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MENTOR MOTHERS PROGRAM IS COST-EFFECTIVE AND PROJECTED TO REDUCE VERTICAL TRANSMISSION OF HIV IN GAZA, MOZAMBIQUE

STUDY REPORT

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Authors

Nicole C. Mccann[1]; Mario Songane[2]; Clare Flanagan[1]; Abdul R. Cassamo[2]; Jessica Greenberg Cowan[3]; Helga Guambe[4]; Celia Magaia[2]; Nilesh Bhatt[2], Sushant Mukherjee[5]; Amancio Nhangave[6]; Andrea Ciaranello[1,7,8,9]

Affiliations:

1. Department of General Medicine, Medical Practice Evaluation Center, Massachusetts General Hospital, Boston, MA, USA
2. Elizabeth Glaser Pediatric AIDS Foundation, Maputo, Mozambique
3. U.S. Centers for Disease Control and Prevention, Maputo, Mozambique
4. Programa Nacional de HIV/SIDA, Ministério da Saúde, Maputo, Mozambique
5. Elizabeth Glaser Pediatric AIDS Foundation, Washington, D.C., USA
6. Direção Provincial de Saúde Gaza, Ministério da Saúde, Maputo, Mozambique
7. Division of General Internal Medicine, Massachusetts General Hospital, Boston, MA, USA
8. Division of Infectious Diseases, Massachusetts General Hospital, Boston, MA, USA
9. Harvard University Center for AIDS Research, Boston, MA, USA

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Acronyms

AIDS - Acquired Immunodeficiency Syndrome

ART - Antiretroviral Therapy

ARV - Antiretroviral

CDC - Centers for Disease Control and Prevention

CEPAC - Cost Effectiveness of Preventing AIDS Complications

CNBS - Comité Nacional de Bioética em Saúde

EGPAF - Elizabeth Glaser Pediatric AIDS Foundation

ePTS - Electronic Patient Tracker System

GBV - Gender-based violence

ICASA - International Conference on AIDS and Sexually Transmitted Infections in Africa

ICER - Incremental cost-effectiveness ratio

IRB - Institutional Review Board

LE - Life expectancy

MM - Mentor Mother

MoH - Ministry of Health

MTCT - Mother to child transmission

PBWH - Pregnant/breastfeeding women (PBW) with HIV

PMTCT - Prevention of mother to child transmission

PPOP - Patient and Program Outcomes Protocol

SOC - Standard of care

TB - Tuberculosis

UNAIDS - United Nations Programme on HIV/AIDS

Contents

Executive Summary

Introduction**:** Mentor mothers (MM) is a program of peer mentors who support pregnant/breastfeeding women (PBW) with HIV (PBWH) through counseling and follow-up visits. MM in Gaza (Mozambique) was associated with increased 12-month retention in prevention of mother to child transmission (PMTCT) care compared with standard of care (SOC). We assessed MM's cost-effectiveness and potential to contribute to meeting the UNAIDS target of <5% 18-month MTCT.

Methods**:** Using the Cost Effectiveness of Preventing AIDS Complications (CEPAC)-Pediatric model, we projected the clinical and economic impact of implementing MM, compared with SOC, for all PBWH in antenatal/postnatal care in Mozambique in 2019. We calculated the incremental cost-effectiveness ratio (ICER) from model-projected discounted life expectancy and lifetime costs, and the strategy was considered cost-effective if its ICER was <50% of Mozambique's GDP per capita. We also projected the necessary improvements in the continuum of care for prevention of vertical transmission, in addition to the MM, to reach the goal of <5% of vertical transmission.

Results: The implementation of MM was projected to reduce the vertical transmission at 18 months from 14.0% to 12.9% and to be cost-effective (ICER = 14% of Mozambique's GDP per capita) in the health facilities included in this evaluation. The UNAIDS goal could be achieved with interventions implemented together with MM that simultaneously accomplish three goals: reduce the incidence of HIV in pregnant women from 1.6% to 1.1% (per-pregnancy) and in lactating women from 0.1% to 0.08% per month, increase knowledge of HIV status among HIV+ pregnant or breastfeeding women in antenatal care from 73% to 100%, and increase coverage of antiretroviral treatment among HIV+ pregnant or lactating women from 95% to 100%. The maximum justifiable total cost that could be devoted to accomplishing these three goals, while remaining cost-effective, is US$590 for each pregnant or lactating HIV-positive woman.

