this? It must be in black and white and these TOR's must be designed in a way that they are very user-friendly. We need to develop training manuals okay on these things, clear training manuals okay on these things." (BPS consortium district partner)*

While these members of staff may potentially move, in the meantime they will be there at the facility implementing interventions on a daily basis. One nurse at the Blantyre DHO reported that they already have the ToTs at the facility level and these members of staff will be teaching each other, including teaching new members of staff who might join the facility.

> *"Because one thing that we have done as part of sustainability, is that we are developing a structural risk reduction implementation guide. Because we recognize that these city councilors are elected, the next election, part of them are going to lose, and some are going to win. So, we need to put a system of some tools that those who are coming in can use, and the person that I have said should be a focal person at the city should be the one that should be orienting them on the tool. So, we also have our session to orient them. So, one of the things that will also include, is the orientation of these bylaws, and what they are supposed to do when they are working in their constituencies." (BPS non-consortium implementing partner)*

The district health promotion office has harmonized all demand creation and health promotion activities in the district. The demand creation and health promotion activities including materials (e.g. flyers) cannot be used in Blantyre without the approval of the HPO. The HPO office has set up the SBCC Technical Working Group of which any player in Blantyre cannot conduct any activities without following the procedures which the BPS set up.

> *"So as I earlier mentioned, this has been adopted and institutionalized within their systems. A very good example, I mentioned about the data management work stream which is the tool which the health promotion office uses whenever they want to design health promotion activities. This tool, they have institutionalized it to the extent that any implementing partner coming to Blantyre to do any*

health-related work and not just HIV, but any health-related work has to follow the procedures and the systems which the BPS has put in place." (BPS consortium implementing partner)

Lastly, several key informants including those working in HMIS reported that the district has already adopted the PALMS and this has since been integrated into the HMIS system, that means that all the officers working at the HMIS are already conversant with PALMS. These HMIS officers are the ones who normally help the coordinators in accessing different indicators in the PALMS.

Conclusions and recommendations

The evidence in this evaluation confirms that BPS was designed and implemented in Blantyre with an overarching objective of strengthening district-level systems to improve HIV prevention. Various stakeholders were involved in different roles in both its design, factoring in local context and implementation. The evaluation results show some key findings that may have implications for future programming.

5.1. Conclusions and implications of the evaluation

The evaluation results show some key findings that may have implications for future programming.

- **Co-creation:** The design and development of the BPS program were informed by local epidemiological data and health systems structures and context. It took a collaborative approach involving the National AIDS Commission, Blantyre District Health Services, local implementing partners in the HIV response, and technical partners with overall coordination by Georgetown University. The collaboration and coordination were cascaded into the implementation phase and contributed to stakeholder commitment, reduction in effort duplication, and resource wastage.

- **Collaboration:** The collaboration enabled district leaders to play an active role in the intervention, and this could have contributed to its acceptability to the local leadership and the community. The use of established structures within the district's public health and governance systems, capacity building, and mentorship for the district, health facility, and community leaders further contributed to the success. Multi-stakeholder involvement and improved coordination were also crucial.

- **Capacitation:** The BPS contributed to capacity building at the community, health system, and leadership levels. Through the community labs initiative, the community got more engaged and demanded more services, while at the health systems level, there were activities geared towards strengthening leadership, communication, and quality of service through the quality improvement initiative and data management and use in programming. The Prevention Adaptive Learning and Management System (PALMS) improved real-time data access and contributed to data-driven decision-making. Stakeholders gained a better understanding of and use of program data in ongoing prevention efforts, for example, by identifying where new risks or hotspots were emerging. The greater impact of how the capacity built will contribute to a sustainable HIV response will best be appreciated after a longer period of follow-up.

- **Improved service uptake:** While attributing impact to a given set of interventions is challenging, the evaluation used an innovative analysis approach to link the observed changes to the intervention-interrupted time series. Early outcome indicators of HIV Counselling and Testing showed significant and sustained uptake over the intervention period. On the other hand, PrEP, which started late, is showing great promise regarding eligibility screening and initiation.

