Breast Feeding for Women with HIV?

CHIVA / BHIVA

Hermione Lyall
Imperial Healthcare
NHS Trust
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Acknowledgements:
Nell Freeman-Romilly, Pat Tookey, Claire Townsend, Claire Thorne, Kate Francis, Helen Peters, Graham Taylor, Marc Lallement
Is it safe for me to breastfeed my baby?

Scenario 1:
Well woman with HIV, 31 years old
- First pregnancy - 20 weeks gestation
- Conceived on ART, still on first line ART
- VL < 50 for 5 years
- CD4 count 770

My family expect me to breastfeed,
I also believe it’s the right thing to do -

I have read the WHO guideline (2016)
→ it says breast is best for women with HIV
what would you advise?
“God will cure me and my child”

Scenario 2:
G 5+0, 32/40 weeks, CD4 - 50, VL - 270,000

Denies HIV, refusing any treatment
for herself before delivery
for herself at delivery
for the infant after delivery
wants normal delivery

I want to breast feed – as I did with all my other kids

Risk of transmission to this infant?
9 yr old, 7 yr old, 5, yr old, 2 yr old – where are they, have they been tested?
WHO Guideline on HIV & Infant feeding 2016

WHO recommends lifelong ART for everyone from the time they are first diagnosed with HIV infection.

This WHO guideline is intended mainly for countries with high HIV prevalence where diarrhoea, pneumonia and under-nutrition are common causes of infant mortality.

However, it may also be relevant to settings with a low prevalence of HIV depending on the background rates and causes of infant and child mortality.
### WHO Guidelines for Infant feeding 2016

<table>
<thead>
<tr>
<th>Clinical Scenarios</th>
<th>WHO guidance for women with HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>For how long should mothers with HIV breast feed?</td>
<td>Mothers living with HIV should breastfeed for at least 12 months and may continue breastfeeding for up to 24 months or longer, if → (same as the general population)</td>
</tr>
<tr>
<td></td>
<td>• Has access to lifelong ART and HIV care</td>
</tr>
<tr>
<td></td>
<td>• Exclusively breastfeeds for the first 6 months</td>
</tr>
<tr>
<td></td>
<td>• Introduce appropriate complementary foods after 6 months and continue breastfeeding</td>
</tr>
<tr>
<td></td>
<td>• Only stop once a nutritionally adequate and safe diet without breast milk can be provided</td>
</tr>
<tr>
<td>If a mother does not exclusively breastfeed:</td>
<td>ART also reduces the risk of HIV transmission in mixed feeding</td>
</tr>
<tr>
<td>is mixed feeding with ART better than no breastfeeding at all?</td>
<td>Although exclusive breastfeeding is recommended - when on ART, mixed feeding is not a reason to stop breastfeeding</td>
</tr>
<tr>
<td>Is a shorter duration of planned breastfeeding with ART better than no breastfeeding at all?</td>
<td>Any duration of breastfeeding is better than never initiating breastfeeding at all</td>
</tr>
</tbody>
</table>
# British HIV Association (BHIVA) and Children’s HIV Association (CHIVA) Position Statement on Infant Feeding in the UK

## BHIVA/CHIVA Writing Group on Infant Feeding in the UK

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr Graham P Taylor</td>
<td>BHIVA; Department of GUM and Communicable Diseases, Imperial College Healthcare NHS Trust</td>
</tr>
<tr>
<td>Professor Jane Anderson</td>
<td>BHIVA; Centre for the Study of Drug Abuse, King’s College London</td>
</tr>
<tr>
<td>Ms Polly Clayden</td>
<td>UK-CID, St Bartholomew’s Hospital, London</td>
</tr>
<tr>
<td>Professor Brian G Gazzard</td>
<td>BHIVA; Centre for Child Health, UCL Institute of Child Health, UK; London</td>
</tr>
<tr>
<td>Professor Jane Fortin</td>
<td>Professor, Pretoria Hospital, South Africa</td>
</tr>
<tr>
<td>Dr Linda Lazarus</td>
<td>Public Health Protection Agency, South Africa</td>
</tr>
<tr>
<td>Professor Marie-Louise Maw</td>
<td>Health, UCL Institute of Child Health, UK; Pretoria Hospital, South Africa</td>
</tr>
<tr>
<td>Ms Beatrice Mckeever</td>
<td>Professor, Pretoria Hospital, South Africa</td>
</tr>
<tr>
<td>Miss Annemiek Van Rooyen</td>
<td>Department of GUM and HIV, Guy’s and St Thomas’ NHS Foundation Trust, London</td>
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<tr>
<td>Dr Pat Tookey</td>
<td>Department of Epidemiology and Biostatistics, UCL Institute of Child Health</td>
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<tr>
<td>Dr Gareth Williams</td>
<td>Department of Paediatrics, Imperial College Healthcare NHS Trust</td>
</tr>
<tr>
<td>Dr Tony Barron</td>
<td>British HIV Association (BHIVA); Paediatric Department, North West London Hospitals NHS Trust</td>
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</tbody>
</table>

