



**Evidence-based practices for retention in care of mother-infant pairs
in the context of eliminating mother-to-child transmission of HIV in
Eastern and Southern Africa:**

A summary with guidance for scale up

MARCH 2019

ACRONYMS

AIDS	Acquired immunodeficiency syndrome
ANC	Antenatal care
ARV	Antiretroviral drug
PBF	Performance based financing
CDC	United States Centers for Disease Control
CHW	Community health worker
CQI	Continuous quality improvement
DHIS	District Health Information System
EBP	Evidence-based practice
EGPAF	Elizabeth Glaser Pediatric AIDS Foundation
EID	Early infant diagnosis
EMTCT	Elimination of mother-to-child transmission (of HIV)
ESA	Eastern and Southern Africa
HSS	Health systems strengthening
MNCH	Maternal, newborn and child health
PEPFAR	United States President's Emergency Plan for AIDS Relief
PHFS	Partnership for HIV-Free Survival Initiative
PMTCT	Prevention of mother-to-child transmission (of HIV)
POC	Point of care
PCR	Polymerase chain reaction
RMNCAH	Reproductive, maternal, newborn, child and adolescent health
SOP	Standard operating procedure
TAT	Turn around time
UNAIDS	The Joint United Nations Programme on HIV/AIDS
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WLHIV	Women living with HIV

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FOREWORD

Countries in Eastern and Southern Africa (ESA) have made remarkable progress in scaling up treatment for pregnant women living with HIV and reducing new infections among children. Estimates from the Joint United Nations Programme on HIV/AIDS indicate that 93 per cent of pregnant women living with HIV in ESA received antiretroviral medicines in 2017. Thanks to an accelerated response over the years in this region, the number of children who acquired HIV has been reduced by more than 1.2 million since 2009. This represents 80 per cent of the global reduction in new infections among children during that period.

Key among the remaining challenges to eliminating mother-to-child transmission of HIV is the retention of mothers and infants in care through the end of breastfeeding. This postpartum period is critical for supporting mothers to take their antiretroviral medicines as prescribed, providing optimal care for HIV-exposed infants and ensuring early identification and treatment of children who test positive for HIV. Mothers and their infants in this region continue to face significant challenges as they navigate the health care system over extended periods of time. Countries urgently require access to evidence-based and relevant practices that are aimed at ensuring that all pregnant women living with HIV receive treatment in a timely manner, and that optimal care and support are provided to both mothers and their infants through the end of breastfeeding and beyond.

We are therefore pleased to share this important review with recommendations, which examines the bottlenecks to retention in care of mother-infant pairs and offers 10 evidence-based practices to reduce those barriers. It is our hope that countries will examine, adapt and invest in rapid scaling up of the selected practices most relevant to their context. The accompanying tools and resources are offered to support countries in this process. As countries take these evidence-based practices to scale, even greater numbers of vulnerable women and children will be given the opportunity not only to survive, but also to thrive, and the world will move closer to ending AIDS among children.



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EXECUTIVE SUMMARY

For countries to achieve the elimination of mother-to-child transmission of HIV (EMTCT), mothers and their infants must remain in care through the cessation of breastfeeding and beyond. While many countries in Eastern and Southern Africa have made significant strides in reducing mother-to-child transmission (MTCT) rates at six weeks, the final MTCT rates at the end of the breastfeeding period remain stubbornly high.¹ This can be attributed in large part to sub-optimal adherence and retention of mother-infant pairs after childbirth.² This study was commissioned by UNICEF Eastern and Southern Africa Regional Office (ESARO) to document and disseminate evidence-based practices and learning to

improve retention in care. It is hoped that the documented practices together with the tools and resources identified will support countries to strengthen their prevention of mother-to-child transmission of HIV (PMTCT) programmes and improve outcomes for mothers, children and their families.

Multiple research methods were used, including literature review, key informant interviews and visits to Eswatini, Kenya and Zimbabwe. A total of 44 published studies and grey literature texts were included in the review, and 45 experts were interviewed. As outlined in Table 1, ten evidence-based practices were identified and organized in four intervention areas.

Table 1: Evidence-based practices by intervention area

Intervention area	Evidence-based practices
1. Service Quality	Laboratory improvements
	Continuous quality improvement
	Integration
2. Human Resources	Task shifting to community health workers (CHWs) / lay counsellors
	Performance-based financing (PBF)
3. Use of Health Information	PMTCT Data reviews
	Use of appointment diaries
4. Demand Generation	Mobile phone client communication
	Peer support interventions
	Male partner involvement

Areas for future research were also identified as follows: electronic health records, interventions for adolescent mothers, private sector and PMTCT, and innovative training approaches, including blended learning and use of mobile phone applications. To ensure maximum impact of the evidence-based practices, the following steps are recommended:

- i. Identify priority bottlenecks to retention in care of mother-infant pairs;
- ii. Prioritize the evidence-based practices that will best address these bottlenecks;
- iii. Cost the selected practices and include them in national plans and frameworks;
- iv. Prepare for implementation, adapt tools and build the capacity of health workers;
- v. Use phased implementation, starting with low performing sub-national levels, and monitor, learn and scale up the evidence-based practices;
- vi. Ensure involvement of key stakeholders at all stages, including women living with HIV; and
- vii. Plan for the sustainability of evidence-based practices

1 UNAIDS, 'The Global Plan Towards the Elimination of New HIV Infections Among Children by 2015 and Keeping Their Mothers Alive. Prepared for the iERG by UNAIDS', Geneva, 2015, http://www.who.int/woman_child_accountability/iERG/reports/UNAIDS_submission_iERG_2015.pdf, accessed 28 January 2019.

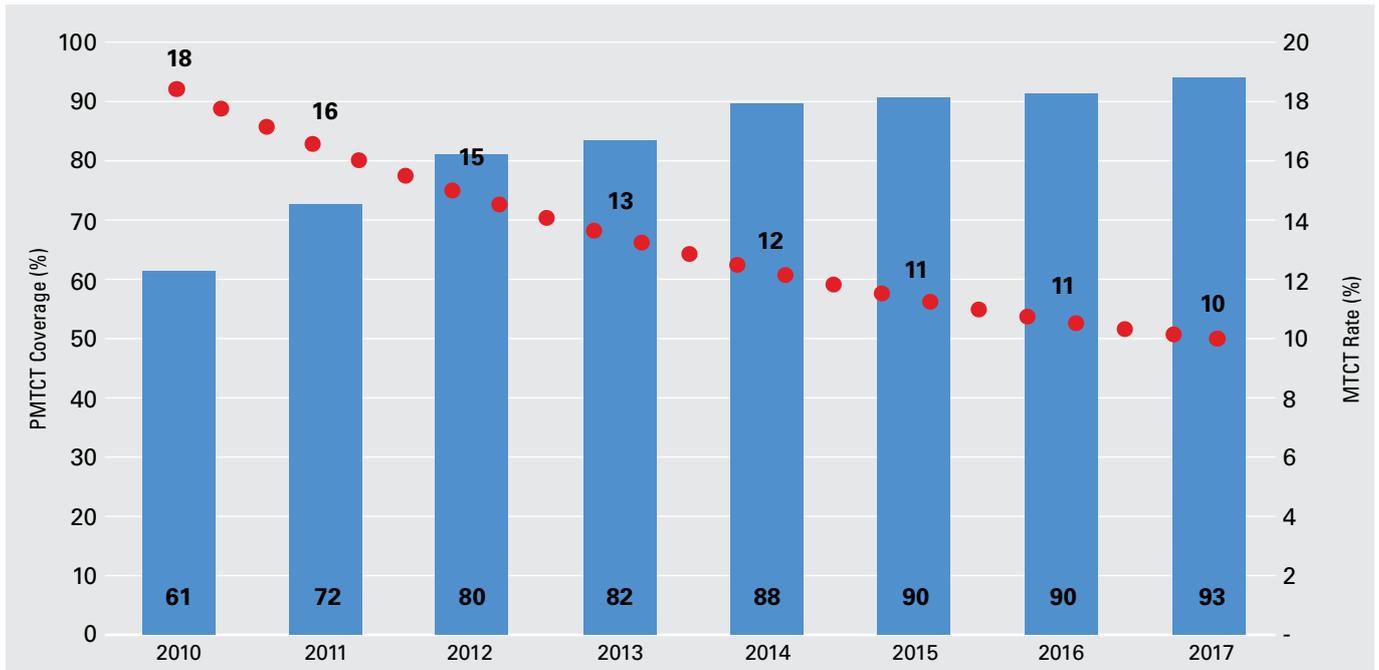
2 Haas A.D., et al, 'HIV transmission and retention in care among HIV-exposed children enrolled in Malawi's prevention of mother-to-child transmission programme', J Int AIDS Soc., vol.21, no.1, 4 September 2017, <https://www.ncbi.nlm.nih.gov/pubmed/28884524> <https://www.ncbi.nlm.nih.gov/pubmed/28884524>, accessed 2 February 2019

INTRODUCTION

Countries in Eastern and Southern Africa (ESA) have made significant strides towards ending AIDS among children through the rapid scaling up of PMTCT programmes. According to UNAIDS 2018 HIV estimates, a remarkable 93 per cent of the 940,000 pregnant women living with HIV in

ESA received antiretroviral medicines (ARVs) in 2017, resulting in an average rate of mother-to-child transmission (MTCT) of 10 per cent, as shown in Figure 1 below.³

Figure 1: Maternal ARV coverage (%) and MTCT rate (%) in ESA



Despite this progress, challenges remain to ensuring that mother-infant pairs remain in care through the cessation of breastfeeding and beyond. Coverage for two-month testing of HIV-exposed infants in the region was estimated at only 63 per cent in 2017.⁴ To achieve elimination of MTCT, mother-infant pairs must be supported to navigate the PMTCT continuum of services, from maternal HIV testing, initiation and retention on lifelong treatment and infant ARV prophylaxis, to infant HIV testing, treatment initiation and retention through the cessation of breastfeeding and beyond for those who test positive.

Although attrition occurs at all stages of the continuum of care, studies have shown that approximately 25-50 per cent are lost during the postpartum period.^{5,6} Coverage for postpartum PMTCT interventions is low in comparison to coverage at earlier points of the continuum of care. A systematic review of 44 studies in sub-Saharan Africa showed

that 94 per cent of pregnant women were tested for HIV, 70 per cent of those who were HIV-positive initiated on ART, 64 per cent of the HIV-exposed infants (HEIs) tested for HIV at six weeks while only 55 per cent of these infants received their final diagnosis at 18 months.⁷ Attrition worsens over time. A study in Rwanda documented a reduction in retention rates for mothers during the postpartum period from 68 per cent at six weeks post-delivery to 58 per cent by 12 months post-delivery.⁸ With evidence suggesting that approximately 95 per cent retention is required at each step of the continuum of care to achieve the elimination of MTCT (EMTCT) of HIV, the high postpartum attrition rates are a significant impediment to achieving the elimination goals.⁹ UNICEF data indicates that among children in ESA, the majority of new HIV infections (54 per cent) occur beyond six weeks.¹⁰

3 UNAIDS, UNAIDS Data 2018, Geneva, UNAIDS, 2018, http://www.unaids.org/sites/default/files/media_asset/unaids-data-2018_en.pdf, accessed 28 January 2019.

4 Ibid.

5 Geldsetzer, P. et al., 'A systematic review of interventions to improve postpartum retention of women in PMTCT and ART care', *J Int AIDS Soc.*, vol.19, no.1, 25 April 2016, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4846797/>, accessed 28 January 2019.

