

Challenges of the postpartum period in women living with HIV

? Questions

- What is the risk of HIV transmission through breastfeeding?
- What are the challenges related to retention in HIV care during the postpartum period?
- What are the challenges related to HIV treatment adherence during the postpartum period?
- What are the challenges related to postpartum depression among women living with HIV?
- What effective interventions or promising practices can be used to support women with the above issues (particularly interventions by social workers, community workers and peers)?

🔑 Key Take-Home Messages

- The rate of transmission of HIV to a newborn is <1% if the mother is adherent to antiretroviral therapy during pregnancy, if the infant is on antiretroviral prophylaxis, and if breastfeeding is avoided (1).
- In Canada, exclusive formula feeding remains the preferred method for feeding infants born to women living with HIV (1, 2), as it is the only strategy that completely eliminates postnatal risk of HIV transmission (2). However, women living with HIV who choose to breastfeed their infants should be supported to do so (1, 2).

Rapid Response: Evidence into Action

The OHTN Rapid Response Service offers quick access to research evidence to help inform decision making, service delivery, and advocacy. In response to a question, the Rapid Response Team reviews the scientific and grey literature, consults with experts if required, and prepares a review summarizing the current evidence and its implications for policy and practice.

While the information in this Rapid Response is considered to be correct at the date of publication, changes in circumstances after the time of publication may impact the accuracy of the information. There are no representations or warranties regarding errors, omissions, completeness, or accuracy of the information provided. This Rapid Response may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to the Ontario HIV Treatment Network (OHTN).

Suggested Citation

Rapid Response Service. Challenges of the postpartum period in women living with HIV. Toronto, ON: The Ontario HIV Treatment Network; August 2024.

Prepared by

Danielle Giliauskas

Program Leads / Editors

David Gogolishvili

Contact

rapidresponse@ohtn.on.ca

For more information visit

www.ohtn.on.ca/rapid-response-service

The Ontario HIV Treatment Network

1300 Yonge Street, Suite 600

Toronto ON M4T 1X3

www.ohtn.on.ca

- Similarly, the most recent U.S. guidelines also recommend supporting the choices of people living with HIV to breastfeed, if they are virally suppressed (3).
- There are some studies from high-income countries that have examined the risk of HIV transmission via breastfeeding (4–13). These studies have small sample sizes and there is considerable variability; for example, maternal antiretroviral regimens, breastfeeding practices, infant antiretroviral prophylaxis, and HIV testing protocols vary across studies (4–13).
- During the postpartum period, adherence to antiretroviral therapy can be challenging for some women living with HIV (14, 15), and they may have suboptimal viral load suppression (16).
- In general, there is a high prevalence of depression among postpartum women living with HIV (17, 18). Factors related to living with HIV, such as stigma and disclosure of one's status to others, can contribute to postpartum depression (19).
- Evidence-based interventions to support HIV care during the postpartum period are limited (20–22). Case management programs (23), care coordination teams (24), financial incentives (25), and group prenatal care (26) appear to improve HIV care continuum outcomes.

The Issue and Why it's Important

Transmission of HIV from mother to infant can occur during pregnancy, birth, or through breastfeeding (27), with maternal viral load being the strongest predictor of perinatal transmission (28). To breastfeed or not to breastfeed is a complex decision for some mothers living with HIV (29–31). Cultural contexts and expectations (30, 32, 33), risk perception (29), variation in official guidelines (30, 34, 35), and evidence around HIV transmission via breastmilk (35, 36) are all factors that can influence decision-making surrounding breastfeeding.

At the same time, staying engaged in HIV care during the postpartum period may be challenging for some mothers living with HIV (14, 21). Even when there is comprehensive coordination between obstetric and HIV care, some women still may disengage from HIV care during the postpartum period (37). Additionally, there is a higher prevalence of depression, general distress, and other mental health symptoms among pregnant and postpartum women living with HIV; this has the potential to impact well-being, quality of life, and other clinical outcomes (38).

The focus of this review is on postpartum mothers living with HIV in high-income settings. Special attention is given to three issues: breastfeeding, engagement in the HIV care cascade, and mental

References

1. Atkinson A, Tulloch K, Boucoiran I, Money D. Guideline No. 450: Care of pregnant women living with HIV and interventions to reduce perinatal transmission. *Journal of Obstetrics and Gynaecology Canada*. 2024;102551.
2. Khan S, Tsang KK, Brophy J, Kakkar F, Kennedy VL, Boucoiran I, et al. Canadian Pediatric & Perinatal HIV/AIDS Research Group consensus recommendations for infant feeding in the HIV context. *Journal of the Association of Medical Microbiology and Infectious Disease Canada*. 2023;8(1):7–17.
3. National Institutes of Health, Office of AIDS Research. Update to clinical guidelines for infant feeding supports shared decision making: Clarifying breastfeeding guidance for people with HIV. 2023. Available from: <https://oar.nih.gov/news-and-updates/oar-updates/update-clinical-guidelines-infant-feeding-supports-shared-decision-making> Accessed July 31, 2024.
4. Prestileo T, Adriana S, Lorenza DM, Argo A. From Undetectable Equals Untransmittable (U=U) to breastfeeding: Is the jump short? *Infectious Disease Reports*. 2022;14(2):220–7.
5. Levison J, McKinney J, Duque A, Hawkins J, Bowden EVH, Dorland J, et al. Breastfeeding among people with human immunodeficiency virus in North America: A multisite study. *Clinical Infectious Diseases*. 2023;77(10):1416–22.

health. The final section of this review examines interventions to support optimal outcomes in the HIV care cascade during the postpartum period.

What We Found

Risk of HIV transmission through breastfeeding

This section presents the current evidence on the risk of an infant acquiring HIV when breastfed by a mother living with HIV.

In 2014, a Cochrane systematic review concluded that HIV prophylaxis in infants, “...whether used by the HIV-infected mother or the HIV-exposed infant while breastfeeding, is efficacious in preventing mother-to-child transmission of HIV” (39). This review was conducted using data from low-income settings, where affordable, feasible, acceptable, sustainable, and safe alternatives to breastmilk are not always available (39). Mothers living with HIV in these settings are counselled to practice exclusive breastfeeding (39). For example, in Southern and Eastern Africa, the use of formula and other non-human milk alternatives among non-HIV exposed infants is associated with increased morbidity and mortality (40). The World Health Organization (WHO) notes that whether or not a mother living with HIV should breastfeed their infant is based on comparing the risk of the infant acquiring HIV through breastfeeding to the increased risk of infant death from malnutrition, diarrhea, and pneumonia if the infant is not exclusively breastfed (41). In settings where national health authorities are recommending breastfeeding for mothers living with HIV, the WHO recommends exclusively breastfeeding for the first six months of life, and introducing appropriate foods thereafter; breastfeeding should continue for at least 12 months, but may continue for up to 24 months (41). Ideally, the mother is being fully supported for antiretroviral adherence (41).

