**Box 1**.: Demonstration of search strategy for CENTRAL for the topic ‘mother-to-child-transmission for HIV infected mothers receiving ART and infant feeding’

1 Maternal

2 mother

3 #1 OR #2

4 Antiretroviral therapy

5 Antiretroviral\*

6 ART

7 HAART

8 #4 OR #5 OR #6 OR #7

9 HIV

10 Transmi\*

11 Infec\*

12 #9 OR #10 OR #11

13 Breastfeeding

14 Postnatal

15 Breast\*

16 Feed\*

17 Mixed

18 #13 OR #14 OR #15 OR #16 OR #17

19 #3 AND #8 AND #12 AND #18

Supplementary Table 1. Included papers: Descriptive information of studies providing information on breastfeeding and ART

|  |
| --- |
| **Cohorts embedded on RCTs** |
| **First Author/Study** | **Place of study** | **Randomised for** | **Feeding**  | **Beginning/ end ART** | **Breast-****feeding duration** | **Time evaluation** | **N** | **Extracted information** |
| **ARV** | **Other** | **Transm. 6 mo** | **Exclude peripartum** |
| HPTN046 trial (Fowler et al, 2014; Coovadia et al, 2012)  | South Africa, Tanzania, Uganda and Zimbabwe | ART or not | Infant NVP or not |  All BF | From first antenatal visit/ 6 mo | 6 mo | 12 mo | 1527 | Given | Postnatal: excluding 6 weeks |
| Jamieson et al, 2012 | Antenatal clinics in Malawi | ART† or infant NVP | Nutritional intervention | Majority BF | 30wks or less/ 6 mo | 6 mo | 12 mo | 849 | Calculated | Both measures. Provides number of infected children before and after 2 weeks |
| Kisumu Breastfeeding Study (Okanda et al, 2014; Minniear et al,2014 Thomas et al, 2011) | Kenya (antenatal clinics) | ART |  | All BF | 34 wks/ 6 mo‡ | 6 months | 6 weeks, 6, 12, 18 mo | 502 | Given | Include peripartum. Postnatal calculated. |
| Thakwalakwa et ala, 2014 | Malawi (Thyolo District Hospital) | Only ART | Nutritional intervention | All BF | From first antenatal visit/ lifelong | 6 mo  | 12 mo | 248 | Not given  | Gives only number of infected children with no denominator |
| **Observational studies** |
| DREAM study (Giuliano et al, 2013; Palombi et al, 2007) | Malawi (two ante natal clinics) | ART\* |  | All BF | 1st trimester and lifelong (CD4+<350) or week 25/ 6 mo or end BF | 4.5 mo | 12 mo | 300 | Not given  | Gives only number of infected children with no denominator |
| Alvarez-Uria et ala, 2012  | India (3 hospitals in Antapur) | ART |  | BF and RF | From first antenatal visit / 6 mo (BF), post labour (NBF) | 6 mo | 6 and 12 mo | 318 | Given | Exclude 6 weeks |
| Peltier et ala, 2009 | Rwanda (four government-run health facilities) | ART |  | BF and RF | 28 wks / 7 mo‡ | 6 mo | 9 mo | 532 | Not given | Provides Overall transmission including peripartum |
| Marazzi et al, 2009 | Mozambique | ART |  | All BF | 15 wks/ 6 mo‡ | 5 mo | 6 weeks, 6 and 12 mo | 341 | Given | Both, provides rates including and excluding peripartum (exclude 4 wks) |
| Kilewo et al, 2009 | Tanzania (Dar es Salam) | ART |  | All BF | 34 wks/ 6 mo | 6 mo | 6 weeks, 6, 9, 12, 18 mo | 441 | Given | Include peripartum. Postnatal calculated. |
| Sagay et al, 2015 | Nigeria | ART |  | All BF | lifelong | 1 year | 6, 18 mo | 856 | Calculated | Exclude 6 weeks |
| Ngoma et al, 2015 | Zambia | ART |  | All BF | 14 wks-lifelong | 1 year | 6 weeks, 6, 12 mo, 18 mo | 231 | Given for 18 months | Include peripartum |

BF= Breastfeeding; RF= Replacement feeding

a Studies performed in rural environment

†Mothers with clinical stage 4 or CD4 <200 cells/mm3 were excluded

‡Mothers with CD4 count <200 cells/mm3 or stage III or IVdisease remained on ART throughout the study, and those who subsequently met the criteria after stopping ARVs were restarted, or when CD4 cell counts were ≤350 cells/mm3 (Peltier, Marazzi)