6 Phillips, T. et al., 'Disengagement of HIV-positive pregnant and postpartum women from antiretroviral therapy services: a cohort study', *J Int AIDS Soc.*, 8 October 2014, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4192834/>, accessed 15 April 2018.

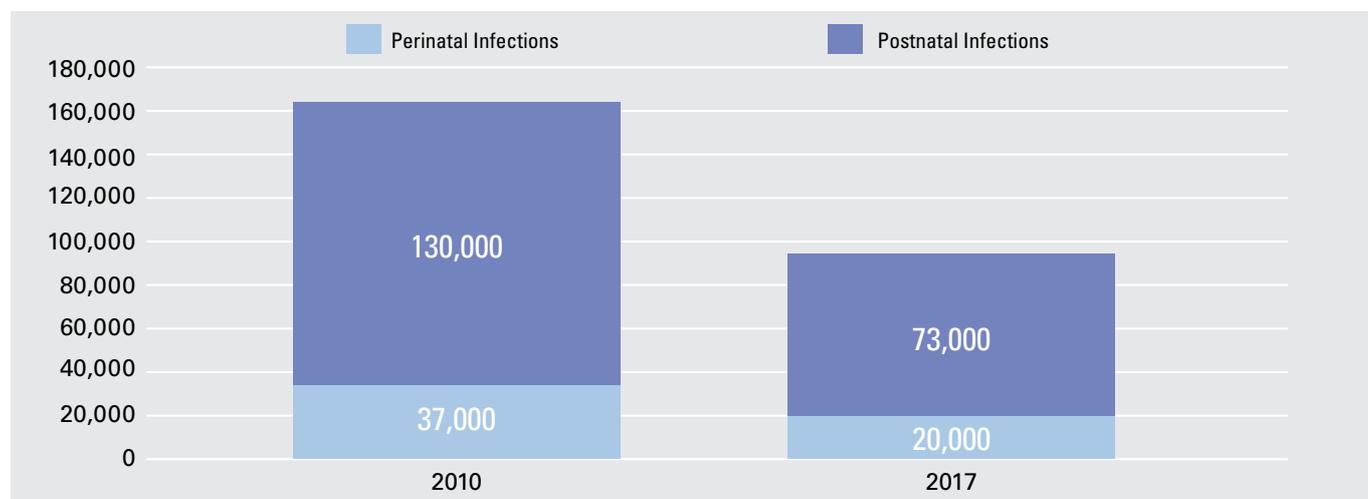
7 Wettstein, C., et al 'Missed opportunities to prevent mother-to-child-transmission: systematic review and meta-analysis', *AIDS*, vol.26, no. 18, 28 November 2012, <https://www.ncbi.nlm.nih.gov/pubmed/22948267>, accessed 15 April 2018.

8 Woelk, G.B., et al., Retention of mothers and infants in the prevention of mother-to-child transmission of HIV programme is associated with individual and facility-level factors in Rwanda', *J Int AIDS Soc.*, vol.19, no.5 suppl. 4, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4956733/>, accessed 28 January 2019.

9 UNAIDS, The Gap Report, Geneva, UNAIDS, 2014.

10 UNAIDS Spectrum Estimates, July 2018

Figure 2: Estimated number of new HIV infections among children (0-14 years), distributed by postnatal and perinatal infection



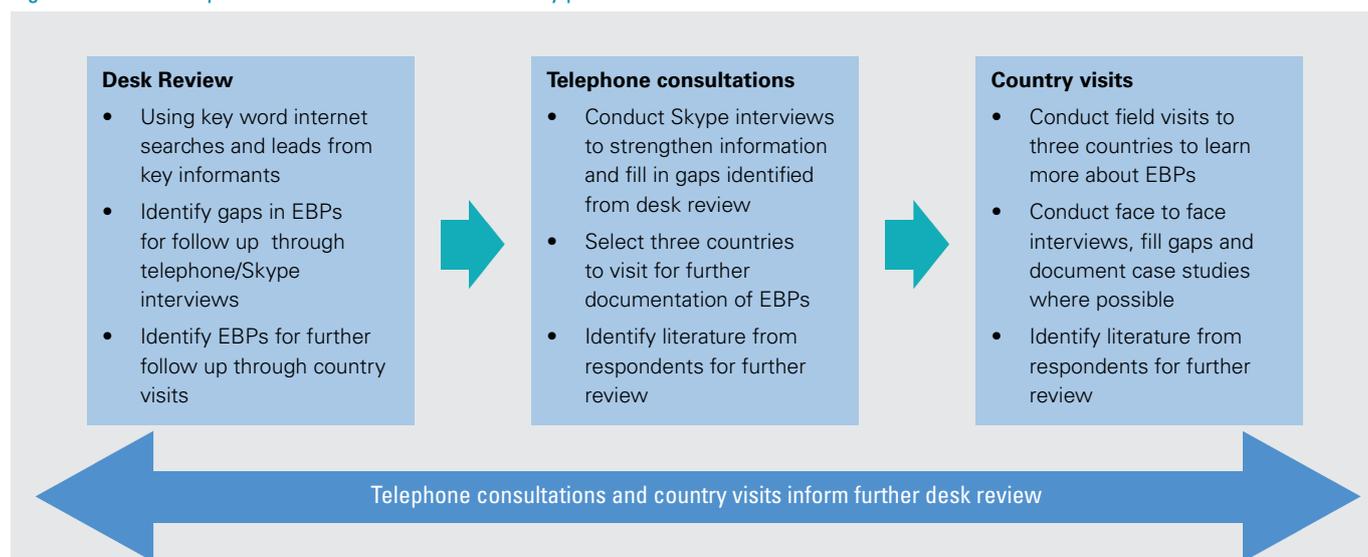
To help address the challenge of retention in PMTCT care, UNICEF ESARO commissioned this study to identify, document and share existing evidence-based practices (EBPs). This review expands on a previous UNICEF-funded study that focused on documenting community-based strategies for enhancing retention in PMTCT.¹¹ Unlike the 2015 study, this review includes both community- and

facility-based practices. Implementation of these EBPs is expected to contribute to the achievement of the UNAIDS 90-90-90 targets¹² and the Three Frees agenda to ending AIDS in children and adolescents.¹³ Where available, tools and resources are provided to guide implementation of the identified EBPs.

Methodology

As illustrated in Figure 3 below, this review used multiple methods, including literature review and field visits, key informant interviews and field visits. The process was iterative with key informants identified through literature review and relevant literature identified through interviews and field visits.

Figure 3: Schematic presentation of documentation study processes



11 Gulaid L.A., Community facility linkages to support the scale up of life long treatment for pregnant and breastfeeding women, New York, UNICEF, 2015, https://www.childrenandaids.org/sites/default/files/2017-03/community_facility_linkages_report_en.pdf, accessed 28 January 2019.

12 UNAIDS, 90-90-90 An ambitious treatment target to help end the AIDS epidemic, Geneva, UNAIDS, 2014, http://www.unaids.org/sites/default/files/media_asset/90-90-90_en.pdf, accessed 28 January 2019.

13 UNAIDS, Start Free, Stay Free, AIDS Free: A super-fast-track framework for ending AIDS among children, adolescents and young women by 2020, Geneva, UNAIDS, n.d., http://www.unaids.org/sites/default/files/media_asset/Stay_free_vision_mission_en.pdf, accessed 28 January 2019.

The desk review comprised internet searches of published journals and grey literature. The search strategy focussed on three key themes:

- The population of interest: mother-infant pairs
- The intervention of interest: postpartum retention for PMTCT and maternal, newborn and child health (MNCH)
- Outcomes for mothers and infants in PMTCT and MNCH

Key words and phrases on the three thematic areas were used to guide the internet search. These included: retention in care; postpartum retention in PMTCT; retention of mothers and infants in PMTCT; loss to follow up in PMTCT programme during postnatal period; interventions for increasing uptake of MNCH services, including immunization and breastfeeding. Search sites included, but were not limited to, PubMed, MEDLINE, Google scholar, Research Gate, Interagency Task Teams on Children and AIDS, and relevant HIV, PMTCT and MNCH University and conference websites. References from identified studies were used to search further. Stakeholder websites including, for example, the Elizabeth Glaser Pediatric AIDS Foundation (EGPAF), the United States President's Emergency Plan for AIDS Relief (PEPFAR), UNAIDS, UNICEF and the World Health Organization (WHO) among others were also searched. Grey literature, including programme documentation of EBPs provided during field visits, was also reviewed.

Studies were included in the review if they had results that improved at least one of the postpartum PMTCT and MNCH outcomes listed in Figure 4. The review did not put restrictions on the type of study design nor the country of implementation. In general, only studies from between 2012 and 2018 were included to ensure alignment to the most recent WHO guidelines, such as Option B+. A few studies conducted before 2012 but not contradicting the guidelines were included.

After title and abstract screening, 53 of the 253 studies identified were retained. Nine studies were discarded because they did not focus on at least one of the targeted PMTCT and MNCH outcomes, leaving a total of 44 studies for analysis. From the analysis, 29 studies demonstrated a positive impact on relevant outcomes and were therefore included in this report. Follow on email and Skype discussions were held with a total of seven study authors and global and regional experts.

Field visits were made to Eswatini, Kenya and Zimbabwe, where face-to-face key informant interviews were held with PMTCT and MNCH experts and implementers. Criteria for country selection included: 1) progress on retention and other PMTCT indicators; 2) existence of EBPs; 3) active presence of leading PMTCT players; and 4) representation of both Eastern and Southern Africa.

The objectives of the key informant interviews conducted during the field visits were to:

- o Identify additional EBPs on retention of mother-infant pairs in the context of PMTCT
- o Identify and gather tools and resources for supporting implementation of EBPs
- o Provide implementation details of the EBPs identified through literature review.

A total of 15 respondents from Eswatini, 10 from Kenya and 16 from Zimbabwe were interviewed. Respondents represented ministries of health, PMTCT and MNCH programmes, PEPFAR and its implementing partners, networks of women living with HIV, and researchers, among others. The key informant interview guide and the full list of respondents are presented in Annex 2.

Figure 4: Study PMTCT and MNCH outcomes

Outcomes relevant to this review

- Postnatal care coverage
- Infants exposed to HIV initiated on ARV prophylaxis
- Infants exposed to HIV receiving virological test and started on cotrimoxazole within two months after birth
- Initiation on ARVs for infants infected with HIV
- Re-testing for infants testing negative at 9 months and at 18 months
- Maternal ARVs uptake
- Breastfeeding rate
- Immunization coverage
- MTCT rate at 6 weeks
- Viral suppression
- Postpartum family planning
- Facility delivery
- MTCT rate at end of breastfeeding period

STUDY CONCEPTUAL FRAMEWORK

A conceptual framework (Figure 4, page 9) was developed to guide the review and analysis. The framework is premised on the question: *'What are the existing EBPs that could be scaled up to effectively address bottlenecks to postpartum retention in care of mother-infant pairs in the context of PMTCT?'*

Studies have documented barriers at all stages of the PMTCT continuum of care.¹⁴ Various factors in supply (facility) and demand (community) combine to facilitate or impede access to and utilization of PMTCT services. Supply-side barriers include poor quality of PMTCT services, such as service fragmentation, long waiting hours, health worker attitudes, inadequate (both in numbers and skills) and demotivated health workers and weak laboratory services.¹⁵ Demand-side bottlenecks to retention include inadequate knowledge on HIV and PMTCT including on availability of services, fear of HIV testing and its implications, stigma and discrimination

at individual, household and community level, reluctance to disclose one's HIV status, weak partner support, high workload among women including child care roles, and inability to afford transport and other costs.¹⁶ Additionally, poor data quality and its sub-optimal use for decision making at national, subnational, facility and community level limits the evidence on PMTCT programming for improved retention of mother-infant pairs.