In 2017, a systematic review examined the risk of HIV transmission from mother to infant via breastfeeding (42). Across eleven studies from low-income settings, HIV-positive mothers receiving antiretroviral therapy and their breastfed infants (regardless of receipt of antiretroviral prophylaxis) reported a pooled postnatal HIV transmission rate of 1.1% by six months of age and 3.0% by 12 months of age (42). We did identify a second systematic review from 2022 that sought to critically appraise recent literature regarding breastfeeding outcomes and associated risks in HIV-infected and HIV-exposed infants, but this review did not explicitly examine risk of HIV transmission (43). Rather, this review found that exclusive breastfeeding contributed to positive growth and development outcomes among all infants, regardless of HIV status (43). Another review supports this, concluding that the potential benefits of breastfeeding may outweigh the “very low” risk of HIV transmission among mothers with a suppressed viral load (44).

6. Crisinel PA, Kusejko K, Kahlert CR, Wagner N, Beyer LS, De Tejada BM, et al. Successful implementation of new Swiss recommendations on breastfeeding of infants born to women living with HIV. *European Journal of Obstetrics, Gynecology, & Reproductive Biology*. 2023;283:86–9.
7. Weiss F, von Both U, Rack-Hoch A, Sollinger F, Eberle J, Mahner S, et al. Brief report: HIV-positive and breastfeeding in high-income settings: 5-year experience from a perinatal center in Germany. *Journal of Acquired Immune Deficiency Syndromes*. 2022;91(4):364–7.
8. Yusuf HE, Knott-Grasso MA, Anderson J, Livingston A, Rosenblum N, Sturdivant H, et al. Experience and outcomes of breastfed infants of women living with HIV in the United States: Findings from a single-center breastfeeding support initiative. *Journal of the Pediatric Infectious Diseases Society*. 2022;11(1):24–7.
9. Nashid N, Khan S, Loutfy M, MacGillivray J, Yudin MH, Campbell DM, et al. Breastfeeding by women living with human immunodeficiency virus in a resource-rich setting: A case series of maternal and infant management and outcomes. *Journal of the Pediatric Infectious Diseases Society*. 2020;9(2):228–31.
10. Koay WLA, Rakhmanina NY. Supporting mothers living with HIV in the United States who choose to breastfeed. *Journal of the Pediatric Infectious Diseases Society*. 2022;11(5):239.

Other evidence specific to HIV-positive mothers on antiretroviral therapy who breastfed their infants continues to emerge from low-income settings. Results from the PROMISE study, conducted at 14 sites in sub-Saharan Africa and India, found that seven (0.57%) of 1,219 infants who were breastfed from mothers on antiretroviral therapy acquired HIV (45, 46). In two of these seven cases, one mother had a detectable viral load but it was less than <40 copies/mL (infant aged 13 weeks) and the other had an undetectable viral load (infant aged 38 weeks) (45). Maternal viral load testing in both cases was done on the same day the infant tested positive for HIV (45). For the five other infants who contracted HIV postpartum, maternal viral load ranged between 6,107–52,002 copies/mL (45).

A study in Tanzania examining the risk of HIV transmission through breastfeeding among mothers on antiretroviral therapy and their infants found no mother-to-child transmission in cases where mothers were retained in care and had a suppressed viral load (47). Two infants tested positive for HIV (n=2/186); one mother had a high viral load five weeks post-delivery (144,111 copies/mL), and the other mother had interrupted antiretroviral therapy during breastfeeding despite having an undetectable viral load six weeks post-delivery (47).

Studies examining the risk of HIV transmission via breastfeeding in high-income countries are also emerging. Table 1 presents the findings of ten such studies from high-income countries (4-13). Most of the women included in these studies are Black: for example, 62% of participants (n=45) who breastfed in a multi-site North American study were born in African countries (5), and 68% (n=17) of breastfeeding mothers in the Swiss Mother and Child HIV Cohort Study were of Black ethnicity (6). It should be noted that the sample sizes of these studies are small; furthermore, there is substantial variability across participants in all studies (4-13). For example, maternal antiretroviral regimens, breastfeeding practices (e.g. exclusive feeding, mixed feeding, duration of breastfeeding), infant antiretroviral prophylaxis (its time of initiation, duration, regimen), and testing protocols (e.g. what disease marker was tested, timing of testing) of both infants and mothers varied considerably (4-13). One seroconversion was reported in a mother and infant who were lost to follow-up; when re-engaged in care, maternal viral load was 5,890,000 copies/mL (suggesting cessation of antiretroviral therapy) and the infant tested positive for HIV (13). While no other seroconversions among infants were reported, these results should be interpreted with caution.

The variability among studies demonstrates that there are knowledge gaps, a notion that has been highlighted by some authors (29, 48). For example, Nachman and Aldrovandi (2024) assign these knowledge gaps into three different categories: maternal health, infant health, and issues related to breastfeeding (29). These three categories and related unanswered questions are outlined in Table 2.

11. Bansaccal N, Van der Linden D, Marot J-C, Belkhir L. HIV-infected mothers who decide to breastfeed their infants under close supervision in Belgium: About two cases. *Frontiers in Pediatrics*. 2020;8:248.
12. Abuogi L, Smith C, Kinzie K, Barr E, Bonham A, Johnson RL, et al. Development and implementation of an interdisciplinary model for the management of breastfeeding in women with HIV in the United States: Experience from the Children's Hospital Colorado Immunodeficiency Program. *Journal of Acquired Immune Deficiency Syndromes*. 2023;93(5):395–402.
13. Boyce TG, Havens PL, Henderson SL, Vicetti Miguel CP. From guidelines to practice: A programmatic model for implementation of the updated infant feeding recommendations for people living with HIV. *Journal of the Pediatric Infectious Diseases Society*. 2024;13(7):381–385.
14. Nachega JB, Uthman OA, Anderson J, Peltzer K, Wampold S, Cotton MF, et al. Adherence to antiretroviral therapy during and after pregnancy in low-income, middle-income, and high-income countries: A systematic review and meta-analysis. *AIDS*. 2012;26(16):2039–52.
15. Hoffman RM, Warshaw MG, Amico KR, Pilotto J, Masheto G, Achalapong J, et al. Predictors of viremia in postpartum women on antiretroviral therapy. *Journal of Acquired Immune Deficiency Syndromes*. 2020;83(1):72–80.

Table 1. Studies examining mother-to-child HIV transmission in high-income settings. Results should be interpreted with caution: maternal antiretroviral regimens, breastfeeding practices (e.g. exclusive feeding, mixed feeding, duration of breastfeeding), infant antiretroviral prophylaxis (its time of initiation, duration, regimen), and testing protocols (e.g. what disease marker was tested, timing of testing) of both infants and mothers vary considerably across all studies