\*Mothers on ART based on disease progression or low CD4+ count

**Supplementary Table 2.** Full-text articles excluded from systematic review with reasons

|  |  |  |
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| No. | Reference  | Reason for Exclusion |
| 1. | Anoje C, Aiyenigba B, Suzuki C, Badru T, Akpoigbe K, Odo M, et al. Reducing mother-to-child transmission of HIV: findings from an early infant diagnosis program in south-south region of Nigeria. BMC Public Health. 2012;12:184. | The study combines both groups of women on different types of ARV, and do not provide infant HIV free survival when mothers are breastfeeding and on cART.  |
| 2. | Becquet R, Bequet L, Ekouevi DK, Viho I, Sakarovitch C, Fassinou P, et al. Two-year morbidity-mortality and alternatives to prolonged breast-feeding among children born to HIV-infected mothers in Cote d'Ivoire. PLoS Med. 2007;4(1):e17Becquet R, Ekouevi DK, Menan H, Amani-Bosse C, Bequet L, Viho I, et al. Early mixed feeding and breastfeeding beyond 6 months increase the risk of postnatal HIV transmission: ANRS 1201/1202 Ditrame Plus, Abidjan, Cote d'Ivoire. Preventive Medicine. 2008;47(1):27-33.Leroy V, Ekouevi DK, Becquet R, Viho I, Dequae-Merchadou L, Tonwe-Gold B, et al. 18-month effectiveness of short-course antiretroviral regimens combined with alternatives to breastfeeding to prevent HIV mother-to-child transmission. PLoS One. 2008;3(2):e1645 | Mothers were not on cART, but on dual ARV with single dose NVP on labour. |
| 3. | Binagwaho A, Pegurri E, Drobac PC, Mugwaneza P, Stulac SN, Wagner CM, et al. Prevention of mother-to-child transmission of HIV: cost-effectiveness of antiretroviral regimens and feeding options in Rwanda. PLoS One. 2013;8(2):e54180 | Mothers are on short course cART, and study does not provide rates of HIV free survival. Focused on costs. |
| 4. | Chi BH, Musonda P, Lembalemba MK, Chintu NT, Gartland MG, Mulenga SN, et al. Universal combination antiretroviral regimens to prevent mother-to-child transmission of HIV in rural Zambia: a two-round cross-sectional study. Bulletin of the World Health Organization. 2014;92(8):582-92. | Provides only total HIV free survival, not total number of mothers on cART or infection only by cART. |
| 5. | Derebe G, Biadgilign S, Trivelli M, Hundessa G, Robi ZD, Gebre-Mariam M, et al. Determinant and outcome of early diagnosis of HIV infection among HIV-exposed infants in southwest Ethiopia. BMC research notes. 2014;7:309 | No rates for breastfeeding and cART together were provided. |
| 6. | Goga AE, Dinh TH, Jackson DJ, Lombard C, Delaney KP. First population-level effectiveness evaluation of a national programme to prevent HIV transmission from mother to child, South Africa. 2015;69(3):240-8 | It is very early diagnosis (4-6 weeks). |
| 7. | Gray GE, Urban M, Chersich MF, Bolton C, van Niekerk R, Violari A, et al. A randomized trial of two postexposure prophylaxis regimens to reduce mother-to-child HIV-1 transmission in infants of untreated mothers. AIDS (London, England). 2005;19(12):1289-97 | Mothers were not on cART, but on dual ARV. |
| 8. | Kagaayi J, Gray RH, Brahmbhatt H, Kigozi G, Nalugoda F, Wabwire-Mangen F, et al. Survival of infants born to HIV-positive mothers, by feeding modality, in Rakai, Uganda. PLoS One. 2008;3(12):e387 | Mothers on different type of antiretroviral therapy. Not possible to identify HIV transmission and death by mothers on cART. |
| 9. | Kouanda S, Tougri H, Cisse M, Simpore J, Pietra V, Doulougou B, et al. Impact of maternal HAART on the prevention of mother-to-child transmission of HIV: results of an 18-month follow-up study in Ouagadougou, Burkina Faso. AIDS care. 2010;22(7):843-50 | Only 8 mothers on cART were breastfeeding on the first exam. |
| 10. | Kuhn L, Aldrovandi GM, Sinkala M, Kankasa C, Semrau K, Kasonde P, et al. Differential effects of early weaning for HIV-free survival of children born to HIV-infected mothers by severity of maternal disease. PLoS One. 2009;4(6):e6059 | Mothers received single-dose nevirapine. |
| 11. | Magoni M, Bassani L, Okong P, Kituuka P, Germinario EP, Giuliano M, et al. Mode of infant feeding and HIV infection in children in a program for prevention of mother-to-child transmission in Uganda. AIDS (London, England). 2005;19(4):433-7 | Mother receiving short course cART. |
| 12. | Mandala J, Moyo T, Torpey K, Weaver M, Suzuki C, Dirks R, et al. Use of service data to inform pediatric HIV-free survival following prevention of mother-to-child transmission programs in rural Malawi. Bmc Public Health. 2012;12 | Mothers on single dose NVP. |