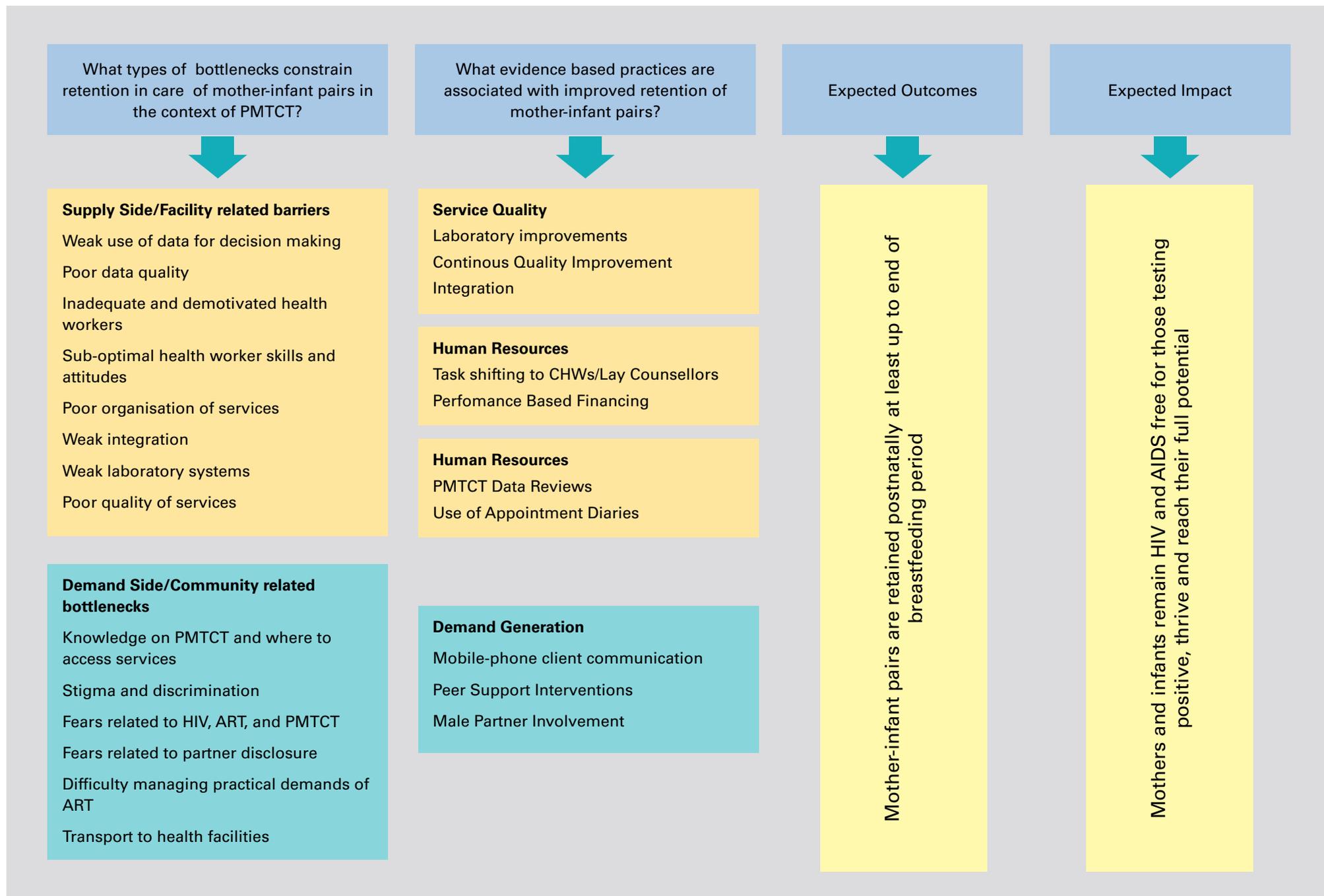
From the review, a total of 10 EBPs were identified and clustered into four intervention areas as follows: 1) service quality; 2) human resources; 3) use of health information; and 4) demand generation. Scaling up these EBPs is expected to result in improved postpartum retention of mother-infant pairs in the context of PMTCT. The overall expected impact is *'mothers living with HIV remain healthy and their HIV exposed infants remain HIV or AIDS free, survive, thrive and achieve their full potential'*.

14 Hodgson, I., et al. 'A Systematic Review of Individual and Contextual Factors Affecting ART Initiation, Adherence, and Retention for HIV-Infected Pregnant and Postpartum Women', PLoS ONE, vol.9, no.11, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0111421#pone.0111421-McLeroy1>, accessed 28 January 2019.

15 Woelk et al, 'Retention of mothers and infants in the prevention of mother-to-child transmission'.

16 Bwirire, L.D., et al, 'Reasons for loss to follow-up among mothers registered in a prevention-of-mother-to-child transmission program in rural Malawi', Transactions of The Royal Society of Tropical Medicine and Hygiene, vol.102, no.12, 1 December 2008, pp.1195–1200, <https://academic.oup.com/trstmh/article-abstract/102/12/1195/1919380?redirectedFrom=fulltext>, accessed 12 April 2018.

Figure 5: Study Conceptual Framework for EBPs on retention in care



THE EVIDENCE-BASED PRACTICES

The 10 EBPs organized under the four intervention areas are described below, including their background and rationale, description, supporting evidence and considerations for implementation.

1. SERVICE QUALITY

Health systems factors, including human resource shortages, sub-optimal organization and quality of service delivery, commodity and supply challenges, weak laboratory and health information systems, have been reported as barriers to retention in care of mother-infant pairs in PMTCT programmes.¹⁷ Three EBPs were identified to address these bottlenecks.

1.1. Laboratory improvements

Rationale

Strong laboratory systems are critical for early detection of HIV infection among exposed infants and for ensuring early treatment initiation for those who test positive, as well as for viral load monitoring of mothers living with HIV. As a result of weak laboratory systems, UNAIDS estimates for 2017 indicate that only 63 per cent of infants born to women living with HIV in ESA received their virological tests for HIV within two months of birth.¹⁸ Infant HIV testing is in most cases characterized by long turnaround time, resulting in delayed treatment initiation and high loss to follow up. Documented laboratory bottlenecks include limited infrastructure, insufficient human resource capacity, weak supply chains for laboratory commodities, and delays in sample transportation and in results return.^{19,20}

Description of the intervention

Specific interventions to improve laboratory services include point-of-care (POC) technology, sending results via mobile phone (short message service - SMS), general packet radio service (GPRS) printers, and improving sample transportation to expedite return of results. For scale up, these approaches are often combined, taking into consideration the local context and resource availability.

Studies supporting the EBP

Documented POC testing interventions have been associated with reductions in turnaround time, timely ART initiation for infants living with HIV and improved retention in care for infants exposed to HIV. A POC randomized control trial in Mozambique resulted in more infants in the group exposed to

POC testing receiving EID results (100 per cent) and initiating treatment (87 per cent) within 60 days of specimen collection compared to those in the group receiving standard care (12 per cent and 13 per cent respectively). A higher proportion of infants living with HIV were retained at three months post-ART initiation in the POC group compared to the group receiving standard care (63 per cent versus 4 per cent).²¹ A similar implementation study by EGPAF in Lesotho resulted in increased percentage of results received by caregiver (82 per cent at baseline to 100 per cent), reduced median number of days for blood collection to return of results (from 63 days to 0 days) and increased number of infants living with HIV being initiated onto ART (7 out of 8 at baseline to 31 out of 33).²²

Other innovations have also been documented to reduce turnaround time for EID. A meta-analysis associated use of SMS/GPRS with a reduction in turnaround time by 25 per cent or 2.5 weeks.²³ Rwanda, through use of a national mobile and internet-based HIV informatics system referred to as TRACnet, significantly reduced the total turnaround time by 84 per cent from 114 days to 23 days.²⁴ A study in Kenya that used a simple electronic medical record tool called HIV Infant Tracking System to assist providers in tracking and communicating EID laboratory results demonstrated significant improvements in retention, efficiency and early initiation of ART. In this study, retention in EID care at nine months more than doubled in the two pilot hospitals with the proportion of infants living with HIV initiated on ART increasing from 14 per cent to 100 per cent (urban) and 64 per cent to 100 per cent (peri-urban) facilities.²⁵

17 Okoli J.C. and G.E. Lansdown, 'Barriers to successful implementation of prevention-of-mother-to-child-transmission (PMTCT) of HIV programmes in Malawi and Nigeria: a critical literature review study', *Pan Afr Med J.*, vol.19, no.154, 15 October 2014, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4345230/>, accessed 28 January 2019.

18 UNICEF, 'Elimination of mother-to-child transmission', <https://data.unicef.org/topic/hiv/aids/emtct/>, accessed 28 January 2019.

19 Vojnov, L., et al., 'POC CD4 testing improves linkage to HIV care and timeliness of ART initiation in a public health approach: A systematic review and meta-analysis', *PLoS ONE*, vol. 11, no.5., 13 May 2016, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0155256>, accessed 28 January 2019.

20 file:///Users/macpro/Downloads/Scale_up_of_Early_Infant_HIV_Diagnosis_and.8.pdf

21 Jani, I., et al., 'Effect of point of care testing (POC) on ART initiation rates in infants', Conference on Retroviruses and Opportunistic Infection, Seattle, abstract, 13-17 February 2017, <http://www.croiconference.org/sessions/effect-point-care-testing-antiretroviral-therapy-initiation-rates-infants>, accessed 28 January 2019.

22 Tumbare, E., 'EGPAF Efforts to Optimize Early Infant HIV Diagnosis and ART Initiation for HIV-exposed Infants in Lesotho', Elisabeth Glaser Pediatric AIDS Foundation', AIDSFree EID Webinar, 18 January 2018, https://aidsfree.usaid.gov/sites/default/files/aidsfree.usaid.gov/sites/default/files/events/presentations/2018.1.18_eid-tumbare-lesotho.pdf, accessed 28 January 2019.

23 Vojnov, L., et al., 'Impact of SMS/GPRS Printers in Reducing Time to Early Infant Diagnosis Compared With Routine Result Reporting: A Systematic Review and Meta-Analysis', *J Acquir Immune Defic Syndr.*, vol.76, no.5, 15 December 2017, pp.522-526, <https://www.ncbi.nlm.nih.gov/pubmed/28825941>, accessed 28 January 2019.

24 Kayumba, K., et al., 'TRACnet Internet and SMS Technology Improves Time to Antiretroviral Therapy Initiation among HIV-Infected Infants in Rwanda', *Pediatr Infect Dis J.*, vol.35, no.7, July 2016, pp.767-771, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4925214>, accessed 28 January 2019.

25 Finocchiaro-Kessler, S., et al., 'If you text them, they will come: using the HIV infant tracking system to improve early infant diagnosis quality and retention in Kenya', *AIDS*, vol.28, suppl.3, July 2014, pp.313-321, <https://www.ncbi.nlm.nih.gov/pubmed/24991904>, accessed 28 January 2019.