Author, year	Country	Study design	Participants	Breastfeeding practices	Results
Crisinel <i>et al.</i> , 2023 (6)	Switzerland	Cohort (prospective)	<ul style="list-style-type: none"> 25 mother-infant pairs Participating mothers fulfilled the criteria of an "optimal scenario" according to Swiss HIV guidelines¹ No infant received antiretroviral prophylaxis 	<ul style="list-style-type: none"> All 25 infants were breastfed <ul style="list-style-type: none"> ✓ Exclusive breastfeeding and mixed feeding were reported Duration of breastfeeding varied (data available for 19 infants with median duration of 6.3 months, range 0.7–25.7 months) 	No neonatal transmission: 24 infants tested negative for HIV at least 3 months after weaning; one mother was still breastfeeding when data were analyzed
Levison <i>et al.</i> , 2023 (5)	U.S. & Canada	Cohort (retrospective)	<ul style="list-style-type: none"> 72 mother-infant pairs Participating mothers were living with HIV who breastfed their infants 90.3% of participants (n=65) had a viral load test of ≤40 copies/mL nearest to delivery High variability of infant antiretroviral prophylaxis 	<ul style="list-style-type: none"> All 72 infants were breastfed <ul style="list-style-type: none"> ✓ Exclusive breastfeeding and mixed feeding were reported Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ Median duration 24 weeks (range: 1 day–72 weeks) 	No neonatal transmissions occurred among the 94% of infants for whom results were available ≥6 weeks after weaning
Prestileo <i>et al.</i> , 2022 (4)	Italy	Cohort (retrospective)	<ul style="list-style-type: none"> 13 mother-infant pairs Participating mothers were women living with HIV on antiretroviral therapy, with an undetectable viral load, and >400 CD4 count during the pregnancy and breastfeeding period Antiretroviral prophylaxis was started immediately after birth in all newborns 	<ul style="list-style-type: none"> All 13 infants were breastfed <ul style="list-style-type: none"> ✓ Feeding (exclusive or mixed) not reported Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ Mean duration 5.4 months 	All infants consistently tested negative for HIV after birth and after the end of breastfeeding, at 1, 3, and 6 months respectively
Weiss <i>et al.</i> , 2022 (7)	Germany	Cohort (retrospective)	<ul style="list-style-type: none"> 30 mother-infant pairs Participating mothers were on antiretroviral therapy at time of delivery 25 infants started antiretroviral prophylaxis post-delivery; 5 mothers (who were classified as "optimal scenario"²) declined infant antiretroviral prophylaxis 	<ul style="list-style-type: none"> All 30 infants were breastfed <ul style="list-style-type: none"> ✓ Most mothers stated exclusive breastfeeding; no conclusive data on mixed feeding practices Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ 5 breastfed for <2 weeks ✓ 9 breastfed for up to 3 months ✓ 5 breastfed for up to 6 months ✓ 2 breastfed >6 months ✓ 1 breastfed >12 months ✓ 8 unknown (loss of follow-up or conflicting documentation) 	No HIV transmission was reported among the 30 breastfed infants
Yusuf <i>et al.</i> , 2022 (8)	U.S.	Cohort (prospective)	<ul style="list-style-type: none"> 10 infants to 9 mothers Participating mothers with demonstrated adherence to antiretroviral therapy and care with sustained virologic suppression 	<ul style="list-style-type: none"> All 10 infants were breastfed <ul style="list-style-type: none"> ✓ Exclusive breastfeeding in all 10 infants Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ Mean duration 4.4 months (range: 1.0–8.6 months) 	All 10 infants tested negative for HIV at a median age of 16 months

¹The Swiss Federal Commission for Sexual Health (FCSH) for Medical Care of HIV-Infected Women and their Offspring describes an "optimal scenario": regular follow-up of treatment during pregnancy (e.g. every 2–3 months) by a physician with expertise in the field of HIV and a viral load of <50 copies/mL ideally throughout pregnancy, but at least at the last two consecutive measurements before birth (minimal interval of 4 weeks and the last measurement after week 36 of pregnancy) (60)

²Weiss *et al.* refer to Kahlert *et al.*'s "optimal scenario": where a pregnant woman is (i) adherent in taking her cART, is (ii) under regular clinical care, and (iii) has a suppressed HIV plasma viral load of <50 RNA copies/mL throughout pregnancy and breastfeeding (81)

Table 1 (continued). Studies examining mother-to-child HIV transmission in high-income settings. Results should be interpreted with caution: maternal antiretroviral regimens, breastfeeding practices (e.g. exclusive feeding, mixed feeding, duration of breastfeeding), infant antiretroviral prophylaxis (its time of initiation, duration, regimen), and testing protocols (e.g. what disease marker was tested, timing of testing) of both infants and mothers vary considerably across all studies

Author, year	Country	Study design	Participants	Breastfeeding practices	Results
Abuogi <i>et al.</i> , 2023 (12)	U.S.	Cohort (retrospective)	<ul style="list-style-type: none"> 13 infants to 10 mothers Participating mothers have "excellent" adherence to antiretroviral therapy and are to maintain viral suppression, tested at delivery, 1 month postpartum, and every 1–2 months thereafter All infants were initiated on antiretroviral prophylaxis 	<ul style="list-style-type: none"> All 13 infants were breastfed <ul style="list-style-type: none"> ✓ Participants are counselled to exclusively breastfeed, though feeding practices (exclusive or mixed) were not explicitly reported Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ 12 infants weaned after breastfeeding for a median duration of 62 days (range 1–309 days) 	All infants tested negative for HIV; one mother was still breastfeeding when data was analyzed
Koay & Rakhmanina, 2022 (10)	U.S.	Case series	<ul style="list-style-type: none"> 7 infants to 6 mothers Participating mothers were on all on antiretroviral therapy <ul style="list-style-type: none"> ✓ 4 mothers virally suppressed (<20 copies/mL) ✓ 2 had low levels of viremia (30–40 copies/mL) prior to delivery All infants were initiated on antiretroviral prophylaxis 	<ul style="list-style-type: none"> All 7 infants were breastfed <ul style="list-style-type: none"> ✓ 1 mother exclusively breastfed ✓ 5 mothers disclosed some degree of mixed breastfeeding Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ 2 weeks to 6 months 	3 weaned infants were confirmed to be HIV uninfected; the 4 other infants continue to be breastfed by mothers with a suppressed viral load
Boyce <i>et al.</i> , 2024 (13)	U.S.	Retrospective review	<ul style="list-style-type: none"> 7 infants to 5 parents (2 repeat pregnancies) <ul style="list-style-type: none"> ✓ All participants on antiretroviral therapy during pregnancy 6 of 7 pregnancies with undetectable viral load at delivery One pregnancy with viral load 62 copies/mL at delivery All infants were initiated on antiretroviral prophylaxis 	<ul style="list-style-type: none"> All 7 infants were breastfed Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ 2–20 months 	<ul style="list-style-type: none"> 5 infants were confirmed to be HIV uninfected 3 months after breastfeeding cessation 1 infant was still breastfeeding at 20 months and tested negative for HIV 1 infant who previously tested negative at 4 weeks of age was temporarily lost to follow-up <ul style="list-style-type: none"> ✓ At 17 months, infant was re-engaged in care and was diagnosed with HIV infection ✓ Maternal viral load at re-presentation to care was 5,890,000 copies/mL, suggesting cessation of antiretroviral therapy
Nashid <i>et al.</i> , 2020 (9)	Canada	Case series	<ul style="list-style-type: none"> 3 infants to 2 mothers Both mothers had an undetectable viral load predelivery All infants were initiated on antiretroviral prophylaxis 	<ul style="list-style-type: none"> All 3 infants were breastfed <ul style="list-style-type: none"> ✓ Case 1: Exclusive breastfeeding ✓ Cases 2 & 3: Mixed feeding Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ Case 1: 6 weeks ✓ Case 2 & 3 (twin infants): 5 weeks of donated breastmilk and formula; then, breastfeeding and formula for 12 weeks 	All 3 infants remained uninfected by HIV
Bansaccal <i>et al.</i> , 2020 (11)	Belgium	Case series	<ul style="list-style-type: none"> 2 mother-infant pairs Both mothers had an undetectable viral load predelivery and for the duration of breastfeeding Both infants were initiated on antiretroviral prophylaxis 	<ul style="list-style-type: none"> Both infants were breastfed <ul style="list-style-type: none"> ✓ Case 1: Exclusive breastfeeding ✓ Case 2: Mixed feeding Duration of breastfeeding varied <ul style="list-style-type: none"> ✓ Case 1: 4 months ✓ Case 2: 5 months 	At 18 months, both infants had negative HIV antibody tests

