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HIV and Human Milk

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Disclosures

No notable disclosures

Terminology

Breastfeeding
Chestfeeding
Body feeding
Human milk (HM)
- EHM: expressed-human milk

Terminology

Human milk (HM)

Unless otherwise stated, will refer to HM throughout indicating the birthing or lactating person affected by HIV who provides their own human milk (direct or EHM)

Terminology

Viral load (VL)
Anti-retroviral therapy (ART)
Anti-retroviral (ARV)
Maternal to child transmission (MTCT)
Drug abbreviations will be referenced; slides not intended to instruct specific drug regimens due to variance dependent upon circumstances

Agenda

Consider the CDCs recent recommendation changes regarding HIV+ birthing persons who desire to their provide human milk to their infant (January 2023)

Consider the implications of these changes as a field who provides care for pregnant/chestfeeding persons and infants

Patient Case

G3P2
G1 SVD c/b PPH requiring pRBC, HIV negative
G2 HIV+ suspected secondary to transfusion, breastfed infant abroad
G3 current, desires to BF; EDD in one month

Patient Case

Tivicay (dolutegravir) and Truvada (emtracitabine and tenofovir) with sustained undetectable VL for duration of pregnancy to date

"Pregnancy-friendly" regimen which is also recommended during breastfeeding but not stated by ID if this is to continue PP

D-D interactions with iron which may affect 3rd tri VL

Previous Recommendations in US

Under no circumstances, is provision of human milk to infant if HIV+ recommended

International Recommendations

Resource dependent

Dependent upon access to reliable clean water for infant formula

- Est 17% US on unregulated well-water (Est >17% in MO; 1.4 million Missourians, chemical risks not resolved by boiling)

International Recommendations

Dependent upon access to reliable formula or infant nutrition source

Risk of malnutrition, dehydration, infection related deaths may outweigh the risk of HIV acquisition by the infant

Consider how this is discussed

"You mean to tell me…"

Clarifying the Population of Interest

Specifically discussing persons who are **HIV+** with **sustained** viral suppression **adhering** to effective **HAART** who desire to **provide their own milk** while **continuing ART** and **ongoing personal VL testing** and **ongoing infant HIV screening**

Prenatal Counseling

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Benefits of human milk

Infant: asthma, gastroenteritis, otitis media, obesity, TIDM, SIDS, NEC

Parent: HTN, TIIDM, breast, endometrial and ovarian cancers

Bi-directional: bonding, financial

Benefits to Consider

**If able to provide HM can I also hug and kiss my child?

**If providing HM, does this increase maternal adherence to ART?

Birthing Persons Affected by HIV – Infant Feeding Options

Patient-centered, evidence-based counseling → shared decision making

Initiate before conception, early in pregnancy, review throughout, after delivery

Options for eliminating v reducing risk of HIV transmission:

- Replacement feeding with properly prepared formula, zero risk
- Pasteurized human donor milk, zero risk
- HM: Achieve and maintain viral suppression, less than 1% risk but not zero

Role of Physician Before Decision is Made

Counseling should include:

Infant Antiretroviral (ARV) prophylaxis
Maternal adherence to HAART
Maternal VL suppression and VL testing schedule
Infant screening schedules

Role of Physician After Decision is Made

Support and follow those who decide to provide their own human milk

- Explore potential barriers to formula feeding and address if noted

Engaging Child Protective Services or similar agency is inappropriate

If HM chosen, support exclusive HM up to 6m of age (planned mixed feeding unless medically indicated is not recommended)

Risk of Transmission

If on ART with SUSTAINED undetectable HIV load during pregnancy, rate is less than 1% but **not zero**

Comparison risk: 15-20% infants convert + in 2 years if no maternal ART, no infant ARV ppx

Define Sustained

Minimum throughout 3rd trimester

AND at delivery

Safety of Parent ART for Neonates

Variable levels of detectable drug in HM depending on ART regimen – most lower than parental plasma

Exception: NRTIs ZDV and 3TC higher in HM than parental blood w/studies demonstrating lower incidence of viral transmission by HM

Safety of Parent ART for Neonates

Despite detectable drug in HM, few studies demonstrate detectable drug in infant blood samples (3TC detectable)

Serious adverse events uncommon

- If infant not on ARV ppx, sub-tx levels of transmitted ART put infant at risk of ARV drug resistance if HIV acquired

Safety of Parent ART for Neonates

- Appendix B: Supplement: Safety and Toxicity of Individual Antiretroviral Agents in Pregnancy
- InfantRisk HCP (TX) – not updated, minimal information on HM feeding risk
- LactMed (NIH) – includes HM exposure adverse effect study information