Considerations for implementing laboratory strengthening interventions

- Develop strategies to ensure quality in POC testing and other laboratory improvements. Develop and implement quality improvement guidelines, including mentorship and supportive supervision
- Build the capacity of staff to operate laboratory improvements. POC testing in most countries, for example, is implemented by medical staff who are not usually trained in laboratory sciences (for instance nurses).
- Ensure sample integration does not weaken EID. Ensure that the programmes into which EID sample transportation is integrated are strong enough and have capacity for successful integration.
- Ensure the availability of airtime and network coverage for interventions using SMS/GPRS printers. Consider strategies to ensure continuous availability of airtime and printing paper at health facilities.
- Continue strengthening conventional laboratory systems along with strategic placement of innovations for optimal use and impact on PMTCT outcomes.

1.2. Continuous Quality Improvement

Rationale

Poor quality of services – including long waiting times, lack of adherence to guidelines, sub-optimal quality of counselling and health worker attitudes – negatively affect retention in care of mother-infant pairs. ‘Quality improvement interventions’ are a set of interventions that support health workers to identify and address bottlenecks to optimal service provision.

Intervention description

Quality improvement interventions usually involve the establishment and training of facility quality improvement teams to identify bottlenecks to retention in care of mother-infant pairs. Through coaching and mentorship sessions, the teams are supported to develop mini ‘quality improvement projects’ through which targeted solutions – ‘change ideas’ – for addressing the identified bottlenecks are implemented.

Continuous Quality Improvement (CQI) is a process in which health teams systematically collect and regularly reflect on local data to inform decisions and modify local practices and so improve delivery of services

Studies supporting the EBP

Quality improvement interventions at both facility and community level have been associated with improved retention of mother-infant pairs. The Partnership for HIV Survival initiative 2012-2016 was implemented in Kenya, Lesotho, Mozambique, South Africa, Tanzania and Uganda. A legacy evaluation conducted during 2017-2018 found that the initiative contributed to increased retention of mother-infant pairs, including from 2.2 per cent to 60 per cent in Uganda and 4 per cent to 73 per cent in Lesotho in less than two years.²⁶ Under this initiative, the quality improvement teams

met regularly, reviewed retention data, identified performance gaps and their root causes, and developed and implemented change ideas to address the bottlenecks. The Lafiyan Jikin Mata study in Nigeria found that facilities exposed to continuous quality improvement interventions achieved EID coverage of 49 per cent versus 25 per cent for the control group.²⁷ A quality improvement project in Cote d’Ivoire increased the EID coverage rate from 17 to 87 per cent.²⁸

Considerations for implementing continuous quality improvement interventions

- Where quality improvement approaches exist, build on these to incorporate retention in care. If none exist, introduce new initiatives with this focus. Sample guidance on quality improvement programmes can be found here and in Annex 2
- Develop systems to build capacity at various levels of service delivery, including through mentorship and coaching, to ensure the establishment and functionality of quality improvement teams
- Ensure availability of resources to implement the identified ‘change ideas’.

Improvements implemented through the Partnership for HIV-Free Survival initiative in Kenya

- File for each mother-baby pair
- Integration of comprehensive care clinic at PMTCT and MCH clinics
- Active screening and linking to care at all possible entry points
- Active follow-up of missed appointments

26 Hales, D.K., et al., ‘Legacy Evaluation of The Partnership for HIV-free Survival Kenya, Lesotho, Mozambique, South Africa, Tanzania and Uganda’ Washington, D.C., USAID, PEPFAR, Measure Evaluation, 2019, <https://www.measureevaluation.org/resources/publications/tr-18-314>, accessed 2 February 2019

27 Oyeledun B., et al., ‘Increasing Retention in Care of HIV-Positive Women in PMTCT Services Through Continuous Quality Improvement. Breakthrough (CQI-BTS) Series in Primary and Secondary Health Care Facilities in Nigeria: A Cluster Randomized Controlled Trial. The Lafiyan Jikin Mata Study’, *J Acquir Immune Defic Syndr*, vol.67, suppl.2, 1 November 2014, pp.S125-S131, <https://pdfs.semanticscholar.org/98cd/23350deadfa8fd3bfff31b179f165c4383f6d.pdf>, accessed 28 January 2019.

28 N’Guessan, J., et al., Results from the Pilot Phase of an ART/PMTCT Improvement Collaborative in Cote d’Ivoire, Washington, D.C., USAID, 2011, http://www.urc-chs.com/sites/default/files/Cote_divoire_Pilot_Phase_results_of_ART_PMTCT_Improvement_Sept2011.pdf, accessed 28 January 2019.

1.3. Integration

Rationale

In many settings, PMTCT is offered as a stand-alone intervention with little integration to other services. Effective integration of PMTCT and MNCH services – such as postnatal care, immunization, infant feeding and growth monitoring – can increase coverage, uptake and retention, reduce stigma associated with standalone PMTCT services and improve efficiency. Integration also presents an opportunity to identify and bring back infants exposed to HIV who have been lost to care. In settings with weak integration, mothers have to visit the clinic at different times to receive services for themselves and their babies. Combining clinics for the mother and child is another approach to integration that can reduce missed opportunities and enhance retention in care. Combined mother-infant clinics also help in reducing costs for women and their families.²⁹

Intervention description

Integrating services involves providing more than one service at the same venue and time. It requires building staff capacity, strengthening logistics to ensure availability of commodities and supplies, addressing bottlenecks in client flow at facility level, supportive supervision and use of data to monitor performance. Examples range from a focused approach of integrating EID into inpatient or nutrition services, to more broadly integrating PMTCT into routine ANC and postnatal care services. Combining services for the mother and the baby is another key approach that involves integrating MNCH and PMTCT services at a single point of care until final determination of the child's HIV status.

Studies supporting the EBP

An evaluation of an early initiative that tested integrating EID with immunization services in Zimbabwe demonstrated improved identification of infants exposed to HIV, and improved coverage with infant cotrimoxazole prophylaxis and HIV testing at 18 months. During the period of the pilot, 91 per cent of the infants exposed to HIV were successfully identified through the Zimbabwe child health card, and 565 infants exposed to HIV initiated treatment with cotrimoxazole prophylaxis between January and June 2008 (compared to 182 initiated between January and June 2007). HIV testing at 18 months increased from 74 (January-June 2007) to 128 (January-June 2008). The study did not

report any negative impacts on immunization coverage for all vaccines.³⁰ A more recent study in Zambia was associated with improved postnatal PMTCT and immunization indicators: the average number of EID tests changed by -0.49, 0.43, and 1.19 tests per month over baseline in control, simple and comprehensive intervention facilities, respectively.³¹ A study in Kenya that tested provision of integrated HIV care and treatment services with MNCH services during the prenatal and postnatal period reported significant improvements in maternal HIV outcomes, including enrolment in care (69 per cent versus 36 per cent). The proportion of infants tested for HIV at three and nine months was slightly higher in the intervention group (25 per cent versus 18 per cent), but not statistically different.³² Where integrated services cannot be offered in the same room, helping mothers and their infants navigate the multiple service delivery points through enhanced referral involving physical escorting also improves PMTCT outcomes. A randomized control trial in Zambezia province in rural Mozambique documented double the EID coverage among infants whose mothers were escorted (54 per cent) than for mothers who navigated the service on their own (26 per cent).³³

Studies have also demonstrated that combining mother and infant clinics is associated with improved PMTCT indicators. A combined mother-infant clinic in Rwanda reported improved retention in care for mothers (98.4 per cent) and a higher uptake of postpartum family planning at 76 per cent, which compares favourably to utilization of family planning among women living with HIV elsewhere in East Africa (ranging from 58-75 per cent). Retention of infants at 15-18 months was higher in the cohort (93 per cent) compared to 76 per cent in the routine programme in the country. Mother-to-child transmission rates among infants exposed to HIV discharged from the combined clinics was low (1.1 per cent) compared to a countrywide MTCT rate of 1.8 per cent.³⁴ A study in South Africa where mother-infant pairs continued to receive HIV care and routine services together at the MNCH clinic until the end of breastfeeding was associated with significant improvements in women's retention in care, viral suppression and extension of breastfeeding. For example, the median duration of breastfeeding was three times longer in the intervention versus control groups (nine months compared to three months).³⁵

29 Guillaune, N., et al., 'A Novel Combined Mother-infant Clinic to Optimize Post-Partum Maternal Retention, Service Utilization, and Linkage to Services in HIV Care in Rural Rwanda', *Int J MCH AIDS*, vol.6, no.1, 2017, pp.36–45, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5547224>, accessed 28 January 2019.

30 Zimbabwe Ministry of Health and Child Welfare et al., 'EPI/PMTCT pilot project. Integration of health services for HIV exposed infants into routine immunization services', Harare, Zimbabwe Ministry of Health and Child Welfare et al., December 2008

31 Wang P.C., et al., 'A Cluster Randomised Trial on the Impact of Integrating Early Infant HIV Diagnosis with the Expanded Programme on Immunization and HIV Testing Rates in Rural Health Facilities in Southern Zambia', *PLoS ONE*, vol.10, no.10, 29 October 2015, <https://www.ncbi.nlm.nih.gov/pubmed/26513240>, accessed 28 January 2019.

32 Turan, J.M., et al., 'Implementation and Operational Research: Effects of Antenatal Care and HIV Treatment Integration on Elements of the PMTCT Cascade: Results from the SHAIIP Cluster-Randomized Controlled Trial in Kenya', *J Acquir Immune Defic Syndr.*, vol.69, no.5, 15 August 2015, <https://www.ncbi.nlm.nih.gov/pubmed/25967269>, accessed 28 January 2019.

33 Ciampa P.I., et al., 'Improving Retention in the Early Infant Diagnosis of HIV Program in Rural Mozambique by Better Service Integration', *J Acquir Immune Defic Syndr.*, vol.58, no.1, 1 September 2011, pp.115–119, <https://www.ncbi.nlm.nih.gov/pubmed/21546845>, accessed 28 January 2019.

34 Guillaune et al., 'A Novel Combined Mother-infant Clinic to Optimize Post-Partum Maternal Retention'.

35 Myer, L., et al., 'Integration of postnatal services improves MCH and ART outcomes. A randomised control trials', Conference on Retroviruses and Opportunistic Infection, Seattle, abstract, 13-17 February 2017, <http://www.croiconference.org/sessions/integration-postnatal-services-improves-mch-and-art-outcomes-randomised-trial>, accessed 28 January 2019.

Considerations for implementing integrated interventions

- Prior to service integration, conduct a rapid assessment of both programmes to ensure that the systems are robust enough to improve with integration. Health systems strengthening (HSS) interventions are often required as part of the integration process.
- Where mother and infant services are combined, develop a clear package of combined services for both mother and infant through the end of breastfeeding period. The package of service developed by the government of Eswatini can be found here and in Annex 2.
- Ensure health workers have the skills, supplies, commodities, guidelines, standard operating procedures, job aides and reporting tools to deliver the required package of services in integrated service delivery models
- To enhance acceptability, ensure the participation of health workers in the design and assessment of the integrated service delivery models, including combined clinics

2. HUMAN RESOURCES

Staff shortages, inadequate skill development and poor motivation are widespread constraints that hinder health services in ESA, including retention in care of mother-infant pairs. EBPs to address these bottlenecks include partnering with community health workers (CHWs) and lay counsellors, and use of performance-based financing.