Table 2. Knowledge gaps: Mothers living with HIV who breastfeed their infants [adapted from Nachman and Aldrovandi (29)]

Maternal health	Infant health	Issues related to breastfeeding
<ul style="list-style-type: none"> • What are the best antiretrovirals to use? • How often should viral load be monitored when lactating? • How should routine maternal medical care be monitored? 	<ul style="list-style-type: none"> • How should mixed feeding be handled? • What infant antiretroviral prophylaxis regimen is best (if any), what should the dosage be, and how long should it be administered for? • How frequently should HIV status be monitored? 	<ul style="list-style-type: none"> • Is there virus in breast tissue? • Which antiretrovirals cross into breastmilk? • Does the virus stay stable in breast reservoirs, or does it change over time during breastfeeding?

It should be noted that research is emerging to fill the evidence gap in some of these areas. For example, a recent study from the Swiss Mother and Child HIV Cohort Study sought to measure the concentration of antiretroviral medications in breastmilk to determine exposure to infants (49). Authors found that antiretroviral drugs were transferred to a variable extent in breastmilk, but that the estimated daily dose from breastfeeding was low (49).

Considering the evidence from low- and high-income settings, some authors have suggested that Undetectable = Untransmittable (U=U) could potentially be extended to mothers living with HIV who breastfeed their infants. For example, authors Prestileo *et al.*, after observing no transmission of HIV via breastfeeding in their small sample (n=13), suggest that “...the U=U paradigm can safely be extended to the setting of breastfeeding...” (4). Another author compares findings of the PROMISE study (a randomized trial of 2,431 mother-infant pairs at 14 health-facility-based research sites in seven countries) (45) to that of the PARTNER study (50), a landmark trial that provided evidence to support U=U for men who have sex with men:

Specifically, the absence of any phylogenetically linked transmission in the PARTNER study turned into a crucially supportive argument. However, would a single case of sexual HIV-1 transmission from someone with an undetectable HIVRNA disprove this conclusion? We think that the PROMISE study results are consistent with those from the PARTNER study in statistically supporting that U=U for breastfeeding HIV infected women and the risk of transmission to their infants (51).

Nonetheless, there is still reluctance in extending the U=U concept to infants breastfed by mothers living with HIV who

- Zanré N, Carvalho S, Elwood C, Cote HCF, Kakkar F, Boucher M, et al. Factors associated with HIV viral load control in the early postpartum period—A Canadian prospective cohort study. *AIDS Care*. 2024;1–8.
- Zhu QY, Huang DS, Lv JD, Guan P, Bai XH. Prevalence of perinatal depression among HIV-positive women: A systematic review and meta-analysis. *BMC Psychiatry*. 2019;19(1):330.
- Momplaisir FM, Aaron E, Bossert L, Anderson E, Taha M, Okafor V, et al. HIV care continuum outcomes of pregnant women living with HIV with and without depression. *AIDS Care*. 2018;30(12):1580–5.
- Wright CE, Savidge K, Armitage H, Barr EA. Factors related to postpartum depression in people living with HIV: A systematic review. *Journal of Psychosocial Nursing and Mental Health Services*. 2024;1–8.
- Scott RK. Adherence among post-partum women living with HIV. *The Lancet HIV*. 2020;7(3):e152–e4.
- Momplaisir FM, Storm DS, Nkwihoreze H, Jayeola O, Jemmott JB. Improving postpartum retention in care for women living with HIV in the United States. *AIDS*. 2018;32(2):133–42.

adhere to antiretroviral therapy and maintain an undetectable viral load (52). Some assert that the risk of HIV transmission through breastfeeding will never be zero (35), while others argue that there are still too many knowledge gaps regarding breastfeeding with HIV to be a recommended practice (29, 48).

Guidelines in high-income settings

There are nuanced differences among guidelines set forth by high-income settings regarding women living with HIV who choose to breastfeed their infants.

In March 2023, the Canadian Pediatric & Perinatal HIV/AIDS Research Group recommended that women living with HIV in Canada not initiate breastfeeding, stating that “[t]he Canadian consensus guidelines continue to support formula feeding as the preferred method of infant feeding as it eliminates any residual risk of postnatal vertical transmission” (2). The guideline also acknowledges that not being able to breastfeed may cause considerable emotional, social, and psychological stress for the mother, and provides guidance for women living with HIV who choose to breastfeed: “[a]s a prerequisite to breastfeeding, health care providers should counsel and support women on how to optimize their health and minimize the risk of HIV transmission through breastmilk” (2). The guideline suggests that if the mother decides to breastfeed, she should be fully adherent to antiretroviral therapy and have sustained virologic suppression (ideally from before conception), regularly attend standard follow-up visits for pre-natal care, and be made fully aware of the potential risk of HIV transmission to the infant (2). Additionally, antiretroviral prophylaxis is recommended for breastfed infants (2): Triple antiretroviral prophylaxis for the first four to six weeks, followed by monotherapy until four weeks after cessation of breastfeeding, is recommended as a preferable option (monotherapy until four weeks after cessation of breastfeeding, or triple therapy until four weeks after cessation of breastfeeding being the alternative options), but it is noted that “[c]urrent evidence is not clear on merits of using monotherapy versus triple therapy in infant prophylaxis, especially if a woman meets all the criteria for risk reduction of transmission from breastfeeding” (2). In the appendices of these guidelines, there is a sample of a signed agreement between the mother, her HIV care provider and pediatric HIV care provider which “...may be considered as a mutually agreed upon source of documentation of the decision-making process” and includes stipulations outlining adherence to HIV antiretroviral therapy, frequent viral load testing, and HIV prophylaxis for the infant (2).

In June 2024, the Society of Obstetricians and Gynaecologists of Canada (SOGC) updated their guidelines on the care of pregnant women living with HIV (1). These guidelines state that “...formula feeding remains the preferred method of infant feeding regardless of plasma HIV viral load and use of maternal antiretroviral therapy”.

22. Geldsetzer P, Yapa HMN, Vaikath M, Ogbuaji O, Fox MP, Essajee SM, et al. A systematic review of interventions to improve postpartum retention of women in PMTCT and ART care. *Journal of the International AIDS Society*. 2016;19(1):20679.
23. Anderson EA, Momplaisir FM, Corson C, Brady KA. Assessing the impact of perinatal HIV case management on outcomes along the HIV care continuum for pregnant and postpartum women living with HIV, Philadelphia 2005–2013. *AIDS and Behavior*. 2017;21:2670–81.
24. Hackett S, Badell ML, Meade CM, Davis JM, Blue J, Curtin L, et al. Improved perinatal and postpartum human immunodeficiency virus outcomes after use of a perinatal care coordination team. *Open Forum Infectious Diseases*. 2019;6(6):ofz183.
25. Williams E, Barnes L, Rowsell C, Islam M, Amofa N, Wills M, et al. The impact of financial support for replacement infant feeding on postpartum attendance and outcomes for women with HIV: P139. *HIV Medicine*. 2014;15:60.
26. McKinney J, Jackson J, Sangi-Haghpeykar H, Hickerson L, Hawkins J, Peters Y, et al. HIV-adapted group prenatal care: Assessing viral suppression and postpartum retention in care. *AIDS Patient Care & STDs*. 2021;35(2):39–46.