Conclusion: Implementing the MM program at the population level in Mozambique is projected to decrease MTCT and be cost-effective. To reach the UNAIDS target, other PMTCT care continuum steps must be targeted at the same time; we provide a maximum justifiable cost for doing so.

Key words: Mentor mothers, HIV, vertical transmission, cost-effectiveness

1. Background

Retention among HIV+ pregnant women is a major priority for the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF) program in Mozambique. According to the Semi-annual Programmatic Report for 2017 (EGPAF, 2017), the 12-month retention rate among HIV-positive pregnant women in 138 health facilities in Gaza province, was 67% compared to 76% among adults in general. This is problematic, as effective prevention of mother-to-child transmission (PMTCT) depends on maternal adherence to care and treatment. To address this challenge, EGPAF rolled out the Mentor Mothers program in May 2016, as recommended by the Ministry of Health.

The program identifies HIV-positive women in the PMTCT program who fulfil the following eligibility criteria: being HIV-positive, adherent to ART, literate in Portuguese and willing to openly discuss their own HIV-status. The selected women, called mentor mothers (MM), are trained to conduct home visits in assigned neighbourhoods. They receive a five-day training on communication skills; adherence counselling; screening for tuberculosis (TB) and malnutrition; instructions on how to complete program forms; and topics that they will cover during counselling and health education sessions throughout the pregnancy and postpartum period. The highest performing MM in the training are promoted to two different positions based in the health facility: supervisor MM and focal point MM. Together with other facility staff, these MM collect and compile program data and monitor whether women who are referred to the health facility subsequently visit the clinic.

The other MM are based in the community where they conduct two different types of home visits for HIV-positive women who consent to such visits ahead of time.

The first type of visit are the routine monthly support visits during which MM assess antiretroviral (ARV) adherence through self-reporting and patient health cards, and also screen and refer for ARV side effects. They also reinforce adherence messages among pre- and post-natal women and HIV-exposed infants, and screen and refer suspected cases of gender-based violence (GBV), malnutrition and TB. Other topics include HIV transmission and prevention (e.g., use of condoms, getting family members tested etc.).

The second type of home visit is the active search visits of women who missed their schedule clinic visits. The women are identified using an electronic medical record access-based database called electronic Patient Tracker System (ePTS).

Apart from the two types of home visits described above, MM perform other types of home visits. These visits are to households that do not include known HIV-positive women but are purposely included in community visits to reduce the risk of inadvertent disclosure from the perspective of the community, these home visits are conducted for health education purposes. In such households, MM provide door-to-door health education sessions on general hygiene and cleanliness, use of mosquito nets for malaria, gender-based violence, and the importance of prenatal care visits.

The MM follow HIV positive women from the beginning of their pregnancy through delivery and postpartum period. These women and their babies are followed until the babies have a definitive HIV diagnosis following cessation of breastfeeding, after which the child is discharged or transferred to the integrated consultation. When the final diagnosis is negative, the women and their babies are discharged from the MM program. These babies are then enrolled in the paediatric HIV care and treatment service. According to the new guidelines, these children are supposed to be followed by a mentor mother up until 10 years of age however, in most health facilities, this recommendation is not followed.

The information regarding cost drivers of the MM program may aid the development of strategies to minimize costs and identify best practices to create efficiency and generate value for money; inform decisions to expand or replicate the program in other settings; and inform estimations of cost per infection averted by the program.