2.1. Partnering with CHWs and lay counsellors

Rationale

When there is a shortage of health workers, and health workers have excessive patient loads or suffer from low morale, time-intensive interpersonal tasks such as client counselling and returning clients to care may be compromised. Such tasks can be effectively shifted to CHWs and lay counsellors, providing more time for health workers to focus on interventions that require more technical skills.

Intervention description

'Task shifting' involves defining a specified set of tasks to shift from a more skilled member of staff to a lower skilled member of staff.

Task shifting in Botswana

Under the Botswana model, the lay counsellor position was created to assist nurses and midwives with counselling and providing support to all women in antenatal and postnatal care clinics. The lay counsellors underwent four to six weeks of training on how to provide HIV counselling and testing services. The lay counsellors are based at public hospitals and clinics throughout the country. They are supervised by nurses and have a job description with clear roles and responsibilities.

Studies supporting the EBP

Provision of selected PMTCT services by CHWs and lay counsellors is feasible and acceptable, and has been associated with improvement in PMTCT indicators. A study from Botswana on use of trained and supervised lay counsellors for provision of HIV services including PMTCT showed that lay counsellors are accepted and able to perform their duties to a high standard, including testing and counselling with the highest quality.³⁶ Follow up of mother-infant pairs through home visits by trained, supervised, motivated CHWs was associated with improved retention in

care. A randomized control trial in South Africa that utilized trained, supervised and remunerated CHWs to conduct home visits to women living with HIV reported improved infant prophylaxis and extended breastfeeding compared to the control group.³⁷ Another study in South Africa where CHWs delivered an integrated package of maternal and newborn care and PMTCT services resulted in a significant increase in exclusive breastfeeding rates at twelve weeks in the intervention group (29 per cent) compared with the control group (15 per cent). Although no significant differences were

36 Ledikwe, J., et al., 'Evaluation of a Well-Established Task-Shifting Initiative: The Lay Counselor Cadre in Botswana', PLoS ONE, vol.8, no.4, 9 April 2013, <https://www.ncbi.nlm.nih.gov/pubmed/23585912>, accessed 28 January 2019.

37 Le Roux I.M., et al., 'Outcomes of Home Visits for Pregnant Mothers and their Infants: A Cluster Randomised Controlled Trial', AIDS, vol.27, no.9, 1 June 2013, pp.1461-71, <https://www.ncbi.nlm.nih.gov/pubmed/23435303>, accessed 28 January 2019.

seen in PMTCT outcomes, the cumulative completion of the PMTCT continuum of care was greater in the intervention group than in the control group.³⁸ An intervention delivered by Mama Mshauri (Mentor Mothers) in Kenya's Nyanza region resulted in a moderate decrease in attrition of mother-infant pairs receiving PMTCT. Viral suppression was higher among the intervention group at 80 per cent (compared to 76 per cent among the control group).³⁹

Considerations for implementing CHW and lay counsellor's interventions

- Ensure continued capacity building and supportive supervision of CHWs and lay counsellors on their roles and responsibilities for PMTCT. A facilitators' manual

from Zimbabwe provides a step-by-step guide for training CHWs in paediatric treatment and follow up of HIV exposed infants. This manual can be found here and in Annex 2.

- The CHWs and lay counsellors need to have clear roles and responsibilities outlined including a job description.
- It is also important to establish and implement clear communication flows between the community workers and the formal health care system.
- Mechanisms need to be put in place for remuneration and motivation. There is a need for national budgetary provision to cover these costs.

2.2. Performance-based financing

Rationale

Poor motivation among health workers has been identified as one of the bottlenecks that negatively impacts on uptake and retention in PMTCT services. Performance-based financing has been tested as an effective strategy for addressing motivation challenges. Several countries in ESA are implementing performance-based financing initiatives for reproductive, maternal, newborn, child and adolescent (RMNCAH) services. This presents an opportunity to integrate retention of mother-infant pairs as one of the performance criteria for financial incentives.

Intervention description

Performance-based financing interventions use payments for performance in addition to standard salary payments. Indicators, levels of change required for payment and the amounts to be paid are defined in advance. Verification committees conduct assessments to validate that targets have been attained as a prerequisite to payment.

Studies supporting the EBP

In Rwanda, a payment for performance scheme increased the proportion of deliveries taking place in health care facilities by 23 per cent and increased the number of preventive care visits by children under two years of age by 56 per cent.⁴⁰

An evaluation study of a 33-month project in Mozambique associated performance-based financing with increased EID at 9-12 months after birth (100 per cent increase from baseline) and maternal ARV coverage (80 per cent increase from baseline). The same study reported a 64 per cent change from baseline on postnatal consultations.⁴¹

Considerations for implementing performance based financing interventions

- Ensure structures and systems are in place for the implementation of performance-based financing, including a clear definition of the indicators against which payment will be made and the amounts to be paid for required levels of change in each indicator. Both a means of verification and a source and system for making payments must also be identified.
- As performance-based financing requires sustained additional resources, maintain advocacy efforts, including presenting the evidence of improved outcomes and efficiencies.

38 Tomlinson, M., et al., 'Goodstart: a cluster randomised effectiveness trial of an integrated, community-based package for maternal and newborn care, with prevention of mother-to-child transmission of HIV in a South African township', *Trop Med Int Health*, vol.19, no.3, March 2014, pp.256-266, <https://www.ncbi.nlm.nih.gov/pubmed/24433230>, accessed 28 January 2019.

39 Fayorsey, R.N., et al., 'Mother-infant Retention for Health (MIR4Health): Study design, adaptations, and challenges with PMTCT implementation science research', *J Acquir Immune Defic Syndr*, vol.72, suppl.2, 1 August 2016, pp.S137-144, <https://www.ncbi.nlm.nih.gov/pubmed/27355501>, accessed 28 January 2019.

40 Basinga, P., et al., 'Effect on maternal and child health services in Rwanda of payment to primary health-care providers for performance: an impact evaluation', *Lancet*, vol.377, no.9775, 23 April 2011, pp.1421-1428, <https://www.ncbi.nlm.nih.gov/pubmed/21515164>, accessed 28 January 2019.

41 Rajkoita, R., et al., 'The effect of a performance-based financing program on HIV and maternal/child health services in Mozambique—an impact evaluation', *Health Policy Plan*, vol.32, no.10, 1 December 2017, pp.1386-1396, <https://www.ncbi.nlm.nih.gov/pubmed/29069378>, accessed 28 January 2019.

3. USE OF HEALTH INFORMATION

Timely and quality strategic information on PMTCT and its use for decision making is critical for improving performance and outcomes. Availability of quality data and its use to identify 'problem areas' along the continuum and at the different levels of service delivery guides improvements. Use of data also helps address inequity issues in PMTCT by helping to identify subnational areas and population groups with poorer PMTCT indicators. Two interventions, periodic PMTCT data reviews and appointment diaries, are discussed under this intervention area.

3.1. PMTCT data reviews

Rationale

PMTCT data reviews, especially through PMTCT cascade analyses and dashboards, can identify the points along the continuum of care where mothers and infants drop out of care, and can localize performance issues (to specific districts or facilities) for improvement. Use of scorecards during these reviews helps to promote greater accountability of stakeholders.

Intervention description

PMTCT data reviews involve collating PMTCT data, usually from District Health Information Systems (DHIS), and analysing the data through cascade analysis. Participatory meetings are then held to review the data, identify the bottlenecks and develop targeted solutions to address the bottlenecks. As the solutions are implemented, performance is monitored through the use of simple tools, including visual dashboards. Although used mainly at facility level, data reviews can also engage the community in joint data reviews and the development of solutions.

Studies supporting the EBP

A study from South Africa demonstrated the successful use of dashboards for data-driven decision making at all levels of service delivery leading to significant improvements in PMTCT indicators. Based on this initiative, postnatal care for mothers at six days recorded an increasing trend from 17 per cent in 2010 to 52 per cent in 2011 and 62 per cent in 2012. Infant Polymerase chain reaction (PCR) testing at six weeks improved from 87 per cent in 2010 to 93 per cent in 2011 and 100 per cent in 2012.⁴² Through a community-facility PMTCT dashboard review process in Malawi, participating facilities reported an increase in EID testing at 12 months from 13 per cent to 100 per cent within a period of three months.⁴³ A similar approach in Tanzania was associated

with improved follow up of children under five years, male partner involvement in PMTCT and improved exclusive breastfeeding.⁴⁴

An evaluation of a community scorecard intervention in Malawi was associated with a 20 per cent increase in CHW visits to women during pregnancy and a 6 per cent increase during the postnatal period. Further analysis suggested that the community scorecard approach had a significant effect on use of modern contraceptives, with an estimated 57 per cent greater use of contraceptives in the intervention versus control communities.⁴⁵

Considerations for implementing PMTCT data review interventions

- Ensure timely availability of quality PMTCT data, as this is essential for successful reviews. It is relevant to include data quality assurance, including mentorship of health workers on approaches to ensure data quality.
- Deliver capacity building interventions for health workers at all levels to manage data analysis, including development and use of dashboards. The EID dashboard used in Kenya can be found here and in Annex 2.
- Ensure implementation of action plans from data review meetings. This requires both dedicated resources and solutions that are feasible and relevant in the local context. CARE has developed a step-by-step guide to developing and implementing community scorecards, which can be found here and in Annex 2.

42 Bhardwaj, S., et al., 'Elimination of mother-to-child transmission of HIV in South Africa: Rapid scale-up using quality improvement', SAMJ, S. Afr. med. j., vol.104, no.3, March 2014, http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0256-95742014000300035, accessed 28 January 2019.

43 UNICEF, 'Together, we can improve': A case study on joint community-facility review of PMTCT dashboards in Malawi, Lilongwe, UNICEF, February 2016 https://www.childrenanddaids.org/sites/default/files/2017-04/Malawi%20Case%20Study_PMTCT_UNICEF-2016.pdf, accessed 28 January 2019.

44 USAID, Strengthening Community Systems to Increase Uptake and Retention of PMTCT services in Tanzania, Washington, D.C., USAID, 2013, https://www.usaidassist.org/sites/assist/files/tanzania_aimgaps_oct2013.pdf, accessed 28 January 2019.

45 Gullo, S., et al., 'Effects of a social accountability approach, CARE's Community Score Card, on reproductive health-related outcomes in Malawi: A cluster-randomized controlled evaluation', PLoS ONE, vol.12, no.2, 10 February 2017, <https://www.ncbi.nlm.nih.gov/pubmed/28187159>, accessed 28 January 2019.

3.2. Use of appointment diaries

Rationale

Many mothers and infants are lost to follow up due to a lack of systems to track and identify clients scheduled for clinic appointments, resulting in failure to identify early those who miss appointments.⁴⁶ Improved client data/information management through use of appointment diaries and a clear system of following up with those who miss appointments has been shown to contribute to improved retention in care of mother-infant pairs.