| 13. | Mwendo EM, Mtuy TB, Renju J, Rutherford GW, Nondi J, Sichalwe AW, et al. Effectiveness of prevention of mother-to-child HIV transmission programmes in Kilimanjaro region, northern Tanzania. Tropical medicine & international health : TM & IH. 2014;19(3):267-74 | Almost 50% of losses on the first PCR test, and only 7 children completed 18 months follow-up. |
| 14. | Nagot N, Kankasa C, Meda N, Hofmeyr J, Nikodem C, Tumwine JK, et al. Lopinavir/Ritonavir versus Lamivudine peri-exposure prophylaxis to prevent HIV-1 transmission by breastfeeding: the PROMISE-PEP trial Protocol ANRS 12174. BMC infectious diseases. 2012;12:246 | Mothers included on the study were not eligible for cART. |
| 15. | Nlend AEN, Ekani BB. Preliminary assessment of breastfeeding practices in HIV 1-infected mothers (prior to weaning) under the Djoungolo programme on the prevention of mother-to-child transmission of HIV. Journal of tropical pediatrics. 2010;56(6):436-9 | The paper focus on breastfeeding, mastitis and transmission, and assessment of transmission done at 13 weeks. |
| 16. | Nyandiko WM, Otieno-Nyunya B, Musick B, Bucher-Yiannoutsos S, Akhaabi P, Lane K, et al. Outcomes of HIV-exposed children in western Kenya: efficacy of prevention of mother to child transmission in a resource-constrained setting. Journal of acquired immune deficiency syndromes (1999). 2010;54(1):42-50 | Not possible to extract transmission and death for cART and BF together. |
| 17. | Omer SB. Twelve-month follow-up of Six Week Extended Dose Nevirapine randomized controlled trials: differential impact of extended-dose nevirapine on mother-to-child transmission and infant death by maternal CD4 cell count. AIDS (London, England). 2011;25(6):767-76 | Most mothers were not on cART. |
| 18. | Read JS. Prevention of mother-to-child transmission of HIV: antiretroviral strategies. Clinics in perinatology. 2010;37(4):765-76. | Very small number of mothers on cART. |
| 19. | Seth A, Chandra J, Gupta R, Kumar P, Aggarwal V, Dutta A. Outcome of HIV exposed infants: experience of a regional pediatric center for HIV in North India. Indian J Pediatr. 2012;79(2):188-93 | Very small number of mothers on cART, and no information provided on whether those mothers were breastfeeding or not. |
| 20. | Shah M, Johns B, Abimiku Al, Walker DG. Cost-effectiveness of new WHO recommendations for prevention of mother-to-child transmission of HIV in a resource-limited setting. AIDS. 2011;25(8):1093-102. | Study based on models of % of adherence in Nigeria. |
| 21. | Simpore J, Pietra V, Pignatelli S, Karou D, Nadembega WM, Ilboudo D, et al. Effective program against mother-to-child transmission of HIV at Saint Camille Medical Centre in Burkina Faso. Journal of medical virology. 2007;79(7):873-9 | Very small number of breastfed children. |
| 22. | Stringer JS, Stinson K, Tih PM, Giganti MJ, Ekouevi DK, Creek TL, et al. Measuring coverage in MNCH: population HIV-free survival among children under two years of age in four African countries. PLoS Med. 2013;10(5). | Only provide HIV free survival for mothers on cART or dual ARV together. |
| 23. | Taha TE, Li Q, Hoover DR, Mipando L, Nkanaunena K, Thigpen MC, et al. Postexposure Prophylaxis of Breastfeeding HIV-Exposed Infants With Antiretroviral Drugs to Age 14 Weeks: Updated Efficacy Results of the PEPI-Malawi Trial. Jaids-Journal of Acquired Immune Deficiency Syndromes. 2011;57(4):319-25 | Mothers not on cART, comparison among dual therapy |
| 24. | Torpey K, Kabaso M, Weaver MA, Kasonde P, Mukonka V, Bweupe M, et al. Infant feeding options, other nonchemoprophylactic factors, and mother-to-child transmission of HIV in Zambia. Journal of the International Association of Physicians in AIDS Care (Chicago, Ill : 2002). 2012;11(1):26-33Torpey K, Kasonde P, Kabaso M, Weaver MA, Bryan G, Mukonka V, et al. Reducing pediatric HIV infection: estimating mother-to-child transmission rates in a program setting in Zambia. Journal of acquired immune deficiency syndromes (1999). 2010;54(4):415-22 | No data for mother on cART and breastfeeding together |
| 25. | van Lettow M, Bedell R, Landes M, Gawa L, Gatto S, Mayuni I, et al. Uptake and outcomes of a prevention-of mother-to-child transmission (PMTCT) program in Zomba district, Malawi. BMC Public Health. 2011;11:426 | Very small number of mothers on cART |