## BHIVA Guidelines 2017

**Formula Feeding Still advised**
Risk Factors for HIV transmission & Breast Feeding

- Viral Load
- CD4 count
- HIV sero-conversion during BF
- Mastitis
- Cracked nipples
- Duration of BF
- Mixed feeding
- Infant oral thrush
Major Risk Factors for MTCT

Maternal
- Plasma viral load
- CD4 count
- Advanced HIV

Delivery
- Premature delivery
- Mode of delivery
- Duration of rupture of Membranes
- Infection in the birth canal

Breast feeding
- No ART

% Transmission

Delivery Plasma HIV RNA

Prevention of HIV Transmission from Breastfeeding in Africa
H. Coovadia - Plenary abst 13 CROI 2007

**NOT** breast feeding is unsafe in developing countries

Early cessation of breastfeeding (<6 months) reduces HIV transmission but **increases** morbidity and mortality in infants born to HIV positive African women.

Continued breast feeding **reduces** morbidity and mortality in **HIV infected** infants in Africa.

**Balancing the risk of:**

- breast milk HIV transmission versus –
- early weaning – **malnutrition** – **gastroenteritis** - death
Duration & Pattern of Breastfeeding & Postnatal HIV Transmission: Pooled Analysis from West & South African Cohorts


N = 1195 infants, not perinatally infected, & breast fed

No maternal post natal ART

<table>
<thead>
<tr>
<th>Duration of Breastfeeding</th>
<th>18 month HIV infection risk</th>
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<tbody>
<tr>
<td>Less than 6 months BF</td>
<td>3.9% (2.3-6.5)</td>
</tr>
<tr>
<td>More than 6 months BF</td>
<td>8.7% (6.8 – 11.0)</td>
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Exclusive BF very similar to predominantly BF (only other liquids)

Solids in first 2 months of life 2.9 fold (1.1-8.0) ↑ risk of HIV

For breast feeding mothers advise → exclusive BF & NO early solids

West Africa - Ditrame-Plus and South Africa – Vertical Transmission study
Feeding and mother not on ART Risk of postnatal HIV transmission

Estimated postnatal risk of transmission:
Overall risk: 9.0/100 child-years
(95% CI 6.2–11.7)

Exclusive breastfeeding: 9.0/100 child-years
(95% SI, 6.0–12.1)

Predominant breastfeeding: 8.5/100 child-years
(95%SI, 1.2–18.1)

Breastfeeding plus solids: 41.2/100 child-years
(95%SI, 1.1–74.5)
Breast feeding mother no ART - infant PEP
ANRS 12174 - PROMISE Pre-EP


RCT 1500 M-I pairs Burkina Faso, South Africa, Uganda, Zambia

HIV-uninfected infants at day 7 - born to mothers not eligible for ART
Exclusive breastfeeding until 26th week of life
Cessation of breastfeeding at a maximum of 49 weeks

Randomised to: infant PEP - Lamivudine or Lopinavir/ritonavir

Primary endpoint → HIV-1 Tx - day 7 - 50 weeks of age
Secondary endpoints → safety (including resistance, adverse events and growth) & HIV-1-free survival until 50 weeks.
Infant Pre-EP

2009 -2012 enrolled 1273 infants → analysed 1236
615 → lopinavir–ritonavir 621 → lamivudine

17 HIV-1 infections (8 lopinavir/rit versus 9 lamivudine)

50 week cumulative HIV-1 infection rate – no difference
Lopinavir/rit 1·4% (95% CI 0·4–2·5)
Lamivudine 1·5% (0·7–2·5)

Clinical / biological severe adverse events – no difference
Lopinavir/rit 251 (51%) grade 3–4 events
Lamivudine 246 (50%) grade 3–4 events
# Breast Feeding not on ART & Risk of HIV Transmission

<table>
<thead>
<tr>
<th>Duration of Breast feeding</th>
<th>Risk of HIV Transmission to the uninfected Infant after birth</th>
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<tr>
<td><strong>6 months</strong></td>
<td>Mother in Africa Not on ART Breast Feeding for 6 months exclusively</td>
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<td><strong>PROMISE</strong></td>
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<td></td>
<td>0.3% (0.1-0.6)</td>
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<td><strong>12 months</strong></td>
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<tr>
<td></td>
<td><strong>PROMISE</strong></td>
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<tr>
<td></td>
<td>0.6% (0.4–1.1)</td>
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<tr>
<td></td>
<td><strong>Pre-EP</strong></td>
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<td>1.5% (0.7–2.5)</td>
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- Each additional month of BF beyond 6 mths of age → 1% risk of HIV (95%CI, 0.5–1.7)

African data
How many women with HIV are breastfeeding in the UK (that we know of)?