2. Objectives

- To determine the unit costs and cost-effectiveness of MM compared with the standard of care (SOC) in twelve districts in Gaza (Mozambique) in 2019
- To determine MM's potential to contribute to meeting the UNAIDS target of <5% total mother-to-child transmission (MTCT)
- To calculate any additional investments needed to achieve <5% MTCT while keeping interventions at the cost-effectiveness threshold of 50% Mozambique's *per capita* GDP

3. Methods

3.1. Study population

This evaluation assessed the cost-effectiveness of the MM intervention compared to SOC. We assessed the costs of MM from the study population of the following cadres: MM program advisor and coordinator, maternal and child health nurses, MM who act as supervisors and focal points at the health facility, and MM performing visits in the community. Costs of program implementation were obtained from financial and administrative personnel at EGPAF and health facilities. A total of 12 health facilities in 12 different districts in Gaza province were included in the evaluation (Table 1). Each health facility had one MM acting as supervisor, one MM acting as focal point, one to three community MM and, one to three maternal and child health nurse.

Table 1. Health facilities included in the evaluation.

District	Study site
Bilene	Centro de saúde da Macia
Chokwe	Centro de saúde de chokwe
Guija	Centro de Saúde de Guija
Chibuto	Centro de Saúde de chibuto
Manjakaze	Centro de Saúde de Manjakaze
Cidade de Xai-Xai	Centro de Saúde de Xai-xai
Limpopo	Hospital rural de Chicumbane
Chonguene	Centro de saúde de Chonguene
Massingir	Centro de Saúde de Massigir
Mabalane	Centro de Saúde de Massigir
Mapai	Centro de Saúde de Massigir
Chicualacuala	Centro de Saúde de Massigir

3.2. Costing

Costs were estimated from a health systems perspective and divided into four categories: labor, training, supplies, and supervision (and meetings) (Appendix Table 1). These costs were incurred between October 2018 and September 2019 in the twelve districts included in the evaluation, and were captured from EGPAF's in-country financial system (QuickBooks) and global financial system (Great Plains) as well as from internal financial reports and budgets. All costs were converted to United States Dollars (US$) using the prevailing exchange rate from the Mozambican Central Bank.

For labor, we annualized the monthly incentives paid to MMs, MM supervisors, and MM health facility focal points. This incentive is also intended to include transport for home visits, so those

costs are included as part of the labor costs. We then divided these costs over the total number of PBWH supported by those cadres during the reporting period, to obtain a labor cost per PBWH.

For training, we calculated the total cost of up-front trainings of MMs, MM supervisors, and MM healthy facility focal points during the reporting period. These included costs for venue, per diem, refreshments, and training materials. These costs were then divided by the total number of PBWH, to obtain a training cost per PBWH during the reporting period. Refresher training costs were not included, as the reinforcement of capacity-building for these MM cadres is being done through site supervision, for which we did compile costs.

For supplies, these included costs for: airtime, badges and ID cards, backpacks, stationary, t-shirts, raincoats, MM follow-up forms, and bicycles. For bicycles, the total costs were annualized using an assumption of two years of useful life, and straight-line depreciation, while all other items were treated as annual, recurrent costs.

Finally, for supervision, we calculated the total travel and per diem costs of EGPAF staff traveling to do site supervision during the reporting period.

3.3 Cost of evaluation

The total cost of this evaluation was US$ 2,488.94 and comprised mostly of LOE of the MM study team involved in compiling and analyzing data, and writing the report.

3.4. Cost-effectiveness model-based analysis

We used the Cost-Effectiveness of Preventing AIDS Complications (CEPAC)-Pediatric model, a validated computer simulation model of pediatric HIV disease progression and costs, to examine the clinical and economic impact of MM compared with SOC for all PBWH in antenatal/postnatal care in Mozambique in financial year 2019. The CEPAC-Pediatric model simulates outcomes for children from birth throughout their lifetime. In the modeled simulations, all children experience monthly risks of non-HIV-related mortality, and children living with HIV face additional monthly risks of HIV-related causes (Ciaranello *et al.*, 2013). In this analysis, the main outcome of the model-based analysis was total MTCT in the SOC strategy compared with the MM strategy.