- **Programmatic Challenges:** The BPS faced challenges in design and implementation, including the complexity of the intervention and related terminology, perceived inadequate training, high health facility staff turnover, weak coordination, limited involvement of the private sector for in-kind or financial support and data access issues - delays in clearing data as fit for sharing by the National HIV program. Perceived limited involvement of district stakeholders in managing the PALMS may impact sustainability. External factors like COVID-19, Cyclone Freddy, and a cholera epidemic further compounded these difficulties.

This evaluation did not assess the cost associated with the BPS program as these were not available to us. As such, the evaluators are unable to comment on the potential for sustainability with regards to the costs and investments needed to replicate a similar program elsewhere.

5.2. Recommendations

1. **Co-creation and design of program:** It is plausible that co-creation and design of the program, use of local and context-specific data, engaging multiple stakeholders, leveraging existing systems, and utilizing technology all contributed to a thriving intervention per our assessment of ongoing implementation and early outcome measures. Going forward, for the program to be sustained (with relevant adjustments according to prevailing conditions, such as available financing), a closer look at the cost implications needs to be undertaken.

2. **Greater Involvement of Stakeholders:** While the BPS initiative involved multiple stakeholders from the beginning, numerous voices, such as the private sector and other implementers, pointed to the feeling of not being involved enough. Increasing engagement with additional parties could attract more investment and have a better long-term impact.

3. **Extra Resources:** While BPS leveraged existing resources, it also introduced some new innovations, such as PALMS. For the PALMS platform to be sustained locally with minimum or no external human resources and technology investments, capacity must be built within national and district teams for effective data management. If PALMS' potential to inform near-real-time epidemic tracking is to be realized, timely availability of data from original sources such as DHIS 2 should be prioritized.

4. **Sustained Learning and Action:** There is a need to build local capacity to continually conduct in depth analyses to offer insights into the program's performance.

5. **Sustaining district-level coordination of activities:** The coordination of partners for the HIV response needs to be firmly institutionalised by mainstreaming coordination activities leveraging routine coordination meetings at the district level.

6. **Sustaining capacities built for HIV response:** The district capacities built by the BPS for coordinating the HIV response, such as quality improvement in service delivery, data use in programming, and client-centered health communication, need to be sustained by established training guidelines or standard operating procedures for future training of new staff, refresher training for existing staff, and having clear transitional plans

References

1. UNAIDS. (2023). *The path that ends AIDS.* Geneva: I+UNAIDS.
2. https://www.who.int/data/gho/data/indicators/indicator-details/GHO/estimated-number-of-people--living-with-hiv
3. https://thepath.unaids.org/wp-content/themes/unaids2023/assets/files/2023_report_chapter_1.pdf
4. https://www.statista.com/statistics/270209/countries-with-the-highest-global-hiv-prevalence/
5. https://phia.icap.columbia.edu/wp-content/uploads/2022/12/241122_Mphia_Foreword.pdf
6. Ministry of Health, Malawi. National HIV and AIDS Policy 2022-2027. Joint United Nations on HIV and AIDS (UNAIDS). From Blantyre - From Strategy to Action. Retrieved from https://fasttrackcitiesmap.unaids.org/cities/blantyre/.
7. Government of Malawi. (2017). HIV and AIDS (Management and Prevention) Act. Lilongwe: Government of Malawi
8. Ministry of Health. (2011). Clinical Management of HIV in Children and Adults. Lilongwe: Ministry of Health.
9. Kripke K, Chimbwandira F, Mwandi Z, Matchere F, Schnure M, Reed J, D. Castor, S. Sgaier & E. Njeuhmeli. (2016) Voluntary Medical Male Circumcision for HIV Prevention in Malawi: Modeling the Impact and Cost of Focusing the Program by Client Age and Geography. PLoS ONE 11(7): e0156521. https://doi.org/10.1371/journal.pone.0156521.

Annexes

Evaluation guide

Introduction

As a stakeholder with knowledge of how BPS has been rolled out, we would like to discuss with you and get perspectives on how BPS was designed and implemented and its likely impact on the HIV response in Blantyre.