NSHPC data on breastfeeding (collected since 2012)

~ 1200 deliveries to women with HIV per year in UK

40 children reported breastfed since 2012 (all maternal VL <50)
~ 7 (0.6%) per year, no trend over time
No transmissions reported to date
Duration of breast feeding: 1 day - > 1 year
On-going surveillance very important
What can we learn from African Studies on ART and Breastfeeding?
Postnatal HIV transmission in breastfed infants of HIV-infected women on ART - meta-analysis

Reviewed studies 2005 to 2015 – 11 studies selected
All mother advised to exclusively breast feed for 6 months

Outcomes: overall & postnatal HIV Tx at 6, 9, 12, 18 months:

Overall 6 months Tx rate: 3.54% (95% CI: 1.15–5.93%)
Overall 12 months Tx rate: 4.23% (95% CI: 2.97–5.49%)

Postnatal 6 months Tx rate: 1.08 (95% CI: 0.32–1.85)
Postnatal 12 months Tx rate: 2.93 (95% CI: 0.68–5.18)

ART mostly provided for PMTCT and did not continue beyond 6 months postpartum
No study provided data on mixed feeding & transmission risk
Breast Feeding on ART & Risk of HIV Transmission

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<tr>
<th>Duration of Breast feeding</th>
<th>Risk of HIV Transmission to the uninfected Infant after birth</th>
<th>Mother in Africa On ART (most ART only for 6 months)</th>
<th>Mother in Africa On ART (long term ART)</th>
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<td>Meta-analysis</td>
<td>Breast Feeding for 6 months exclusively then adding complementary foods</td>
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<td>6 months</td>
<td>1.08% (0.32-1.85)</td>
<td>0.3% (0.1-0.6)</td>
<td>PROMISE trial Taha et al IAS 2016</td>
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<td>18 months</td>
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<td>-</td>
<td></td>
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<td>24 months</td>
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### UK - Breast Feeding on ART & Risk of HIV Tx

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<th>Mother in UK On ART (long term)</th>
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<th>Mother in Africa On ART (most ART only for 6 months)</th>
<th>Mother in Africa On ART (long term)</th>
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<tr>
<td>6 months</td>
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<td>No data</td>
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*Meta-analysis*  
**PROMISE trial**
Breast feeding in Tanzania on ART with Viral Load monitoring

KIULARCO Study  Luoga et al  EACS PS5/5

2013-15

methods

Mothers initiated ART before delivery
Exclusively breastfed for ≥5 months
Infants - negative HIV DNA-PCR at age 4-12 weeks

Mothers – VL once or twice up to 11 months post delivery
Infants - HIV antibody test at 18 months
Breast feeding in Tanzania on ART with Viral Load monitoring

KIULARCO Study Luoga et al EACS PS5/5

Results
211 women - 215 pregnancies, 225 infants (10 twins)
Median time on ART 23 months (IQR 4-52)
VL measured twice in 53% (114/215) of pregnancies

During breastfeeding
91% (197/215) VL < 1000 copies/mL
75% (162/215) VL < 100 copies/ml

Duration of breastfeeding
52 weeks (IQR 44-54) (181 infants)
Breast feeding in Tanzania on ART with Viral Load monitoring

KIULARCO Study _Luoga et al EACS PS5/5

Results – Infants to July 2017
Lost to follow-up 10% (22/225)
Transferred 2% (4/225)
Died 8% (18/225) HIV status at 1 month post-delivery known
Still breastfeeding 2% (4/225)

Remaining infants (78% 177) HIV infected
(mother VL < 100 copies/mL at one month post-delivery)
(mother interrupted ART during breastfeeding)

No MTCT from mothers with suppressed VL test results
breastfeeding → very low risk of transmission when blood VL is suppressed
Breastfeeding with maternal antiretroviral therapy or formula feeding to prevent HIV postnatal mother-to-child transmission in Rwanda

Cécile Alexandra Peltier, Gilles François Ndayisaba, Philippe Lepage, Johan van Griensven, Valériane Leroy, Christine Omès Pharm, Patrick Cyaga Ndimubanzi, Olivier Courteille and Vic Arendt

Non randomised Interventional cohort study:

**BF + ART for 6 months**

*Formula feeding*

All received ART from 28wks

9mth cumulative risk of HIV transmission rate & HIV free survival
Overall HIV transmission → 1.3% (7 infants – 6 in-utero infections)

One infant in the BF group infected at 3-7 months

9 month post natal infection risk with BF 0.5% (95% CI – 0.1-3.4%; p =0.24)

9 month cumulative mortality:
3.3% in BF group (95% CI – 1.6 – 6.9%)
5.7% in FF group (95% CI – 3.6 – 9.2%) (p = 0.2)

HIV free survival at 9 months:
95% in BF group (95% CI – 91-97%)
94% in FF group (95% CI – 91-96%) (p = 0.66)
What we learn from African Studies on ART and Breastfeeding

- Maternal ART / infant ART & Breast feeding: MTCT ~ 0.6 - 3%
- Maternal ART & Formula feeding: MTCT - 0%
UK - Breast Feeding on ART?