“Should the woman choose to breastfeed, she should be supported during her pregnancy care, and consultation with pediatric HIV experts should be sought to plan for enhanced surveillance and/or prophylactic treatment for the infant” (1). Authors note that the strength of this recommendation is “strong”: there is a high level of confidence that the desirable effects outweigh the undesirable effects (1). Additionally, the quality of evidence was classified as “moderate”: the true effect of the evidence is likely to be close to the estimate (1). As for infant antiretroviral prophylaxis, these guideline states that this should be decided based on the risk of perinatal transmission, measured as mother’s optimal adherence to antiretrovirals and viral suppression) (1). The SOGC guideline states that transmission of HIV to the newborn is <1% if the mother is adherent to antiretroviral therapy, if the infant is on antiretroviral prophylaxis, and if breastfeeding is avoided (1).

Previously, clinical guidelines in the U.S. did not recommend breastfeeding for mothers living with HIV (53). However, updated guidelines from January 2023, published by the U.S. National Institutes of Health (NIH), state that “[c]linicians should support the choices of people with HIV to breastfeed (if they are virally suppressed) or to formula/replacement feed” (3), noting that transmission risk with properly prepared formula or human donor milk is zero, and is less than 1% (but not zero) for people living with HIV on antiretroviral therapy with sustained undetectable viral load through pregnancy and postpartum (53). All infants perinatally exposed to HIV are recommended to receive postpartum HIV medications: one or more drugs to a newborn without documented HIV infection (as antiretroviral prophylaxis) and three-drug regimen to newborns who are at highest risk of perinatal acquisition (may serve as prophylaxis or treatment) or with documented HIV infection (as treatment) (54). These guidelines place an emphasis on shared decision-making between providers and patients, explicitly stating that Child Protective Services (CPS) not be engaged when a parent living with HIV chooses to breastfeed their infant (53, 55). The American Academy of Pediatrics has also recently updated their guidelines: “...pediatricians should be prepared to offer a family-centered, nonjudgmental, harm reduction approach to support people with HIV on ART [antiretroviral therapy] with sustained viral suppression below 50 copies per mL who desire to breastfeed” (56). There are at least two models of care in the U.S. that have developed approaches to care for women living with HIV who choose to breastfeed their infants (12, 13). Both of these models include provision of infant antiretroviral prophylaxis (12, 13).

The British HIV Association (BHIVA) guidelines for the management of HIV in pregnancy and postpartum states that “[i]n the UK and other high-income settings, the safest way to feed infants born to women with HIV is with formula milk, as there is no on-going risk of HIV exposure after birth. We therefore continue to recommend that women living with HIV feed their babies with formula milk” (57). However, BHIVA also states that “[w]omen who are virologically

27. World Health Organization. Infant feeding for the prevention of mother-to-child transmission of HIV. August 2023. Available from: <https://www.who.int/tools/elena/interventions/hiv-infant-feeding> Accessed June 10, 2024.
28. Poliektov NE, Badell ML. Antiretroviral options and treatment decisions during pregnancy. *Paediatric Drugs*. 2023;25(3):267-82.
29. Nachman S, Aldrovandi G. Breastfeeding in the United States among women with HIV: Con viewpoint. *Clinical Infectious Diseases*. 2024;08:08.
30. Khan S, Kennedy VL, Loutfy M, MacGillivray J, Yudin M, Read S, et al. “It’s Not Easy”: Infant feeding in the context of HIV in a resource-rich setting: Strengths, challenges, and choices, a qualitative study. *Journal of the Association of Nurses in AIDS Care*. 2021;32(1):105-14.
31. Chaparro AI, Formul D, Vasquez S, Cianelli R, Gonzalez IA, Scott G, et al. Breastfeeding in women with HIV infection: A qualitative study of barriers and facilitators. *PloS One*. 2024;19(7):e0303788.
32. Etowa J, Nare H, Kakuru DM, Etowa EB. Psychosocial experiences of HIV-positive women of African descent in the cultural context of infant feeding: A three-country comparative analyses. *International Journal of Environmental Research & Public Health*. 2020;17(19):29.

suppressed on cART [combination antiretroviral therapy] with good adherence and who choose to breastfeed should be supported to do so, but should be informed about the low risk of transmission of HIV through breastfeeding in this situation and the requirement for extra maternal and infant clinical monitoring” (57). BHIVA recommends that if a mother chooses to breastfeed, it should only be for a maximum of six months to decrease HIV transmission risk (58). BHIVA provides a complex set of dosing recommendations for antiretroviral prophylaxis (“infant PEP”) depending on “very low”, “low” or “high” risk of transmission: two weeks of monotherapy, four weeks of monotherapy, or up to four weeks of combination therapy, respectively (59).

Since 2018, guidelines from the Swiss Federal Commission for Sexual Health (FCSH) state that “...breastfeeding still should not be actively recommended for HIV-infected mothers in Switzerland until more robust data is available” (60). However, the guidelines do note that “...a strong wish of a HIV-positive woman to breastfeed the child must be respected and should be supported in case the conditions of the ‘optimal scenario’ are fulfilled and the decision is the result of a shared decision-making among physician and mother or parents” (60). This “optimal scenario” is as follows: regular follow-up of treatment during pregnancy (e.g. every 2–3 months) by a physician with expertise in the field of HIV and a HIV plasma viral load of <50 copies/mL ideally throughout pregnancy, but at least at the last two consecutive measurements before birth (minimal interval of 4 weeks and the last measurement after week 36 of pregnancy) (60). In the “optimal scenario”, no infant antiretroviral prophylaxis is recommended (60). The 2023 European AIDS Clinical Society (EACS) Guidelines state that “[b]reastfeeding is not recommended routinely” but that “[i]n situations where there is persistently undetectable maternal HIV viral load and very low risk of transmission, breastfeeding may be facilitated by joint decision making and with appropriate close monitoring of mother and infant” (61). If an infant is considered very low risk for transmission, single agent antiretroviral prophylaxis for two-six weeks is recommended, whereas for infants at higher risk of acquiring HIV, combination therapy with two or three agents for four weeks is recommended (61). Women Against Viruses in Europe (WAVE), which is part of EACS, conducted a survey in 2022 to gather information on breastfeeding recommendations and practices for women living with HIV in European countries (62). The survey was sent to 31 countries, and 25 unique responses were received, each from a different country (62). Twenty-three countries have guidelines specific to HIV and breastfeeding; of these, 12 (52%) recommended against breastfeeding. However, 11 of 23 respondents (48%) indicated that breastfeeding is an option if certain criteria were met (62).