Total MTCT was defined as the total number of pediatric HIV infections among children born to women with HIV divided by the total number of pregnant/breastfeeding women with HIV. In the model, MTCT risk is determined by maternal HIV status, including whether a

pregnant/breastfeeding woman has acute or chronic HIV, if she is on or off ART (and if on ART, if ART was initiated before or during pregnancy) (Stover *et al.*, 2019).

Therefore, total MTCT is dependent on the PMTCT cascade of care: HIV prevalence/incidence, ART coverage and retention, and viral suppression. These cascade of care parameters model inputs are different for SOC vs MM (Table 2). Patient-level data for the MM program was used as model inputs. The risk was modeled as a one-time risk during pregnancy and delivery, whereas during breastfeeding was modeled as a monthly risk.

Maternal HIV status was dependent on the PMTCT continuum of care, including HIV prevalence and incidence, knowledge of HIV status (determined by antenatal care coverage and HIV testing), ART initiation and retention, and viral suppression in each strategy (SOC vs. MM). In the model, these PMTCT continuum parameters were used as inputs for the SOC and MM strategies based on observational data from published literature (Table 2), and from the MM program using the Open Medical Record System (OpenMRS), a database which contains the demographic and clinical data of patients who use the health facility`s services (Table 2).

Table 2. Model input parameters: PMTCT continuum and costs.

Model parameters: PMTCT continuum inputs and costs in Mozambique	**SOC**	**Mentor Mothers**	**Sources**
HIV prevalence among PBW	15.2%	15.2%	(AIDSinfo, 2019)
HIV incidence among pregnant women (one-time probability)/among breastfeeding women (per-month)	1.6%/0.1%	1.6%/0.1%	(Dinh *et al.*, 2015; AIDSinfo, 2019)
Knowledge of HIV status (antenatal care coverage * HIV testing in ANC)	73%	73%	(Lain *et al.*, 2020)
ART coverage in PBWH in antenatal/postnatal care	95%	95%	(UNAIDS, 2019)
Viral suppression during pregnancy among women retained in care	73%	73%	(Dugdale *et al.*, 2019) EGPAF 2020
PBWH retention in PMTCT care at 12 months postpartum	71%	90%	(Dugdale *et al.*, 2019; EGPAF, 2020)
Maternal/paediatric ART cost, (per-month, paediatric stratified by age)	US$5-23	US$5-23	CHAI 2017
Cost of lifetime routine HIV care for children with HIV (per-month)	US$13-21	US$13-21	(Hyle *et al.*, 2014)
Additional cost for MM intervention, per PBWH in antenatal/postnatal care (per-month for 12-month duration)	-	US$2	

PMTCT care continuum inputs, inputted separately for SOC vs MM, included HIV incidence in pregnancy (1.6% per-pregnancy) and breastfeeding (0.1% per-month), knowledge of HIV status among PBW (73%), ART coverage among PBWH in antenatal care (95%), viral suppression in PBWH in pregnancy (73%), and retention on ART and in PMTCT care at 12 months postpartum (MM = 90%, SOC = 71%) (Table 2). MM cost data were estimated based on actual expenditures, as described in 3.2 above. Costs of ART and routine care were based on published cost data (Table 2).

As shown in Table 2, the difference between SOC and MM is reflected in the improved retention in PMTCT care and the intervention cost with MM: we assumed that MM would increase 12-month retention in postnatal care and on ART by 1.26-fold compared to SOC (from 71% with SOC to 90% with MM), and cost US$2/month/PBWH for the 12-month intervention. The 71% retention in the SOC was estimated based on routine program data pre-introduction of MM whereas 90% retention rate for MM was derived from program data post-introduction of MM in the same sites.

Discounted (3% per year) and undiscounted pediatric life expectancy (LE) were defined as the average LE of simulated individual in each strategy (SOC vs. MM). Discounted (3% per year) costs were defined as the average cost accrued by a simulated individual over their lifetime in each strategy (SOC vs. MM). Using projected discounted per-person LE and discounted per-person lifetime cost, we calculated the incremental cost-effectiveness ratio (ICER), defined as the difference in cost divided by the difference in life expectancy between MM and SOC. MM would be considered cost-effective if its ICER was <50% of Mozambique's *per capita* GDP, Mozambique GDP = US$503.57 (World Bank, 2019), as previously done (Francke *et al.*, 2016).