**Supplementary Table 3.** GRADE evidence profile

**Question**: HIV transmission in breastfed infants of mothers on ART 1

**Setting**: Zambia, Nigeria, Malawi, South Africa, Tanzania, Uganda and Zimbabwe, India, Kenya, Mozambique

| **Quality assessment** | **№ of patients** | **Effect** | **Quality** | **Importance** |
| --- | --- | --- | --- | --- |
| **№ of studies** | **Study design** | **Risk of bias** | **Inconsistency** | **Indirectness** | **Imprecision** | **Other considerations** | **[intervention]** | **Rate of transmission % (95% CI)** |
| Overall transmission at 6 months (Perinatal and Postnatal transmission) |
| 6  | observational studies2  | very serious 3 | very serious 4 | serious 5 | not serious  | none | 3175  | Rate 3.54 (1.15- 5.93) | ⨁◯◯◯VERY LOW 2 3 4 5 | IMPORTANT   |
| Postnatal transmission at 6 months |
| 6  | observational studies 6 | very serious 7 | very serious 8 | serious 9 | not serious  | none | 2109  | rate **1.08** (0.32 to 1.85)  | ⨁◯◯◯VERY LOW7 8 9 | CRITICAL  |
| HIV transmission at 9 months - including peripartum transmission |
| 1  | observational studies10  | serious11  | not serious  |  serious 12  | not serious  | none | 532  | rate **1.8** (0.7 to 4.8)  | ⨁◯◯◯LOW11 12 | CRITICAL  |
| Overall transmission at 12 months - including peripartum transmission  |
| 5  | observational studies 13 | serious 14 | serious 15 | not serious 16 | not serious  | none | 1493  | rate **4.23** (2.97 to 5.49)  | ⨁◯◯◯VERY LOW 14 15 16 | CRITICAL |
| Postnatal transmission at 12 months (excluding peripartum transmission) |
| 2  | observational studies 17  | serious 18 | serious 19 | serious 20 | not serious  | none | 833  | rate **2.93** (0.68 to 5.18)  | ⨁◯◯◯VERY LOW 18 19 20 | CRITICAL |
| Postnatal transmission at 18 months (lifelong ART, including all transmission) |
| 1  | observational studies 21 | not serious 22 | not serious  | serious23  | not serious | none | 219  | rate **4.1** (2.2 to 7.6 )  | ⨁◯◯◯LOW 23 | CRITICAL |