33. Etowa J, Etowa E, Nare H, Mbagwu I, Hannan J. Social determinants of breastfeeding preferences among Black mothers living with HIV in two North American cities. *International Journal of Environmental Research & Public Health*. 2020;17(18):21.
34. Tuthill EL, Tomori C, Van Natta M, Coleman JS. “In the United States, we say, ‘No breastfeeding,’ but that is no longer realistic”: Provider perspectives towards infant feeding among women living with HIV in the United States. *Journal of the International AIDS Society*. 2019;22(1):e25224.
35. Cranmer LM, Chung MH, Chahroudi A. Support for establishing best practices for breastfeeding in the current HIV/ART era. *Journal of the Pediatric Infectious Diseases Society*. 2022;11(3):90–1.
36. Bamford A, Foster C, Lyall H. Infant feeding: Emerging concepts to prevent HIV transmission. *Current Opinion in Infectious Diseases*. 2024;37(1):8–16.
37. Adhikari EH, Yule CS, Roberts SW, Rogers VL, Sheffield JS, Kelly MA, et al. Factors associated with postpartum loss to follow-up and detectable viremia after delivery among pregnant women living with HIV. *AIDS Patient Care & STDs*. 2019;33(1):14–20.
38. Kapetanovic S, Dass-Brailesford P, Nora D, Talisman N. Mental health of HIV-seropositive women during pregnancy and postpartum period: A comprehensive literature review. *AIDS and Behavior*. 2014;18:1152–73.

Challenges to HIV care during the postpartum period

The majority of research examining postpartum retention in HIV care and/or adherence to antiretroviral therapy appears to come from low-income settings (15, 21, 63, 64). However, we identified one systematic review from 2012 conducted across both low- and high-income settings, which found that achieving optimal antiretroviral therapy adherence is particularly challenging during the postpartum period (14). A 2023 Canadian study supports this, noting that the postpartum period is a challenging time for adherence to antiretroviral therapy and viral load control; in a sample of women from British Columbia and Quebec (n=214), only 87% had an undetectable viral load during the postpartum period (16). Other authors have noted that postpartum care engagement for diverse populations of women living with HIV is especially lacking (65) and that there is a need for qualitative studies from high-income settings to determine barriers to retention in care in this population (16).

We found some studies from high-income settings that describe factors associated with different outcomes in the HIV care continuum during the postpartum period. The main findings of these studies are as follows:

- Women with prenatal substance use and women who were not virally suppressed at enrollment into prenatal care were at greater risk of poor retention in care and lack of viral suppression postpartum (66);
- Detectable viral load at delivery, failure to return for a postpartum visit, and a high pill burden (≥ 6 pills daily) during pregnancy predicted loss to HIV care postpartum (37);
- Having a viral load ≥ 400 copies/mL and/or CD4 counts < 200 cells/ μ L in the year before pregnancy was a risk factor for increased viral loads postpartum (67);
- Women with a viral load < 200 copies/mL at baseline (i.e. first entry to prenatal care) were six times more likely to be engaged in care three months postpartum compared to women whose viral load was > 200 copies/mL at baseline (68);
- Starting antiretroviral therapy late (i.e. in the third trimester of pregnancy) may be a risk factor for suboptimal retention in HIV care postpartum (69);
- Pregnant women living with HIV were more likely to be engaged in HIV care postpartum compared to before pregnancy (70);

39. White AB, Mirjahangir JF, Horvath H, Anglemeyer A, Read JS, Group CHA. Antiretroviral interventions for preventing breast milk transmission of HIV. *Cochrane Database of Systematic Reviews*. 2014;10(CD011323).
40. World Health Organization. Guideline: Update on HIV and infant feeding. The duration of breastfeeding and support from health services to improve feeding practices among mothers living with HIV. 2016. Available from: <https://iris.who.int/bitstream/handle/10665/246260/9789241549707-eng.pdf?sequence=1> Accessed July 16, 2024.
41. World Health Organization. Infant feeding for the prevention of mother-to-child transmission of HIV. 2023. Available from: <https://www.who.int/tools/elena/interventions/hiv-infant-feeding> Accessed July 16, 2024.
42. Bispo S, Chikhungu L, Rollins N, Siegfried N, Newell ML. Postnatal HIV transmission in breastfed infants of HIV-infected women on ART: A systematic review and meta analysis. *African Journal of Reproduction and Gynaecological Endoscopy*. 2017;20(1).
43. Eccles R, du Toit M, de Jongh G, Kruger E. Breastfeeding outcomes and associated risks in HIV-infected and HIV-exposed infants: A systematic review. *Breastfeeding Medicine*. 2022;17(2):112–30.

- Viral suppression at delivery and attending an HIV care visit within 90 days after delivery was associated with 12-month viral suppression (71);
- Postpartum women who had an undetectable viral load were more likely to have at least a high school education, a planned pregnancy, and had initiated antiretroviral therapy before pregnancy (72);
- During the postpartum period, disruption of regular routines due to infant care and fatigue and sleep deprivation caused some mothers to miss doses of antiretroviral therapy (73).

Postpartum depression among mothers living with HIV

A 2019 meta-analysis found that women living with HIV had a greater risk of antenatal and postnatal depression compared to HIV-negative people; however, this analysis was mainly comprised of data from settings in Africa (17). Authors noted that because of the high prevalence of depression in this population, clinicians should screen for depression before and after delivery (17).

A more recently published systematic review (2024) examined factors related to postpartum depression among women living with HIV, though this review only included one study from a high-income setting (a survey study from Norway, Finland, and Sweden); the other studies were from South Africa, Uganda, Kenya, Malawi and India (19). Authors classified factors that contribute to postpartum depression in women living with HIV into four categories: HIV diagnosis and living with HIV, maternal factors, infant factors, and social support (19). These are listed in Table 3.

Table 3. Factors that contribute to postpartum depression in women living with HIV [by Wright et al. (17)]

HIV diagnosis & living with HIV	Maternal factors	Infant factors	Social support
<ul style="list-style-type: none"> • Timing of HIV diagnosis • Disclosure to others • Stigma • Adherence to antiretroviral therapy 	<ul style="list-style-type: none"> • Education • Lower income • Rural location • Stress • Pregnancy intention • Substance use • Antenatal care • Pregnancy complications • Intimate partner violence 	<ul style="list-style-type: none"> • Mother-infant bonding • Pre-term delivery • HIV status • Hospitalization • Excessive crying • Feeding issues 	<ul style="list-style-type: none"> • Postpartum loneliness • Immigrant status • Participation in support programs • Stress management

- Gross MS, Taylor HA, Tomori C, Coleman JS. Breastfeeding with HIV: An evidence-based case for new policy. *Journal of Law, Medicine & Ethics.* 2019;47(1):152–60.
- Flynn PM, Taha TE, Cababasay M, Butler K, Fowler MG, Mofenson LM, et al. Association of maternal viral load and CD4 count with perinatal HIV-1 transmission risk during breastfeeding in the PROMISE postpartum componen. *Journal of Acquired Immune Deficiency Syndromes.* 2021;88(2):206–13.
- Flynn PM, Taha TE, Cababasay M, Fowler MG, Mofenson LM, Owor M, et al. Prevention of HIV-1 transmission through breastfeeding: Efficacy and safety of maternal antiretroviral therapy versus infant nevirapine prophylaxis for duration of breastfeeding in HIV-1-infected women with high CD4 cell count (IMPAACT PROMISE): A randomized, open-label, clinical trial. *Journal of Acquired Immune Deficiency Syndromes.* 2018;77(4):383–92.
- Luoga E, Vanobberghen F, Bircher R, Nyuri A, Ntamatungiro AJ, Mnzava D, et al. Brief report: No HIV transmission from virally suppressed mothers during breastfeeding in rural Tanzania. *Journal of Acquired Immune Deficiency Syndromes.* 2018;79(1):e17–e20.