We then projected combinations of PMTCT care continuum improvements needed, in addition to MM, to reach the 5% MTCT target and calculated the additional investments that could be made to achieve this target while allowing the intervention to remain cost-effective at the 50% *per capita* GDP threshold

4. Data management

4.1. Data source

EGPAF`s program activity data from October 2018-September 2019 in the 12 districts included in the analysis was captured from internal financial reports and budgets, databases and relevant log-books.

4.2. Data storage

Data was entered into a password-protected database by data clerks in the health facility and validated by an M&E officer. A restricted shared folder on the local server was created. The local server is backed-up daily.

5. Limitations

- The current study did not disaggregate cost data by district or health facility, given that costs were not captured in our financial system at that level of detail.
- Model inputs are based on observational data and, SOC and MM were implemented at different points in time. Therefore, as with all observational studies, observed differences between SOC and MM may be confounded by external factors.
- We did not compare MM sites to non-mentor mother sites, because non-mentor mother sites were very small, minimal patient volume, etc. Instead we opted to compare 12-month retention prior to the introduction of MM, and then after the introduction of MM, at the same sites.
- HIV-related costs may vary over the lifetime of a child.

6. Ethical considerations

This evaluation was conducted under EGPAF's Patient and Program Outcomes Protocol, which covers secondary data analysis of routinely collected patient-level data. Permission and ethical clearance to conduct this protocol was obtained from the local IRB (approval number CNBS/656/19), CDC and Advarra Institutional Review Board (IRB) in the United States of America. The CEPAC-P modeling work was approved by the Mass General Brigham IRB.

This protocol is limited to the analysis of secondary data that were routinely collected as part of the standard services. This evaluation did not involve direct interaction with patients. No additional patient information was collected outside of the records at the time of data extraction.

7. Results

The total cost of the MM program was US$465,794 and the cost per pregnant and lactating woman (PLW) was US$24.93 (Table 3). The main cost driver was labor (71%) followed by supplies (16%), training (12%) and supervision (1%) (Figure 1).

Table 3. Total per pregnant and lactating woman.

Total MM Costs	**US$465,794**
Total No. of Clients (PW and LW)	**18,683**
Cost per PLW Woman	**$24.93**

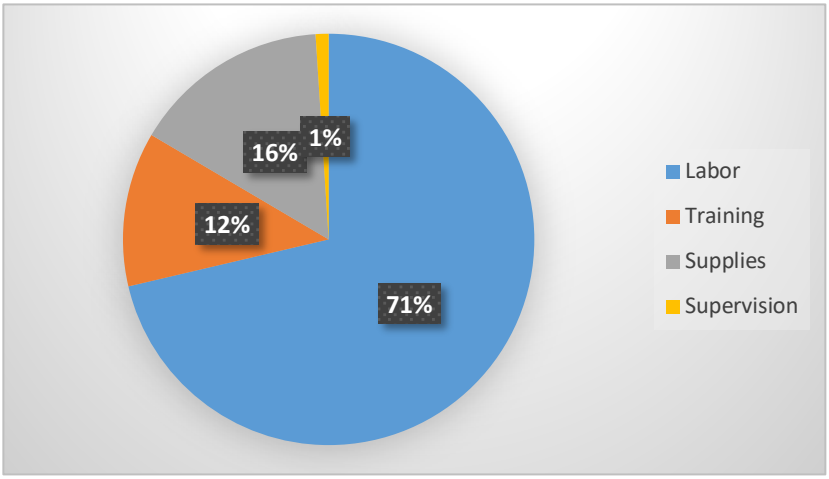

Figure 1. Cost components of MM Program.

In modeling analysis, MM reduced projected 18-month MTCT from 14.0% to 12.9% (Figure 2).