Opening: Please tell me about your role/involvement in the BPS. *(Include gender, role/ position, and duration of current position)*

a. *(Probe) What was your role in the design of the BPS*

b. *(Probe) What was your role in the implementation of the BPS*

A. Design (* Questions on design applicable to core team only)

1. What informed/was the basis for the design of the BPS? What local and contextual data were used to design the BPS, and from which sources were they?

   a. *(Probe) How were the local and contextual data used while designing the BPS?*

   b. *(Probe) Please describe the contextual factors you considered during the design of the BPS. (describe what factors within the context informed the design of BPS and how)*

2. Please describe how the BPS design incorporated the capacitation (building capacity) of district systems as part of the plan to improve HIV prevention programming.

B. Implementation

1. What are the different interventions being implemented under BPS? *(Probe only if not mentioned : PALMS, Health communication, quality improvement, community labs, structural risk mapping)*

   a. (*Applicable only to the core BPS implementation team) Who was involved in the implementation of the BPS and what were their roles?

   b. (*Applicable to the core BPS implementation team) What shows that multi-stakeholder engagements at various stages of the HIV response while implementing the BPS - planning, community involvement - have been sustained?

   c. What were the enabling conditions for the district and national stakeholders to be involved/participate in implementing the interventions?

d. To what extent have you implemented the BPS interventions in the different levels of the health system *(e.g. administrative level, health facility level, community level) (Probe for each intervention mentioned)*

e. How has the district and the city adopted, integrated, and institutionalized the HIV prevention interventions you mentioned (Probe for each of the interventions mentioned).

2. In what ways has the BPS impacted/influenced the implementation of district-led HIV prevention programming to date?

   a. What were the main enablers in implementing and achieving the intended BPS results/outcomes?

3. What are the main barriers that have hindered implementing and achieving the intended BPS results/outcomes?

   a. How were these barriers addressed in the co-design and implementation phases?

4. What policies, guidelines, by-laws, and other tools have been developed or updated for better HIV response as a result of the BPS?

   a. Probe: How did BPS support the development, improvements, and/or adoption of updated policies, guidelines, by-laws, and other tools informed by project learning?

   b. Probe: What changes have occurred in HIV programming since the policies, guidelines, by-laws, and other tools were adopted?

C. Outcomes

1. What are the major outcomes resulting from the implementation of the BPS interventions?

   a. Governance and leadership:

   i. How have the district and city's capabilities in governance and technical leadership improved since the start of the project?

   b. PALMS:

   i. How has the use of data from PALMS influenced HIV programming - planning, resource allocation, implementation, and evaluation? Who has access to the data from PALMS?

   ii. What changes have occurred in HIV programming from the use of PALMS over the life of the project? What evidence is there to show/illustrate this change?

   c. Quality improvement

   i. How often are district-led quality improvement initiatives being used compared to the period before BPS?

ii. What were the facilitators for ensuring district-led quality improvement initiatives were used regularly?

iii. What changes (policy/programmatic) have occurred in HIV programming from the quality improvement initiatives over time?

iv. How have the quality improvement initiatives improved the HIV response in the district over time?

d. Health Communications

e. Community labs

f. Structural risk management

2. In which ways do you find the BPS valuable to your institution?

HIV prevention outcomes

a. In which ways has the BPS improved access to and use of HIV testing in the district as a secondary outcome?

b. In which ways have BPS improved access and uptake of PrEP?

D. Sustainability

1. How sustainable are these interventions implemented under BPS?

   a. How sustainable are the capacities built through the BPS to promote district and city ownership and functions in the entire Blantyre district's system and processes? Why do you say so?

   b. What has been done to ensure the sustainability of the BPS beyond the initial financial support? What other conditions need to be in place to ensure sustainability? *(Probe for considerations that should be made by the Blantyre district/City/ Government of Malawi to ensure the sustainability of the BPS in the long run)*

   c. What structural risk management strategies have been put in place by the district to ensure a functioning HIV prevention program? *(Probe on social, economic, and political risks).*

2. In which ways might BPS be influencing (attracting?) the in-flow of other HIV resources into the district?

3. (* Applicable to the core team only) What strategies can other districts in Malawi use to adopt and sustain the BPS components in their systems? Why do you say so?

Recommendations

a. What lessons have been learned from the BPS implementation that can be used to design and implement programs like this in the future?

b. What do you recommend should be done by the Government of Malawi to ensure the scale-up and sustainability of the BPS in Malawi beyond the support that has been provided?

Conclusion

Thank you very much for your time and cooperation, you have given us a lot of important information, and we appreciate all of your help.

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