The impact of depression on HIV care outcomes in pregnant and postpartum women living with HIV is limited (18). We did identify one U.S. study that found that an increase in depressive symptoms from the third trimester to up to six months postpartum was associated with a decrease in viral suppression (74). However, another U.S. study found that women living with HIV who were diagnosed with definite, possible, or no depression during pregnancy had similar HIV care outcomes postpartum (18). Authors surmised that this was likely due to supportive services and intensive case management provided to women with possible or definite depression (18).

One retrospective cohort study from Ontario (not included in either of the aforementioned reviews), examined the ambulatory and acute mental health service use of postpartum women living with HIV compared to those not living with HIV (75). Women living with HIV were more likely to access outpatient mental health services but more than twice as likely to remain engaged in psychiatric services only (75). Based on these findings, authors suggested that postpartum mental health care be part of comprehensive reproductive health care (75).

Interventions to support HIV care during the postpartum period

One author stated that “[t]he post-partum fall-off from the HIV care continuum is understudied and there are no proven prenatal or post-partum interventions to ameliorate this drop in adherence and retention in care in resource-rich settings” (20). This is supported by others, who note that “[a] number of studies have identified factors associated with postpartum retention in care, but the evidence base for interventions to address the problem and close this gap in the HIV care continuum is limited” (21).

We identified four systematic reviews that examined interventions to support HIV care outcomes during the postpartum period (22, 76-78). However, only three individual studies across these four systematic reviews were among postpartum women living with HIV from high-income settings (23-25).

One of these four systematic reviews was from 2021 and examined available evidence on transitioning women into prevention of mother-to-child HIV transmission services during pregnancy and back to regular HIV care for continued antiretroviral adherence after delivery (77). Across 36 studies, two were from high-income settings (23, 24, 77). The first study was conducted in Philadelphia, and found that women living with HIV in a perinatal case management program were more likely to achieve viral suppression before delivery and be retained in care at one year postpartum, compared to women not in this program (23). The second study was from Atlanta and had similar outcomes: women living with HIV who delivered after the implementation of a perinatal care coordination team were more likely to have a suppressed viral load six months postpartum and

48. Waitt C, Low N, Van de Perre P, Lyons F, Loutfy M, Aebi-Popp K. Does U=U for breastfeeding mothers and infants? Breastfeeding by mothers on effective treatment for HIV infection in high-income settings. *The Lancet HIV*. 2018;5(9):e531–e6.
49. Aebi-Popp K, Kahlert CR, Crisinel PA, Decosterd L, Saldanha SA, Hoesli I, et al. Transfer of antiretroviral drugs into breastmilk: A prospective study from the Swiss Mother and Child HIV Cohort Study. *Journal of Antimicrobial Chemotherapy*. 2022;77(12):3436–42.
50. Rodger AJ, Cambiano V, Bruun T, Vernazza P, Collins S, Degen O, et al. Risk of HIV transmission through condomless sex in serodifferent gay couples with the HIV-positive partner taking suppressive antiretroviral therapy (PARTNER): Final results of a multicentre, prospective, observational study. *The Lancet*. 2019;393(10189):2428–38.
51. Behrens GMN, Aebi-Popp K, Babiker A. Close to zero, but not zero: What is an acceptable HIV transmission risk through breastfeeding? *Journal of Acquired Immune Deficiency Syndromes*. 2022;89(4):e42.
52. Powell A, Agwu A. In support of breast/chest feeding by people with HIV in high-income settings. *Clinical Infectious Diseases*. 2024;25:25.

more likely to have better HIV care visit attendance within 90 days after delivery, compared to women living with who delivered before such team was set up (24).

A 2016 systematic review identified a study from the UK that offered women financial support for formula feeding that was provided at a hospital with a specialized HIV care and pregnancy team (22, 25). Women treated in this specialized care program were more likely to have better adherence to their antiretroviral regimen and routine HIV care appointment attendance when compared to women who were treated before the introduction of the scheme (25).

Two studies examined acceptability of interventions. A small qualitative study conducted in Philadelphia among pregnant or postpartum women found that a peer mentoring intervention could be an acceptable approach to reinforce antiretroviral adherence and maintain engagement in care after delivery (79). Another qualitative study among four sites in the U.S. (Philadelphia, Atlanta, Washington, DC, and Birmingham, AL) found that technology-based approaches to improve adherence during pregnancy and postpartum that prioritized overall wellness and enhanced patient-provider support were preferred; text-message reminders were the favoured modality as it was familiar to providers, easily accessible to patients, and was perceived as less invasive when compared to video calls and signaling pill bottles (pill bottle flashes when it is time for the patient to take their medication; computer system records data when pill bottle was opened) (80).

In the absence of evidence from high-income settings, one study collates the available data on improving postpartum retention in care for women living with HIV and suggests general steps for improvement (21):

- Increase provider and patient awareness of poor postpartum retention and take steps to support women as early as possible during pregnancy;
- Improve care coordination using existing resources;
- Involve perinatal case management in the care of pregnant women living with HIV;
- Implement peer support interventions;
- Use technology-based interventions to engage women living with HIV (21).

53. Department of Health and Human Services Panel on Treatment of HIV in Pregnancy and Prevention. Infant feeding for individuals with HIV in the United States. 2023. Available from: <https://clinicalinfo.hiv.gov/en/guidelines/perinatal/infant-feeding-individuals-hiv-united-states?view=full> Accessed June 10, 2024.
54. Department of Health and Human Services Panel on Treatment of HIV in Pregnancy and Prevention. Management of infants born to people with HIV infection. 2023. Available from: <https://clinicalinfo.hiv.gov/en/guidelines/perinatal/management-infants-arv-hiv-exposure-infection?view=full> Accessed August 14, 2024.
55. Covin C. Parenting with HIV: A patient's view on updated infant feeding guidelines in the US. HIV Research & Clinical Practice. 2024;25(1):2357871.
56. Abuogi L, Noble L, Smith C. Infant feeding for persons living with and at risk for HIV in the United States: Clinical report. Pediatrics. 2024:e2024066843.
57. Gilleece Y, Tariq S, Bamford A, Bhagani S, Byrne L, Clarke E, et al. British HIV Association guidelines for the management of HIV in pregnancy and postpartum 2018. HIV Medicine. 2019;20(S3):S2–S85.

Factors That May Impact Local Applicability

This review is a synthesis of research evidence on postpartum women living with HIV in high-income settings. The focus was on high-income countries due to the socioeconomic and cultural differences and circumstances. However, it should be noted that important differences among populations within high-income settings also exist; this is evident from the discussion in emerging literature and from different breastfeeding guidelines. Furthermore, as the evidence in this area rapidly evolves, the guidelines in this synthesis may have changed since publication, and may no longer be up-to-date. The evidence in this synthesis is not intended to replace medical advice. The term “breastfeeding” is used throughout this document, but it is acknowledged that some other terms are also used in the literature, such as “chestfeeding.” Additionally, gender-neutral terms when describing people giving birth, such as “birthing parents” or “pregnant people” are also used in the literature.