Intervention description

The use of an appointment diary to record priority client appointments was identified as a key intervention. Based on review of information in the appointment register, missed appointments are tracked and followed up through text message, phone calls and/or home visits. Structured monthly meetings between clinic staff and tracing agents (who mainly include CHWs and mentor mothers) may also be held to discuss progress in bringing back clients lost to follow up.⁴⁷

Studies supporting the intervention

A study in Zimbabwe that implemented appointment diaries and monthly client review meetings was associated with improved appointment making, returning women to care within three months of a missed appointment, and tracing women who had defaulted from treatment. Maternal and infant appointment making increased in the intervention sites compared to the control sites at 51 per cent versus 36 per

cent for maternal and 41 per cent versus 5 per cent for infant appointments. A higher proportion of mothers (11 per cent) in the intervention arm were returned to care within three months of a missed appointment than in the control arm (4 per cent).⁴⁸

Considerations for implementing client appointment diaries

- Develop a user-friendly appointment register and documented protocol for tracking clients and tracing those who miss appointments. Zimbabwe has developed a both a sample register and defaulter tracing operating procedure which can be adopted by other countries. Both the sample register and the standard operating procedure from Zimbabwe can be found here and In Annex 2.
- Ensure clients are protected from stigma and discrimination. Various tracing and tracking interventions, such as use of mobile phones and lay counsellors, may expose mother-infant pairs to HIV-related stigma and discrimination.⁴⁹ Extra care must be made in planning and monitoring tracing interventions to avoid such unintended consequences.
- Make use of multiple tracking and tracing interventions, as this is likely to yield better results, as clients differ in their channels of communication and responsiveness.

46 Taylor, N.K. and A.M. Buttenheim, 'Improving utilization of and retention in PMTCT services: Can behavioral economics help?', *BMC Health Serv Res.*, vol.13, no.406, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3852550/>, accessed 28 January 2019.

47 Woelk, G., et al., *Enhancing retention in care for HIV positive mothers and their infants by improving facility tracking and community health working tracing in Zimbabwe*. The Tractor Report, Washington, D.C., USAID, 2016, http://www.hivcore.org/Pubs/Zim_TracTOR.pdf, accessed 28 January 2019.

48 Ibid.

49 Mwapasa, V., 'Impact of Mother–Infant Pair Clinics and Short-Text Messaging Service (SMS) Reminders on Retention of HIV-Infected Women and HIV-Exposed Infants in eMTCT Care in Malawi: A Cluster Randomized Trial', *J Acquir Immune Defic Syndr*, vol.75, suppl.2, 1 June 2017, S123–S131, http://www.who.int/hiv/pub/journal_articles/jaids-2017-04.pdf, accessed 28 January 2019.

4. DEMAND GENERATION

Individual and interpersonal barriers impacting on postnatal retention of mothers and infants in the context of PMTCT include social and demographic factors, knowledge of PMTCT and where to access services, and fears related to an HIV diagnosis, lifelong treatment and disclosure.⁵⁰ Stigma, social, cultural and gender norms are identified as leading community-level barriers that hinder mother-infant pair retention in care.⁵¹ Community-level evidence-based practices seek to create an enabling environment at community level for increased service uptake, adherence and retention in care. EBPs identified under this intervention area include: Mobile Phone based Client Communication, Peer Support and Male Partner Involvement.

In implementing demand generation activities, it is critical to ensure that the supply side (service provision) is ready for increased demand. This includes availability of adequate and skilled health workers and commodities and supplies.

4.1. Mobile phone client communication

Rationale

Women's heavy burden of household responsibilities, lack of information on the availability of PMTCT services as well as inadequate knowledge about the importance of PMTCT services negatively impact on the retention in care of mother-infant pairs. With increased mobile phone ownership and network coverage in the ESA region, mobile phone communication through both voice and text messages presents an opportunity for enhanced provision of PMTCT information, and to remind women of the importance of attending health facilities for their HIV care and treatment and that of their infants.

Intervention description

Evidence-based interventions under communication based on mobile phone clients use phone calls, text messages or a combination of both. Some interventions use a dedicated case manager to communicate with clients.

Summary of evidence supporting the EBP

Previous reviews have documented the impact of mobile phone client communication on improving PMTCT outcomes.^{52,53} A randomized control trial study in Kisumu in Kenya (2014) resulted in improved adherence to infant nevirapine⁵⁴ prophylaxis (91 per cent versus 72 per cent in the control group, six-week retention in care (78 per cent versus 52 per cent in the control group),⁵⁵ and early HIV testing for infants exposed to HIV (69 per cent versus 37 per cent in the control group). A South African study that used telephone calls and text messages from a case manager was associated with improved EID outcomes. In this study, 90 per cent of infants were tested for HIV by 10 weeks of age during the intervention period, compared to 63.3 per cent during the pre-intervention.⁵⁶

Considerations for implementing mobile phone client communication

- Conduct analyses to understand mobile phone coverage and usage. For effective use of mobile phones for PMTCT, women living with HIV will need to have some form of access, either through their own phone, or that of a partner or another trusted person. Alternative interventions will be needed for women with no access to mobile phone communication.
- Obtain informed consent in advance from women on the use of mobile phones for communication. Another strategy to minimize stigma would be to engage all pregnant women, regardless of HIV status, in mobile phone use for follow up.
- Plan and budget for payment of costs associated with phone calls and text messages. Where possible, ensure that women can call and text back free of charge for clarifications or to seek more information.
- Consider partnering with mobile phone companies as part of their corporate social responsibility. In Mozambique, the Ministry of Health partnered with a mobile phone company that donated SIM cards, airtime, and technical assistance to the health system.⁵⁷
- Ensure that the content of messages and phone communication is informed by a formative assessment of local knowledge, attitudes and practices that facilitate and hinder service uptake and retention. Messages need to be standardized and conveyed in language that is understood by the majority of women.

50 Hodgson, I., et al., 'A Systematic Review of Individual and Contextual Factors Affecting ART Initiation, adherence and retention', PLoS ONE, vol.9, no.11, 5 November 2014, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0111421#pone.0111421-McLeroy1>, accessed 28 January 2019,

51 Ibid.

52 Geldsetzer et al., 'A systematic review of interventions to improve postpartum retention of women in PMTCT and ART care'

53 Gulaid, Community and facility linkages to support the scale up of life long treatment for pregnant and breastfeeding women with HIV.

54 Nevirapine (NVP) is a drug used as part of ARV.

55 Kebaya, L., et al., 'Efficacy of mobile phone use on adherence to nevirapine prophylaxis and retention in care among HIV exposed infants in PMTCT', Arch Dis Child, vol.99, suppl.2, 2014, https://adc.bmj.com/content/99/Suppl_2/A329.2, accessed 28 January 2019.

56 Schwartz, S.R., et al., 'Acceptability and Feasibility of a Mobile Phone-Based Case Management Intervention to Retain Mothers and Infants from an Option B+ Program in Postpartum HIV Care', Matern Child Health J, vol.19, no.9, September 2017, pp.2029-2037, <https://www.ncbi.nlm.nih.gov/pubmed/25656728>, accessed 28 January 2019.

57 Essajee, S., et al., 'Scale-up of early infant HIV diagnosis and improving access to paediatric HIV care in Global Plan countries: Past and future perspectives', J Acquir Immune Defic Syndr, vol. 75, suppl.1, 1 May 2017, <https://journals.lww.com/jaids/pages/articleviewer.aspx?year=2017&issue=05011&article=00008&type=Fulltext>, accessed 2 February 2019

4.2. Peer support interventions

Rationale

Women living with HIV experience individual and interpersonal barriers including stigma, partner disclosure and generally coping with HIV status, especially when newly diagnosed.⁵⁸ These barriers negatively affect their retention in care and that of their infants. Peer support interventions have been documented as effective strategies for empowering PMTCT clients through providing education, counselling and psychosocial support.⁵⁹

Intervention description

Peer support interventions involve partnerships with mothers living with HIV to provide counselling, education and psychosocial support to other mothers. The support is either provided during clinic visits, through home visits by designated mentor mothers or facilitated peer group models. Documented interventions involved provision of a holistic, personalized, package of psychosocial support from designated, trained and supervised mentor mothers.

Studies supporting the EBP

A Médecins Sans Frontières study of a mentor mothers project in Zimbabwe demonstrated improvements in partner disclosure and EID rate at six to eight months (99 per cent in the intervention group versus 49 per cent in the control group).⁶⁰ A mentor mothers project in Durban, South Africa demonstrated an improvement in exclusive breastfeeding rates at six months.⁶¹ Compared to the control group, a WHO-led study of a mentor mother project in Nigeria resulted in improved retention of mother-infant pairs at six months post-partum (62 per cent among the intervention group versus 25 per cent among the control group) and improved

EID coverage within two months (64 per cent versus 35 per cent).⁶² A peer support group model that used postnatal clubs in South Africa was associated with improved retention of mother-infant pairs, where 96 per cent mother-infant pairs were retained in the first six months.⁶³

Considerations for implementing peer support interventions

- Ensure standardization at national level. Peer support interventions are in most cases partner led and lack standardization in terms of who delivers the interventions and their training and supervision, the package of interventions to be delivered and remuneration schemes. Governments and their partners are encouraged to review existing peer support models, and work towards national harmonization and standardization. The national guidelines for Kenya's mentor mother programme can be found here and in Annex 2.
- Ensure peer support interventions are implemented in a way that does not fuel stigma and discrimination towards women living with HIV. Community follow up with women living with HIV can contribute to stigma. As part of implementing peer support programmes, it is critical to undertake contextual analysis to ensure peer support interventions are designed in a way that protects women from HIV-related stigma at family and community level. Delivery of integrated interventions including maternal, newborn, child and early childhood education interventions is a good approach to protect women from stigma associated with HIV.

58 Merten, S., et al., 'Patient-reported barriers and drivers of adherence to antiretrovirals in sub-Saharan Africa: a meta-ethnography' *Trop Med Int Health*, vol.15, no.suppl.1, June 2010, pp.116–133, <https://www.ncbi.nlm.nih.gov/pubmed/20586957>, accessed 28 January 2019.

59 Ambia, J. and J. Mandala, 'A systematic review of interventions to improve prevention of mother-to-child HIV transmission service delivery and promote retention', *J Int AIDS Soc*, vol.19, no.1, 2016, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4824870/?report=classic>, accessed 5 August 2018.

60 Shroufi, A., et al., 'Mother to Mother (M2M) Peer Support for Women in Prevention of Mother-to-child Transmission (PMTCT) Programmes: A Qualitative Study', *PLoS ONE*, vol.8, no.6, 5 June 2013, pp.e64717, <https://www.ncbi.nlm.nih.gov/pubmed/23755137>, accessed 28 January 2019.

61 Rotheram-Borus, M.J., et al., 'A Cluster Randomized Controlled Trial Evaluating the Efficacy of Peer Mentors to Support South African Women Living with HIV and Their Infants', *PLoS ONE*, vol.9, no.1, 22 January 2014, <https://www.ncbi.nlm.nih.gov/pubmed/24465444>, accessed 28 January 2019.

62 Sam-Agudu, N.A., et al., 'The Impact of Structured Mentor Mother Programs on Presentation for Early Infant Diagnosis Testing in Rural North-Central Nigeria: A Prospective Paired Cohort Study', *J Acquir Immune Defic Syndr*, vol. 75, suppl.2, 1 June 2017, http://www.who.int/hiv/pub/journal_articles/jaids-2017-11.pdf?ua=1, accessed 28 January 2019.

63 Nelson, A., et al., 'Post natal integrated clubs as a way to improve retention in care of mother-infant pairs in a primary care setting, Khayelitsha, South Africa', Cape Town, Médecins Sans Frontières / City Health of Cape Town / mothers2mothers, n.d., <http://www.differentiatedcare.org/Portals/0/adam/Content/PJOjuicR7EmSPo4ZuWJA2w/File/SA%20AIDS%202017%20abstract%20poster.ppt>, accessed 15 October 2018.