1. There was no comparison that was in line with the PICO question. In all studies the recommendation was exclusive breastfeeding for the first six months of life and the majority of mothers breastfed their children. Transmission according to mixed feeding was not provided by any of the studies.
2. Studies included: Ngoma et al, 2015; Sagay et al, 2015; Jamieson et al, 2012; Thomas et al, 2011; Marazzi et al, 2009 and Kilewo et al, 2009. Of these, Jamieson et al (2012) and Thomas et al (2011) were cohorts embedded in randomized control trials, while Ngoma et al, (2015), Sagay et al (2015), Marazzi et al (2009) and Kilewo et al (2009) were cohort studies
3. Risk of bias: We downgraded once due to potential selection bias for lack of detailed feeding history in Sagay et al, 2015 and Marazzi et al. 2009. Adherence to ART was not provided in Sagay et al, 2015; Marazzi et al, 2009 and Kilewo et al, 2009. Sagay et al, 2015 and Jamieson et al, 2012 did not provide a rate of transmission, but the rate of transmission was calculated from the number of children at risk provided in the paper. Sagay et al, 2015 is a retrospective study, and only one denominator was provided for all rates provided in the study. Ngoma et al, 2015 and Marazzi et al, 2009 did not provide confidence interval, which was calculated for both studies according to the formula provided in Appendix 6.
4. Inconsistency: We downgraded twice due to substantial heterogeneity in rates of transmission provided or calculated. Rates ranged from 0.7% (95% CI 0.20%-1.20%) in Sagay et al, 2015, which was a retrospective cohort, to 7.9% (95% CI 6.2%-9.90%) in Jamieson et al, 2012
5. Indirectness: We downgraded once as the studies’ questions were not in line with the PICO question and covered different types of additional interventions. In Ngoma et al, 2015, Sagay et al, 2015, Marazzi et al. 2009 and Kilewo et al. 2009 the only intervention was ART. Jamieson et al. 2012 compared transmission rates in children whose mothers were on ART, infants on NVP and a control group and the three groups were further divided into those who were on a maternal nutrition supplement and those that were not.
6. Studies included were: Coovadia et al, 2012, Jamieson et al, 2012, Alvarez-Uria et al, 2012, Thomas et al, 2011, Marazzi et al, 2009 and Kilewo et al, 2009. Coovadia et al (2012), Jamieson et al (2012) and Thomas et al (2011) were cohorts embedded in randomized control trials, while Alvarez-Uria et al (2012), Marazzi et al (2009) and Kilewo et al (2009) were cohort studies.
7. Risk of bias: We downgraded once due to potential selection bias for lack of detailed feeding history in Marazzi et al, 2009. Adherence to ART was not provided in Marazzi et al, 2009 and Kilewo et al, 2009. There were some differences regarding age in weeks as endpoint considered perinatal transmission. Coovadia et al (2012), Alvarez-Uria et al (2012), Thomas et al (2011) and Kilewo et al (2009) excluded children positive at 6 weeks, Jamieson et al (2012) excluded at 2 weeks and Marazzi et al (2009) at 4 weeks. Jamieson et al (2012), Thomas et al (2011) and Kilewo et al (2009) did not provide a rate of transmission, but the rate was calculated based on the number of children at risk provided in the paper. In Marazzi et al (2009) a confidence interval was not provided but was calculated using the formula in Appendix 6.
8. Inconsistency: We downgraded due to substantial heterogeneity in rates of transmission provided or calculated (I2=66.4%). Rates ranged from 0.24% (95% CI 0.0% to 1.40%) in Coovadia et al, 2012 to 3.10% (95% CI 1.20% to 7.80%) in Alvarez-Uria et al, 2012, the latter study had a very wide confidence interval due to the small sample of 127.
9. Indirectness: We downgraded once as the studies’ questions were not in line with the PICO question and covered different types of co-interventions. In Alvarez-Uria et al., 2012, Marazzi et al. 2009 and Kilewo et al. 2009 the only intervention was ART. Jamieson et al. 2012 compared HIV-free survival in children whose mothers were on ART, infants on NVP and a control group and the three groups were further divided into those who were on a maternal nutrition supplement and those that were not. In Coovadia et al, infants were randomized to receive extended Nevirapine or placebo until 6 months of life. In Alvarez-Uria et al. 2012 all women were on ART but newborns were also given prophylaxis, the study also compared transmission rates between infants being breastfed and receiving formula feeding. In Thomas et al. 2011 all mothers were on ART but all infants received a single dose of NVP within 72 hours. Studies also varied with regard to initiation of maternal ART.
10. Single study included: Peltier et al, 2009, which was a cohort study.