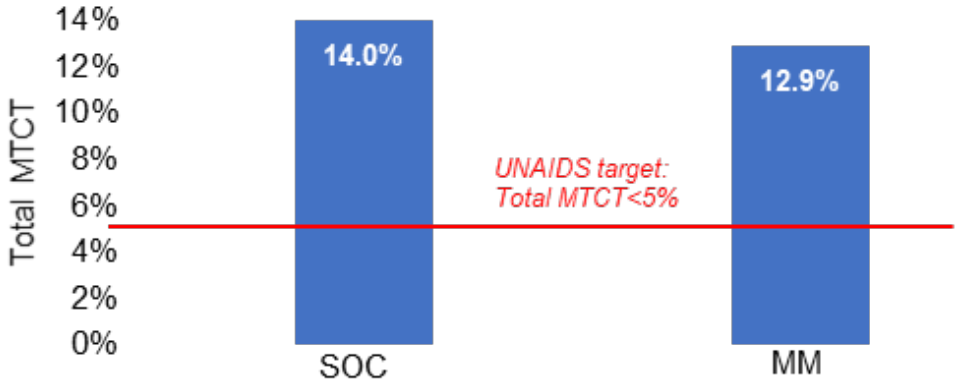

Figure 2. Total MTCT with MM and SOC.

In the model-based cost-effectiveness analysis, projected undiscounted LE was 0.09 years higher with MM than with SOC (61.87 years vs. 61.78 years, respectively). The model-projected ICER was $130 per year of life saved (YLS), well below 50% of the country's GDP per capita, indicating that MM intervention met the criterion for cost-effectiveness (Table 4).

Table 4. MM vs SOC life expectancy, costs, and cost-effectiveness.

	Pediatric life expectancy (years). Undiscounted	**Pediatric life expectancy (years). Discounted**	**Pediatric per-person lifetime costs (US$). Discounted**	**ICER US$/YLS**
SOC	61.78	25.89	38	--
MM	61.87	25.92	42	**130**

Additional modeling analysis found that the UNAIDS MTCT target could be reached with interventions implemented alongside MM that decrease HIV incidence in all PBW from 1.6% (per-pregnancy)/0.1% (per-month) to 1.1%/0.08%, increase knowledge of HIV status among PBWH from 73% to 100%, and increase ART coverage among diagnosed PBWH from 95% to 100%. The maximum justifiable total additional cost is US$90/PBW (US$590/PBWH) for these additional interventions, while still remaining cost-effective (Table 5).

Table 5. PMTCT care continuum improvements needed in addition to MM to reach UNAIDS target of <5% total MTCT.

PMTCT care continuum parameter	Current value	Value needed to reach target
HIV incidence among pregnant women (one-time probability), %	1.6	1.1
HIV incidence among breastfeeding women (monthly), %	0.10	0.08
Knowledge of HIV status in pregnant/breastfeeding women (antenatal care coverage*HIV testing in antenatal care), %	73	100
ART coverage in pregnant/breastfeeding women with HIV in antenatal care, %	95	100

8. Discussion and Conclusion

Achieving the combination of improvements needed to reach the UNAIDS target would be cost-effective at the 50% per capita GDP threshold, if interventions cost less than US$90 per pregnant/breastfeeding woman in the population (with and without HIV), or US$590 per pregnant/breastfeeding woman with HIV.

In our evaluation we did not include capital costs; however, they are expected to be low. Compared with a previous cost evaluation of MM in the region, US$124 per mother/child in 2016 US$ (Wynn *et al.*, 2017), our estimated cost per PLW is much lower. The difference in the cost per mother/child between our study and Wynn *et al.* are mainly due to differences in salary scales, costs of supplies and capital between Mozambique and South Africa.

Implementing population-level MM is projected to incrementally decrease MTCT and be cost-effective. To reach the UNAIDS target, other PMTCT care continuum steps must be targeted; we provide a maximum justifiable cost for doing so.

9. Recommendations

Since MM is projected to be cost-effective and increase retention, we recommend expansion of this program nationwide. However, to reach under 5% of MTCT there is also a need to expand ART coverage, increase HIV testing among PBWH and lower HIV infection risk among PBW.