African infants: ↑ Death from gastro (HIV +/−); ↓ Death from HIV

European infants: Women want to do it – is it safe?

For the mother with plasma VL < 50, & on ART after delivery?

Will the milk plasma VL be <50?

What about transmission to the infant through milk?

Risk of prolonged exposure to ART?

Risk of transmitted resistance in a breast milk HIV infected infant?

Still some unanswered questions
**Antiretroviral Drug Penetration into Breast Milk and Infant Plasma: BAN Study**

*Corbett A et al. 15th CROI Boston, MA, 2008 Abs 648*

Sampled maternal, infant, breast milk in 20 women receiving postnatal maternal ART at 6, 12, 24 weeks PP. Analysis of all sampling time points:

<table>
<thead>
<tr>
<th></th>
<th>3TC (N=47)</th>
<th>NVP (N=21)</th>
<th>NFV (N=26)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast Milk /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal Plasma</td>
<td>2.6 (1.1-3.5)</td>
<td>0.7 (0.5-0.9)</td>
<td>0.08 (0.04-0.14)</td>
</tr>
<tr>
<td>Infants Plasma /</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast Milk</td>
<td>0.01 (0.004-0.03)</td>
<td>0.2 (0-0.3)</td>
<td>ND</td>
</tr>
<tr>
<td>Maternal Plasma</td>
<td>0.06 (0.01-0.1)</td>
<td>0.12 (0-0.3)</td>
<td>ND</td>
</tr>
</tbody>
</table>

Infant ART exposure during breast feeding – is this a concern?
<table>
<thead>
<tr>
<th>Testing for HIV in infants born to breast feeding mothers with HIV on ART</th>
</tr>
</thead>
</table>
| **Formula Fed Infant**  
*4/5 blood tests*  
Birth HIV PCR  
High risk infants - additional week 2-3 HIV PCR  
Week 6 HIV PCR (off PEP)  
Week 12 HIV PCR (off PEP)  
Loss of HIV antibody at 18 months |

| **Breastfed Infant**  
*4 + X monthly blood tests*  
Birth HIV PCR  
Clinical review & monthly HIV PCR when Breast feeding  
Week 4 HIV PCR (off BF)  
Week 8 HIV PCR (off BF)  
Loss of HIV antibody at 18 months |
Back to our 2 women – breast feeding?

**Scenario 1**
Conceived on ART
still on first line ART
VL < 50 for 5 years
FF ~ 0% risk of HIV Tx
BF ~ 0.6% risk of HIV Tx (at 12 mths)
Open conversations,
Likely to work well with MDT

*We would support BF*

**Scenario 2**
CD4 - 50, VL - 270,000
Does not believe in HIV
Not on ART
FF ~ 15% risk of HIV Tx
BF ~ 30% risk of HIV Tx
Not engaging with MDT, unlikley to comply with ART, → antenatal SC referral

*We not would support BF*
Breastfeeding Advice as Harm Reduction

“People will make more health-positive choices if they have access to adequate support, empowerment, and education”.

Patient Information on HIV and Breastfeeding

Which simplifies complex (and changing) information
+
Accounts for patient’s wishes
+
Persuasively guides patients towards the safest approach
Two Patient Leaflets

1 – for all pregnant women with HIV:
‘Feeding Your New Baby’

2- for pregnant women with HIV who want to breastfeed:
‘Living with HIV and Breastfeeding Your New Baby’
The Safer Triangle

No virus
Only breastfeed if your HIV is undetectable.

Healthy breasts for mums
Only breastfeed if your breasts and nipples are healthy with no signs of injury or infection.

Happy tums
Only breastfeed if both you and your baby are free from tummy problems.
Conclusion – Answering your child’s question?
New BHIVA guidelines coming out - 2017

NSHPC – enhanced surveillance

**Safest thing is to formula feed – zero risk**

breast feeding is an option, but women must understand →
they are taking a risk, even if very small

**Any women who wishes to breast feed:**
Highly adherent to ART
VL<50, ideally throughout pregnancy
Short a duration as possible
Engaged with MDT
Willing to be followed up monthly

Trouble shooting advice leaflet – the safer triangle

PACIFY Study
Questionnaire to understand views of pregnant women with HIV on breast feeding in UK –
Let us know if you would like to join!
Thank You