4.3. Male partner involvement

In many parts of Sub Saharan Africa, women are dependent on men for financial support and decision making to access health services for themselves and their children.⁶⁴ This economic dependence and other harmful gender norms, including widespread domestic violence, create barriers to timely uptake and retention of mother-infant pairs in PMTCT care.⁶⁵ Spousal non-disclosure has been documented as one of the leading barriers to enrolment and retention in PMTCT programmes.⁶⁶ The positive impact of male partner involvement in improving PMTCT outcomes as well as other related maternal, child and newborn health indicators has been well documented.⁶⁷ Male involvement interventions have also been associated with harmful unintended consequences such as partner violence. This calls for careful planning and monitoring of their implementation.⁶⁸

Intervention description

Common strategies for male involvement focus on effecting change in social and gender norms for increased male partner participation in MNCH and PMTCT services. The interventions are implemented on two fronts: community and facility level. Community-level interventions involve engagement with cultural and religious leaders through community dialogue and social mobilization, involving community health workers and establishment and partnership with male champions. Facility-level initiatives include: use of incentives such as shorter waiting times; facilitating access for men by use of flexible clinic hours; and use of family support groups.

Studies supporting the EBP

In a Kenyan study, antenatal couples' counselling was associated with increased uptake of interventions for PMTCT. In this study, women who came for HIV testing with their partners were three times more likely to return for nevirapine ($P = 0.02$) and to report administering nevirapine at delivery ($P = 0.009$). Additionally, nevirapine use was reported by 88 per cent of women living with HIV who received couples' counselling, compared to 67 per cent who did not receive couples' counselling although their partners attended, and 45 per cent whose partners did not present for HIV testing

(P for trend = 0.006). In the Partner Plus study from South Africa, an intervention involving four successive weekly couples' 'homework' sessions of 90-120 minutes covering PMTCT and ANC-relevant information discussions at home was associated with improved PMTCT indicators. In addition to improved knowledge, mothers in the intervention group were more likely to report giving their infants every dose of HIV prophylaxis medication during the study period (74 per cent) compared with mothers from the control group (46 per cent).⁶⁹ A retrospective cohort study in Mwanza district in Malawi was associated with improved postnatal-retention PMTCT indicators. In this study, male partner involvement was significantly associated with hospital delivery and completion of follow-up (18 months postnatal period) in the programme.⁷⁰ While this review identified studies that provide evidence that male partner involvement is associated with improved PMTCT outcomes, there is a paucity of information on EBPs that provide the 'how' of increasing positive male partner involvement.

Considerations for implementing male partner involvement interventions

- Ensure the interventions are informed by behavioural research. It is critical to ensure that interventions are informed by an understanding of the local context and of gender-related behaviours that need to be addressed through male involvement. Countries planning for male involvement interventions are encouraged to undertake formative assessments as a precursor to designing the interventions
- Develop structured manuals and train facilitators to implement comprehensive male involvement interventions. From this review, interventions that are comprehensive, structured and facilitated seem to have better results.
- Closely monitor male involvement initiatives for any unintended consequences and have response strategies in place should there be increased gender-based violence or other negative incidents.

64 Duff, P., et al., 'Barriers to accessing highly active antiretroviral therapy by HIV-positive women attending an antenatal clinic in a regional hospital in western Uganda', *J Int AIDS Soc*, vol.13, 23 September 2010, <https://www.ncbi.nlm.nih.gov/pubmed/20863399>, accessed 28 January 2019.

65 Muchedzi, A., et al., 'Factors associated with access to HIV care and treatment in a PMTCT programme in urban Zimbabwe' *J Int AIDS Soc*, vol. 13, 6 October 2010, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2978127/>, accessed 28 January 2019.

66 Brusamento, S., et al., 'Male involvement for increasing the effectiveness of prevention of mother-to-child HIV transmission (PMTCT) programmes (Review)', *Cochrane Database of Systematic Reviews*, issue 10, 2012, <http://cochranelibrary-wiley.com/doi/10.1002/14651858.CD009468.pub2/full>, accessed 28 January 2019.

67 Gulaid, L., Community and facility linkages to support the scale up of life long treatment for pregnant and breastfeeding women with HIV.

68 Integrated Regional Information Network (IRIN), 'Kenya: The downside of male involvement in PMTCT', *PlusNews*, 16 January 2012, <http://www.plusnews.org/Report/94652/KENYA-The-downside-of-male-involvement-in-PMTCT>, accessed 5 May 2018.

69 Weiss, S.M., et al., 'Improving PMTCT uptake in Rural South Africa', *J Int Assoc Provid AIDS Care*, vol.13, no.3, May-June 2014, pp.269-76, <https://www.ncbi.nlm.nih.gov/pubmed/23778240>, accessed 28 January 2019.

70 Kalembo, F.W., et al., 'Association between Male Partner Involvement and the Uptake of Prevention of Mother-to-child Transmission of HIV (PMTCT) Interventions in Mwanza District, Malawi: A Retrospective Cohort Study', vol.8, no.6, 2013, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3680434/#!po=1.21951>, accessed 28 January 2019.

STUDY LIMITATIONS AND AREAS FOR FURTHER RESEARCH

Study limitations

The following are the limitations of this study.

- Many studies and programmes were excluded from the review because the work had not been linked to outcomes. It is important for researchers and implementers to consider these associations at the start of a study or programme.
- Being a regional study, it was not possible to contextualize considerations and recommendations to country and sub-national context
- Although the desk review was extensive, only three countries were visited, which may have limited the number of EBPs documented and tools and resources collected to support implementation.

Areas for further research

The following were identified as potential EBPs for retention of mother-infant pairs in PMTCT care and areas for further research.

- Retention into late post-partum period. Most of the interventions identified focus on the prenatal period up to six weeks postpartum. There is a need for more research on specific interventions for enhancing retention in the late post-partum period.
- Interventions for adolescent mothers. Emerging evidence indicates that adolescent mothers and their infants are at increased risk of loss to follow up. Evidence is not yet available on feasible interventions for enhancing their retention. Early implementation of peer support interventions in Zimbabwe (Young Mentor Mothers) and by Mothers2Mothers (Raising the Future) may provide evidence to support this important group.
- Innovative health worker training approaches. Field visit findings identified innovative health worker capacity building approaches including blended learning and use of WhatsApp applications.⁷¹ There is as yet inadequate research on how these training modes impact on delivery of services and retention in care.
- Retain and re-test pregnant women who are HIV free. To end AIDS among children, incidence of infections in women of childbearing age must be reduced. As yet, there is little research and evidence on retaining and retesting pregnant and breastfeeding women who are HIV free.
- Use of electronic health records. Country visits identified that Zimbabwe and Eswatini have developed and are currently piloting electronic health records to improve client tracking and follow up.
- Evidence-based practices on the 'how' of male partner involvement. Although there is solid evidence that positive male partner involvement improves MNCH/PMTCT outcomes, there is a need for more documentation of EBPs that increase the level and quality of male partner involvement.
- Private sector and PMTCT. Discussions with PMTCT experts during country visits identified possible loss to follow up of clients accessing MNCH and PMTCT services from private service providers. USAID has published a brief on engagement of private service providers on provision of PMTCT services but there is a need for further research on the extent of this issue and how it translates to improving postpartum PMTCT indicators.⁷²

71 I-TECH International Training and Education Center for Health, 'Innovative Technology in Zimbabwe', <https://www.go2itech.org/2017/07/innovative-technology-in-zimbabwe/#more-11779>, accessed 28 January 2019.

72 White, J.J., et al., Engaging Private Health Providers to Extend the Global Availability of PMTCT Services, Arlington, VA, Strengthening High Impact Interventions for an AIDS free Generation (AIDS Free) Project, 2016.

GENERAL OPERATIONAL CONSIDERATIONS AND CONCLUSIONS

Considerations

Below are general operational considerations for countries when implementing the identified evidence-based practices. It is hoped that these considerations will support countries in adopting and scaling up relevant EBPs in context.

- **Ensure involvement of stakeholders, especially women living with HIV.** To improve the quality of programming and coordination and increase uptake of the selected interventions, countries are strongly encouraged to involve relevant stakeholders at different levels of service delivery, including communities and women living with HIV, throughout the process of identifying and rolling out a relevant package of EBPs to improve retention in care.
- **Fully explore and understand the bottlenecks to retention in care of mother-infant pairs.** Undertaking a bottleneck analysis on PMTCT retention could provide an important first step to understand the context-specific barriers that need to be addressed.
- **Select and tailor interventions to address the country's priority bottlenecks to retention in care of mother-infant pairs.** Based on the findings of the bottleneck analysis, countries are encouraged to select from the menu of documented EBPs and tailor the selected interventions for maximum impact in their settings.
- **Include selected evidence-based practices in national plans.** To ensure implementation and measurement, countries are encouraged to include the selected interventions in national EMTCT plans, national strategic frameworks for HIV and broader health plans.
- **Cost the implementation of identified evidence-based practices.** To support resource mobilization, it is recommended that countries cost and budget for the proposed interventions and develop strategies for domestic and other resource mobilization, to ensure scale up and sustained implementation.
- **Prepare well for implementation.** Implementation will require guidance tools, training materials and possibly monitoring and evaluation and reporting tools. Where possible build on existing resources. Annex 2 provides some relevant tools and resources that can be adapted by countries to suit their context.
- **Implement in phases, learn and scale up the selected interventions.** Start small, with a focus on low performing subnational areas, document the emerging lessons and disseminate for national scale up.

Conclusion

EBPs for enhancing retention in care of mother-infant pairs do exist. When implemented with quality and at scale, the 10 EBPs identified through this review each have potential to improve retention in care of mother-infant pairs. To ensure sustained retention of mother-infant pairs, evidence-based interventions must address both demand and supply side barriers. From the review, it is evident that multifaceted

and multiple level interventions that address the diverse bottlenecks to retention of mother-infant pairs have greater impact in ensuring retention than singular interventions. Each country has unique bottlenecks to retention of mother-infant pairs; as such it will be critical for selecting and contextualizing relevant EBPs to the country context.