Our analysis suggests that even with substantial additional investments of spending up to US$90 more per PBW, these investments in reducing MTCT would remain cost-effective.

10. Research utilization

The data provided here will inform donors and program implementers about the costs of implementing the MM program. This information is useful in informing program improvement opportunities, expansion and replication.

11. Dissemination

The presentation and dissemination of this study results are the responsibility of EGPAF in accordance with the reporting requirements of donors and the Mozambique`s Ministry of Health. The dissemination plan is as follows:

Site level

We will disseminate study findings to sites that participated in the study once we summarize preliminary findings. We will use feedback from site-level staff to validate findings and facilitate discussion regarding how study findings can inform site-level programming.

Ministry of Health (MoH) and/or Provincial Health Directorate (HPD)

We will formally disseminate study findings to key stakeholders at the MoH and Health Provincial Directorate. We may hold workshops to discuss the final study results and recommendations and action plan. The results were already orally presented at Mozambique`s XVII Jornadas Nacionais de Saúde that took place in Maputo from September 8-10th, 2021.

Global level

The results of this study were presented in poster format at International Conference on AIDS and Sexually Transmitted Infections in Africa (ICASA) that took place in Durban (South Africa) from 6th –11th December 2021. We will also prepare a manuscript to submit for publication in a peer-reviewed journal. Our publications will follow the guidelines of MoH, EGPAF, and the sponsoring USG agency. In addition, we will also disseminate findings to the 14 EGPAF-presence countries through one of the regular EGPAF in-person and virtual meetings that bring country teams across the 14 EGPAF countries together to share lessons learned and findings from current programming.

12. Conflicts of Interest

None of the team members had a conflict of interest.

13. Evaluation team

Authors` roles

JG, SM, NB, ARC designed the study; CCM, AN, ARC and HG were involved in data curation; NM, MS, CF performed data analysis with input from SM and AC. AC and SM, supervised and advised on the overall conduct of the study; NM, MS, NB, SM and AC drafted the report. All authors have read and agreed to submit the report.

Authors` background and qualifications

Nicole McCann – has a BA in Biology and Science in Society, and currently a PhD student in Health Service Research at Boston University School of Public Health. At Massachusetts General Hospital performed health economic modeling using Monte-Carlo simulation of HIV disease and treatment to inform policy decisions. International analyses: cost-effectiveness of implementing point-of-care HIV diagnostic tests for infants in Zimbabwe; novel TB diagnostics for people with HIV in South Africa and Malawi. US-based analyses: costs, financing, and cost-effectiveness of HIV prevention and treatment.

Mario Songane (MS) – has Master of Research in Biomedicine, PhD in Innate Immunity and Infection, and a Master in Business Administration. Highly versatile professional who has worked in various healthcare fields (Biomedical Research, Health Policy, Health Economics, Therapy Evaluation and Monitoring) in different countries (Mozambique, United Kingdom, The Netherlands, Canada and Switzerland). Has various publications in the field of Health Economics and Policy. Currently is the Regional Advisor for Economic Evaluations at EGPAF.

Clare Flanagan – holds an MPH in Global Health & Population and a BA in Government and Women's & Gender Studies. She worked on the end TB study with Partners In Health and has a background in the implementation and management of research projects.

Abdul R. Cassamo (ARC) – has bachelor degree in Computer Science and Information Systems, and a postgraduate diploma in Medical Informatics. At the time of the study was Director of Strategic Information at EGPAF. Abdul is a seasoned strategic information professional with over 10 years of experience in designing, implementing, monitoring, and strengthening monitoring, evaluation and reporting systems in Mozambique and throughout Southern Africa. He brings expertise in data management, research, program management and training for HIV programs.

Jessica Greenberg Cowan – is a Medical Doctor and has an MPH. Jessica is the Maternal and Child Health Branch (MCHB) Chief for CDC Mozambique where she oversees a portfolio of programs and partners in Mozambique focused on preventing HIV and TB transmission and caring for women, children and adolescents living with HIV. MCHB collaborates closely with the MOH, other government entities, provincial health departments, implementing partners, United Nations agencies and other donors and stakeholders. Together with other technical CDC branches in Mozambique, the MCHB supports more than 900 public health facilities across seven provinces.