What We Did

We searched Medline (including Ovid MEDLINE and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations) using text term HIV and (text terms [postpartum or post-partum or post partum or childbirth or child birth or after delivery or postnatal or after pregnancy or infant feeding or breastfeed* or breast feed* or chestfeed* or chest feed*] or MeSH terms [exp Postpartum Period/ or exp Lactation/]). Searches were conducted on May 17, 2024 and results limited to articles published from 2018 to present in English. Reference lists of identified articles were also searched. Google (grey literature) searches using different combinations of these terms were also conducted. The searches yielded 1,997 references from which 81 were included.

58. Gilleece Y, Byrne L, Bamford A, Lyall H, Seery P, S T. Interim BHIVA position statement on HIV and mixed infant feeding. December 2023. Available from: <https://www.bhiva.org/file/639b0a86a19c7/BHIVA-position-statement-on-HIV-and-mixed-infant-feeding.pdf> Accessed June 10, 2024.
59. BHIVA. British HIV Association guidelines for the management of HIV in pregnancy and postpartum 2018 (2020 third interim update). Available from: <https://www.bhiva.org/file/5f1aab1ab9aba/BHIVA-Pregnancy-guidelines-2020-3rd-interim-update.pdf> Accessed August 22, 2024.
60. Aebi-Popp K. Recommendations of the Swiss Federal Commission for Sexual Health (FCSH) for medical care of HIV-infected women and their offspring. December 2018. Available from: <https://www.bag.admin.ch/bag/en/home/krankheiten/krankheiten-im-ueberblick/sexuell-uebertragbare-infektionen/richtlinien-und-empfehlungen-zu-sti.html> Accessed June 12, 2024.
61. European AIDS Clinical Society. EACS Guidelines. Version 12.0. October 2023. Available from: <https://www.eacsociety.org/media/guidelines-12.0.pdf> Accessed June 12, 2024.
62. Keane A, Lyons F, Aebi-Popp K, Feiterna-Sperling C, Lyall H, Martinez Hoffart A, et al. Guidelines and practice of breastfeeding in women living with HIV-Results from the European INSURE survey. *HIV medicine*. 2024;25(3):391–7.

63. Hodgson I, Plummer ML, Konopka SN, Colvin CJ, Jonas E, Albertini J, 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*. 2014;9(11):e111421.
64. Colvin CJ, Konopka S, Chalker JC, Jonas E, Albertini J, Amzel A, et al. A systematic review of health system barriers and enablers for antiretroviral therapy (ART) for HIV-infected pregnant and postpartum women. *PloS One*. 2014;9(10):e108150.
65. Psaros C, Stanton AM. Patterns of post-partum HIV care engagement. *The Lancet HIV*. 2021;8(12):e730–e1.
66. Oliver C, Rebeiro PF, Hopkins MJ, Byram B, Carpenter L, Clouse K, et al. Substance use, demographic and socioeconomic factors are independently associated with postpartum HIV care engagement in the Southern United States, 1999–2016. *Open Forum Infectious Diseases*. 2019;6(2):ofz023.
67. Patel K, Karalius B, Powis K, Kacaneck D, Berman C, Moscicki AB, et al. Trends in post-partum viral load among women living with perinatal HIV infection in the USA: A prospective cohort study. *The Lancet HIV*. 2020;7(3):e184–e92.
68. Ojukwu EN, Cianelli R, Rodriguez NV, Gattamorta K, De Oliveira G, Duthely L. Predictors and social determinants of HIV treatment engagement among post-partum Black women living with HIV in southeastern United States. *Journal of Advanced Nursing*. 2023;79(11):4365–80.
69. Paioni P, Aebi-Popp K, Martinez de Tejada B, Rudin C, Bernasconi E, Braun DL, et al. Viral suppression and retention in HIV care during the postpartum period among women living with HIV: A longitudinal multicenter cohort study. *The Lancet Regional Health–Europe*. 2023;31:100656.
70. Okhai H, Tariq S, Burns F, Gilleece Y, Dhairyawan R, Hill T, et al. Association of pregnancy with engagement in HIV care among women with HIV in the UK: A cohort study. *The Lancet HIV*. 2021;8(12):e747–e54.
71. Meade CM, Badell M, Hackett S, Mehta CC, Haddad LB, Camacho-Gonzalez A, et al. HIV care continuum among postpartum women living with HIV in Atlanta. *Infectious Diseases in Obstetrics & Gynecology*. 2019;2019:8161495.
72. Boucoiran I, Kaida A, Blakeley C, Skerritt L, Khan S, Bakombo MD, et al. Practices, support and stigma related to infant feeding and postpartum engagement in care among women living with HIV in Canada. *AIDS Care*. 2023;35(12):1971–81.
73. Momplaisir FM, Fortune K, Nkwihoreze H, Groves AK, Aaron E, Jemmott JB. Outcome expectancies toward adherence to antiretroviral therapy for pregnant and postpartum women with HIV. *Women's Health*. 2021;17:17455065211061094.
74. Momplaisir F, Hussein M, Kacaneck D, Brady K, Agwu A, Scott G, et al. Perinatal depressive symptoms, human immunodeficiency virus (HIV) suppression, and the underlying role of antiretroviral therapy adherence: A longitudinal mediation analysis in the IMPAACT P1025 Cohort. *Clinical Infectious Diseases*. 2021;73(8):1379–87.
75. Sparrow-Downes VM, Loutfy M, Antoniou T, Vigod SN. Postpartum mental health service utilization in women with human immunodeficiency virus (HIV): A population-based study. *AIDS Care*. 2019;31(11):1332–9.
76. Brittain K, Teasdale CA, Ngeno B, Odondi J, Ochanda B, Brown K, et al. Improving retention in antenatal and postnatal care: A systematic review of evidence to inform strategies for adolescents and young women living with HIV. *Journal of the International AIDS Society*. 2021;24(8):e25770.
77. Phillips TK, Teasdale CA, Geller A, Ng'eno B, Mogoba P, Modi S, et al. Approaches to transitioning women into and out of prevention of mother-to-child transmission of HIV services for continued ART: A systematic review. *Journal of the International AIDS Society*. 2021;24(1):e25633.
78. Vrazo AC, Firth J, Amzel A, Sedillo R, Ryan J, Phelps BR. Interventions to significantly improve service uptake and retention of HIV-positive pregnant women and HIV-exposed infants along the prevention of mother-to-child transmission continuum of care: Systematic review. *Tropical Medicine & International Health*. 2018;23(2):136–48.
79. Akinde Y, Groves AK, Nkwihoreze H, Aaron E, Alleyne G, Wright C, et al. Assessing the acceptability of a peer mentor mother intervention to improve retention in care of postpartum women living with HIV. *Health Equity*. 2019;3(1):336–42.
80. Rendell S, Schmidt H, Neergaard R, Nkwihoreze H, Barbati Z, Short WR, et al. Integrating ART adherence support technologies in the care of pregnant and postpartum people with HIV: A qualitative study. *Implementation Science Communications*. 2022;3(1):85.
81. Kahlert C, Aebi-Popp K, Bernasconi E, Martinez de Tejada B, Nadal D, Paioni P, et al. Is breastfeeding an equipoise option in effectively treated HIV-infected mothers in a high-income setting? *Swiss Medical Weekly*. 2018;148:w14648.