11. Risk of bias: We downgraded once due to potential selection bias since this was a non-randomized intervention cohort in which the mother could choose the type of feeding for the infant. Only mothers with low CD4 count (<350 cells/µl or WHO clinical stage 4) were eligible for lifelong ART. The study had good adherence to ART and ascertainment of feeding. Only 15 mothers were reported to be mixed feeding their children, but no children were infected.
12. Indirectness: We downgraded once as the study research question was not in line with PICO questions and although the study compares breastfeeding and formula feeding, it did not study the effect of ART by feeding.
13. Studies included were: Giuliano et al, 2013, Alvarez-Uria et al, 2012, Thomas et al, 2011, Marazzi et al, 2009 and Kilewo et al, 2009. Thomas et al (2011) was a cohort embedded in a randomized control trial, while Giuliano et al (2013), Alvarez-Uria et al (2012), Marazzi et al (2009) and Kilewo et al (2009) were cohort studies
14. Risk of bias: We downgraded once due to potential selection bias for lack of detailed information regarding feeding in Marazzi et al, 2009.
15. Inconsistency: We downgraded once due to heterogeneity in rates of transmission (I2 =39.9%), which varied from 2.8% (95%CI 1.40% to 5.50%) in Marazzi et al, 2009 to 5.80% (95% CI 3.60% to 8.00%) in Kilewo et al, 2009.
16. Indirectness: We downgraded once as the studies’ research questions were not in line with PICO questions and covered different types of co-interventions. In Giuliano et al, 2013, Alvarez-Uria et al, 2012, Marazzi et al. 2009 and Kilewo et al. 2009 the only intervention was ART. Giuliano et al (2013) offered lifelong ART for mothers with low CD4 count. In Alvarez-Uria et al. 2012 all women were on ART but newborns were also given prophylaxis. In Thomas et al. 2011 all mothers were on ART but all infants received a single dose of NVP within 72 hours. Studies also varied with regard to initiation of maternal ART.
17. Studies include were: Coovadia et al, 2012 and Jamieson et al, 2012. Both studies were cohorts embedded in a randomized control trial.
18. Risk of bias: We downgraded once due to potential selection bias for lack of detail of feeding practices and adherence to ART in Coovadia et al, 2012. Jamieson et al, 2012 did not provide rate of transmission. The studies also varied in the age in weeks as endpoint for peripartum transmission, Coovadia et al, 2012 excluded infants identified as infected at 6 weeks and Jamieson et al, 2012 at 2 weeks.
19. Inconsistency: We downgraded twice due to high heterogeneity in the pooled estimate (I2= 71.2%), with rates varying from 1.70% (95% CI 0.30% to 4.10%) in Coovadia et al, 2012 and 4.0% (95%Ci 1.94% to 4.29%) in Jamieson et al, 2012..
20. Indirectness: We downgraded once because the studies’ research question was not in line with the PICO question and covered different types of co-interventions. . In Coovadia et al. 2012, infants were randomised to receive either extended Nevirapine prophylaxis or placebo until 6 months or until breastfeeding cessation. Jamieson et al, 2012 compared HIV-free survival in children whose mothers were on ART, infants on NVP and a control group and the three groups were further divided into those who were on a maternal nutrition supplement and those that were not.
21. Single study included: Ngoma et al, 2015.
22. Risk of bias: The study was not downgraded because the study had high adherence to ART, all mothers were receiving lifelong ART, and feeding was well-evaluated.
23. Indirectness: We downgraded once as the study’s research questions were not in line with the PICO question, and although all mothers were on lifelong ART, and ascertainment of ART and breastfeeding were adequate, outcome was not stratified by feeding, and the number of infants who were mixed fed was not provided.

**Supplementary Table 4. Modified Newcastle-Ottawa for assessment of HIV transmission in breastfed infants whose mothers were on ART**

|  |  |  |  |
| --- | --- | --- | --- |
| **Author** | **Country** | **Selection** | **Outcome** |
| Ngoma et al, 2015 | Zambia | \*\*\*\*\* | \*\* |
| Sagay et al, 2015 | Nigeria | \*\*\* | \*\* |
| Thakwalakwa et al, 2014 | Malawi | \* | \*\* |
| Giuliano et al, 2013 | Malawi | \*\* | \*\* |
| Coovadia et al, 2012 | South Africa, Tanzania, Uganda and Zimbabwe | \*\* | \*\* |
| Jamieson et al, 2012 | Malawi | \*\*\*\* | \*\*\* |
| Alvarez-Uria et al, 2012  | India | \*\* | \*\*\*\* |
| Thomas et al, 2011 | Kenya | \*\*\*\* | \*\*\* |
|  Marazzi et al, 2009 | Mozambique | \*\* | \*\* |
|  Kilewo et al, 2009 | Tanzania | \*\*\* | \*\*\* |
|  Peltier et al, 2009 | Rwanda | \*\*\*\* | \*\*\* |