Helga Guambe – is a Medical Doctor. At the time of the study was responsible for the Prevention of Vertical Transmission of HIV at Programa Nacional de HIV/SIDA (Ministry of Health).

Celia Magaia (CCM) - has a bachelor in Accounting Science with specialization in auditing. Celia is an experienced accountant with more than 8 years in financing management. At EGPAF, she is the Finance Senior Manager responsible for managing accounts, financial systems and administrative procedures to ensure compliance with donor requirements. Celia is also responsible for advising the Senior Management Team on matters related to budgets, contracts, procurement regulations and donor policies.

Amancio Nhangave (AN) – has a degree in Radiology and currently is enrolled in a Master in Public Health program at University Eduardo Mondlane. Currently is the Focal Point for Research at Gaza Provincial Health Directorate where he is involved in multiple HIV related projects with EGPAF in various areas such as HIV counseling and testing at facility and community levels, pharmacovigilance, clinical and qualitative studies.

Nilesh Bhatt (NB) – is a Medical Doctor with a Master in Medicine (STD-HIV/AIDS) and PhD in Infectious Diseases. Currently is the Director of Global Clinical Research at EGPAF (Washington, USA) and at the time of the study was the Mozambique`s Research Director. Prior to joining EGPAF was the Director of the Centro de Investigacao e Treino em Saude da Polana Canico and

a Senior Research at Instituto Nacional de Saude. Nilesh has published over 20 peer-reviewed articles, most of them on HIV/AIDS and TB.

Sushant S. Mukherjee (SSM) – has a Master of Arts in International Relations and Affairs, and a Master of Business Administration. Currently, is the Global Director of FACS and Economic Analysis. He is leading cost effectiveness analyses, economic evaluations and time-motion studies in global and country projects to inform value for money, financial sustainability of programs. Furthermore, he is building capacity of country staff to undertake such analyses.

Andrea Ciaranello – is a Medical Doctor and has an MPH. Dr. Ciaranello is an Associate Professor of Medicine at Harvard Medical School and an infectious disease physician at the Massachusetts General Hospital, where she directs the Perinatal Infectious Disease Program. Her research interests involve the use of simulation models to examine the long-term clinical outcomes and cost-effectiveness of strategies to care for women, children, and adolescents who are living with or at risk for HIV, including programs to prevent, diagnose, and manage perinatal HIV infection. She has worked closely with the World Health Organization to develop new pediatric HIV guidelines since 2012, and is the Co-Chair of the US Department of Health and Human Services Perinatal HIV Guidelines Panel.

377
378
379
380
381
382
383
384
385
386

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14. Appendix

Table 1. Cost data collection tool.

LABOR						
Cadre	**Unit**	**# of months**	**Monthly salary**	**LOE**	**# employees**	**Total cost**
Mentor Mothers	*Month*					
Mentor Mother Supervisors	*Month*					
Mentor Mother Health Facility Focal Points	*Month*					
TRAVEL						
Trip Description	***Periodicity***	**# of trips**	**Fuel**	**Accommodation**	**Perdiem**	**Total cost**
Mentor mother home visits						

SUPPLIES				
Item	***Units***	**# units**	**Unit price**	**Total cost**
Airtime				
Office stationery				
Capulanas				
Badges and ID cards				
Backpacks				
T-shirts				
Mentor Mother follow up forms				
Bicycles				
Raincoats				
Tablets				

TRAINING			
Item	**#**	**Unit cost**	**Total cost**
# of days the training took			
# of participant			
Venue rent			
Lunch			
Perdiem			
Training material			
Refreshments			
Fuel			
Accommodation			

SUPERVISION AND MEETINGS			
Item	**#**	**Unit cost**	**Total cost**
Venue			

Per diem			
Meeting supplies			
Local travel			
Refreshments			

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