ANNEXES

Annex 1: List of respondents and affiliated organisations

Name of respondent	Organisation/affiliation
Global and Regional experts	
1. Dr Dorothy Mbori-Ngacha	UNICEF Headquarters, New York
2. Dr Fabian Mwanyumba	UNICEF Rwanda
3. Professor Ruth Nduati	University of Nairobi
4. Dr Karusa Kiragu	UNAIDS Uganda
5. Dr Angela Mushavi	Ministry of Health and Social Welfare, Zimbabwe
6. Dr Morkor Newman	WHO Africa Regional Office, Zimbabwe
7. Dr Godfrey Woelk	EGPAF Headquarters, Washington DC
8. Dr Lynne Mofenson	EGPAF Headquarters, Washington DC
9. Dr Alexandra Vrazo	USAID office of HIV/AIDS
Eswatini	
10. Dr. Joyce Mphaya	UNICEF
11. Dr. Sithembile Dlamini-Nqeketo	WHO
12. Dr. Chris Makwindi	EGPAF
13. Alison Hughey	Clinton Health Access Initiative (CHAI)
14. Dr. Yohannes Ghebreyesus	University Research Corporation (URC)
15. Dr. Ruben Sahabo,	ICAP
16. Siphesihle Shongwe	ICAP
17. Mudekereza Rachel	ICAP
18. Dr. Pido Bongomin	ICAP
19. Zandile Nhleko	Baylor college
20. Dr. Simangele Mthethwa-Hleza	Ministry of Health
Kenya	
21. Dr Terezah Alwar	UNICEF
22. Dr Khadija Abdalla	UNICEF
23. Dr Judi Lusike	CHAI
24. Dr George Githuka	National AIDS and STI Control Programme (NASCOPI), Ministry of Health
25. Dr Wangui Muthigani	Reproductive and Maternal Health Service Unit (RMHSU), Ministry of Health
26. Dr Lucy Matu	EGPAF
27. Catherine Kidiga	ICAP
28. Dr Agnes Lagat	Centers for Disease Control (CDC)
29. Dr Emily Koech	University of Maryland Kenya Country office
30. Jackie Wambui	Network of People Living with HIV in Kenya (NEPHAK)
31. Lucy Wangui	NEPHAK
32. Leonara Obara	Women Fighting AIDS in Kenya (WOFAK)
Zimbabwe	
33. Chiara Pierotti	UNICEF
34. Dr Tonderayi Murirwa	UNICEF
35. Dagmar Hanisch	United Nations Family Planning Association (UNFPA)
36. Dr Appolo Tsitsi	Ministry of Health and Child Care (MOHCC)
37. Dr Benard Madzima	MOHCC
38. Dr Owen Mugurungi	MOHCC
39. Dr Nyika Ponesai	CDC
40. Nicola Willis	Africaid
41. Barbara Englesmann	The Organization of Public Health Interventions and Development (OPHID)
42. Dr Agnes Mahomva	EGPAF
43. Alexio Mangwiro	CHAI
44. Sarah Musungwa	United Nations Development Programme (UNDP)
45. Nyika Mahachi	Family Health International (FHI) 360
46. Dr Gloria Gonesse	I-TECH
47. Karl Riber	JF KAPNEK TRUST
48. Godfrey N Musuka	ICAP

Annex 2: Tools and resources for supporting implementation of EBPs

Below are listed a set of tools and resources to support implementation of the EBPs. The tools are organised by three intervention areas: service quality; use of health information; and demand generation. No tools are presented for the intervention area on human resources.

Intervention area 1: Service quality

Improving retention of mother baby pairs; tested changes and guidance from Uganda.

This is a publication of the Partnership for HIV-Free Survival Initiative (PHFS) initiative in Uganda. This describes the process as well the tested changes that were implemented to improve retention in care of mother-infant pairs.

Access link: <https://www.usaidassist.org/resources/improving-retention-mother-baby-pairs-tested-changes-and-guidance-uganda>

The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement

This publication by Institute for Health Care Improvement provides guidance for developing and implementing quality improvement programmes.

Access Link: http://www.ncpc.org.uk/sites/default/files/Anita_IHIBreakthroughSerieswhitepaper2003.pdf

Integrated package of services for lactating mothers and their babies. Swaziland HIV integrated guidelines. 2015

The Swaziland HIV integrated guidelines provide a package of services for mother and baby pairs during the postnatal period. The integrated package of services ensures that the mother and baby are seen at the same time, reducing the number of times the mother has to visit the clinic. This package provides a guide to countries planning to develop an integrated package of services for mother-infant pairs.

Access link: https://aidsfree.usaid.gov/sites/default/files/tx_swaziland_2015.pdf

Intervention area 3: Use of Health Information

Kenya EID dashboard

This website presents an example of a functional interactive dashboard for EID. The site provides analysis on EID situation by sub-national levels and facilities, laboratory performance and trends. The information is presented in a form that can be used for decision making towards improving EID.

Access link: <https://eid.nascop.org/>

Standard operating procedure for patient tracing in health facilities in Zimbabwe

The SOP is presented as appendix 3 of the USAID Tractor project report on enhancing retention for mothers and their infants by improving tracing by facility and community health workers in Zimbabwe. The SOP outlines the steps and processes for conducting tracing of mothers and their infants

in the context of PMTCT. The SOP provides a guidance for countries planning for implementation of defaulter tracing interventions.

Access link: http://www.hivcore.org/Pubs/Zim_TracTOR.pdf

A generic guide for implementing CARE's community scorecard process to improve quality of services

Although not focussed directly on PMTCT, the guide provides steps in developing and implementing community score cards. The publication is useful in providing guidance to countries planning to implement community scorecards as an accountability process for ensuring retention of mother-infant pairs.

Access link: https://www.care.org/sites/default/files/documents/FP-2013-CARE_CommunityScoreCardToolkit.pdf

Intervention area 4: Demand generation

Community health workers training manual

This Millennium Villages CHW curriculum provides an example on how PMTCT topics can be integrated into CHW training.

Access link: <http://millenniumvillages.org/wp-content/uploads/2014/09/CHWTrainingManual.pdf>

The Kenya Mentor Mother Program Guidelines

The National Guidelines for the Kenya Mentor Mother Program provide a starting point for countries planning to initiate and standardize mentor mother programmes. Other supporting materials may be obtained from the Ministry of Health in Kenya.

Access link: http://guidelines.health.go.ke:8000/media/National_Guidelines_for_PMTCT_Peer_Education_and_Psychosocial_Support_in_Kenya_KMMP.pdf

Standard SMS messages for promoting uptake of PMTCT services

This supplementary material provides a sample of SMS messages at different stages of the PMTCT continuum of care that can be used to strengthen uptake of PMTCT services and hence ensure retention in care of mother-infant pairs. These sample messages provide a guide to countries that may want to utilize SMS reminders for increasing retention of mother-infant pairs in the context of PMTCT.

Access link: <https://link.springer.com/article/10.1007/s10995-015-1715-0#SupplementaryMaterial>

Guidance for developing Content for a mHealth Intervention to promote postpartum retention in PMTCT Programmes

This publication provides guidance for developing content for mHealth intervention to promote postpartum retention in PMTCT. The documentation provides a description of the process for developing theory-informed, individually tailored, culturally appropriate text messages targeted at improving uptake of infant HIV testing rates and maternal retention in PMTCT programmes. The guidance is useful to countries planning for use of mHealth applications in promoting retention in care of mother-infant pairs in the context of PMTCT.

Access link: <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0106383#s4>

The Integrated management of paediatric AIDS/HIV care and treatment and PMTCT (IMPACT). A Bantwana model. Facilitators manual

This facilitators' guide provides a step by step approach for training CHWs and community-based organisations in advocating for and supporting implementation of paediatric ART, as well as to identify previously undiagnosed children and young people living with HIV. An accompanying set of Reference Cards and a referral form provides a ready reference tool for CHWs in the field. The guide is useful for countries planning for implementation of community-based interventions for promoting retention in care of mother-infant pairs in the context of PMTCT.

Access link: <https://www.worlded.org/WEIInternet/resources/publication/display.cfm?txtGeoArea=INTL&id=16980&thisSection=Resources>

ACCLAIM toolkit: Scaling up community involvement in maternal and child health and prevention of mother-to-child transmission of HIV. EGPAF 2016

Although this report did not identify any evidence-based practice in community leaders' engagement, such engagement remains critical in ensuring retention of mother-infant pairs in the context of PMTCT. This toolkit by EGPAF compiles various tools (guidelines, SOPs, presentations, job aids and forms) to enhance community involvement in MNCH and PMTCT services among men, women and community leaders. This toolkit showcases how to bring to scale three distinct approaches: 'community days'; peer group mentorship; and community leadership engagement. The guide is useful for countries planning to implement interventions on community leaders' engagement for PMTCT.

Access link: <http://www.pedaids.org/resource/acclaim-toolkit-scaling-up-community-involvement-in-maternal-and-child-health-and-prevention-of-mother-to-child-hiv-transmission>

Annex 3: Key informant interview guide

1. For the purpose of understanding the country / regional context, please tell me about the PMTCT situation (and more specifically postnatal retention of mother-infant pairs) in the country/region.

Probes

- What is the situation of PMTCT indicators in the country / region?
 - More specifically, what is the situation on postnatal retention of Mother-infant Pairs - what is the status of the PMTCT postnatal indicators / outcomes for both mother and infants?
 - Who are the main players / stakeholders involved in PMTCT response in the country / region? Are there some partners specifically focusing on increasing postnatal retention of mother-infant pairs?
2. What are the priority country / regional challenges / bottlenecks to retention of mother-infant pairs in the PMTCT continuum of care and more specifically during the postnatal period?
 3. What strategies are being used in the country / region to address those bottlenecks / challenges? Are the various strategies working? Have they been scaled up in the country / regionally? Are there some you consider innovative?
 4. More specifically, are there some EBPs that are currently being used in the country / region to address bottlenecks on / or to improve postnatal retention of mother-infant pairs?

Probes

- EBPs to address facility-related barriers
 - EBPs to address client-related barriers
 - EBPs to address community related barriers
 - EBPs to address health systems-related barriers
5. An interim literature review was undertaken as part of this documentation process, several EBPs were identified from this country / region, for each them (or selected), I would like to get your opinion on the EBP(s).

Probes for each EBP

- Do you know about this EBP(s)?
- What were the strengths and limitations of the EBP, how were the various limitations and challenges addressed?
- Was the Ministry of Health involved in the design, implementation and evaluation of the EBP?
- Has the EBP been scaled up? If yes, where and what was the outcome of the scale up? What were the challenges in scale up and how were those addressed?

- What would be your advice on the scale up of the EBP in another context / country / region? What modifications would you recommend?
 - What were the lessons learnt from the implementation of the EBP(s)?
 - Any published materials on the EBP that you may want to refer me to?
 - Any resources / tools developed as part of the implementation of the EBPs that you can refer me to?
6. I know the list of EBPs from the interim literature review is not exhaustive, do you have other EBPs (for improving postnatal retention of mother-infant pairs) in the country / region that you may want to tell me about?

Probes for each mentioned EBP

- Background on the EBP: The specific EBP, what bottleneck it addresses, who is implementing the response to the bottleneck, where it is implemented, when was it implemented, was it evaluated?
 - What were the findings of the evaluation if it was evaluated?
 - What were the strengths and limitations of the EBP, how were the various limitations addressed?
 - Was the Ministry of Health involved in the design, implementation and evaluation of the EBP?
 - Has the EBP been scaled up, if yes where and what was the outcome of the scale up? What were the challenges in scale up and how were those addressed?
 - What would be your advice on the scale of the EBP in another context / country / region?
 - Any published materials on the EBP that you may want to refer me to?
 - Any resources / tools developed as part of the implementation of the EBPs that you can refer me to?
7. Reproductive, maternal, newborn and child health interventions present an entry point / platform for ensuring postnatal retention of mother-infant pairs. Are there any EBPs being implemented in the country / region on increasing MNCH uptake, especially around the postnatal period, that present potential for helping to increase postnatal retention of mother-infant pairs in the context of PMTCT?

Probes

- EBPs around increasing uptake of postnatal MNCH interventions e.g. postnatal care, breastfeeding, immunization etc.
- EBPs promoting use of postnatal MNCH interventions such as integrating EID with immunization

-
8. For purposes of strengthening the documentation process, I am still reviewing more documents and looking forward to speaking to other experts who may have useful information on postnatal retention of mother-infant pairs in the context of PMTCT. Are there experts in the country / region you would refer me to? Are there documents / published research and grey literature that you would want to refer me to?
 9. To support scale up of identified EBPs, this documentation process also seeks to make available tools and resources on EBPs for promoting postnatal retention of mother-infant pairs in the context of PMTCT, including training curriculums, planning and implementation manuals / guidance manuals, tracking tools, registers etc. In reference to the mother-infant pairs discussed, do you have some tools and resources you can refer me to? / or provide?
 10. Any other thing you may want to tell me about on postnatal retention of mother-infant pairs in the context of PMTCT?