Safety of ARV Prophylaxis for Neonates

Serious adverse events low

- Decent volume of short-term adverse event data
- Paucity of long-term data of exposures

Safety of ARV Prophylaxis for Neonates

ZDV – hematologic, typically mild anemia that resolves by 12 weeks

3TC – additive hematologic, anemia and neutropenia risk + ZDV
- Brazil study: 69% anemia, 13% neutropenia

ABC – reassuring data thus far, requires negative HLA-B5701

Safety of ARV Prophylaxis for Neonates

NVP – rash (inc. SJS), symptomatic hepatitis, severe systemic hypersensitivity syndrome

Safety of ART for Parent

TDF-based ART associated with decreased parental bone mineral content among parents providing HM; clinical significance uncertain

Transmission Studies

Transmission Studies

Ample data out of low and middle resource countries

Transmission Studies

MAMA-BANA Trial – Botswana
RCT 709 dyads
Goal ID which HAART regimen resulted in lowest rate of parent to child transmission (ART v ARV ppx) – wean meds at 6w PP, avg. HM length 5.8m
All 3 arms with suppression ~1.1% MTCT (8/709)

Transmission Studies

Tanzania

RCT N=186

Goal: assess ART effects on MTCT during provision of human milk

2 cases of infant transmission; no MTCT if suppressed VL

- 1 maternal high VL at 1m PP
- 1 maternal discontinuation of ART

Transmission Studies

IMPAACT PROMISE Trial - Sub-Saharan Africa and India
RCT N=2431 dyads
Goal: assess prolonged infant NVP ppx and mART on MTCT (tx 18mg or to cessation of BF, whichever came first)

- mART arm ROT: 0.58%
- iNPV arm 0.58%

Transmission Studies

Limited information out of high resource settings
Limited information in chronically suppressed VL patients
Studies often included women who started ART in 2nd/3rd tri
Studies and locations often with ARV ppx for infants x6m

Transmission Studies

Higher resource setting studies include:

- Toronto (n=3)
- US (n=10, n=8)
- Germany (n=30, 25 w/viral suppression)
- Italy (n=13)

Zero cases of transmission

Delivery Planning

Delivery Planning

Team education may be needed (OB, Peds, SW, lactation, RN)

Signed waiver of risk acknowledgement v too stigmatizing

Consider PP contraception options and drug-drug interactions which may affect sustained postpartum viral suppression

Postpartum Care

Consider Multi-disciplinary Approach

LC education on risk reduction tactics

Case management or SW considerations

Consider Multi-disciplinary Approach

Clear delineation regarding who is following VL (ID, PCP – OB/FM/IM)

Whomever is following VL must be aware of infant feeding plan

Who is following infant – peds/FM/peds ID?

- Must maintain communication with VL follower if not same person

Postpartum Follow Up - Clinic

Attention to EPDS – risk for non-adherence to ART

VL management:

- Attention to VL at all points of contact
- No prescribed frequency of PP VL, expert opinion q1-2m
- Detectable VL → stopping/modifying HM plan, consult expert in HIV/BF and consider PEP for infant

Postpartum Follow Up

Education on breast care

- Reduction of over-production
- Reduction of milk stasis
- Early ID +/- presentation for:
  - Sore, cracked nipples
  - Mastitis, thrush treatment recommended

Postpartum Follow Up

Rapid weaning associated with higher rates of viral shedding in HM in pre-ART era

2-4 week wean may be safer

Stopping or Modifying HM - Situations

Detectable VL
Mastitis
Bleeding nipples

Stopping or Modifying HM - Options

1. Provide EHM from VL-suppressed period, pump and discard until condition resolves or VL undetectable
2. Pumping and “flash heating”
3. Providing replacement feeding with formula or donor milk
4. Permanent cessation of HM

Flash Heating

Documented to eliminate HIV from milk
Place sample of milk in glass container within a pot of water
Boil water
Immediately remove milk when water has boiled
Cool to room temperature and serve

Newborn and Well-Child Care

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Perinatal Exposure Infant Screening

Virologic-based testing: HIV RNA or HIV DNA NAT

**If known maternal non-B subtype or Group O infection
HIV RNA NAT or dual-target DNA/RNA testing for infant

Routine Screening HIV "Exclusion" Criteria

14-21 days
1-2 months
4-6 months

HR infants: birth, 2-6w after ARV drug discontinuation

HM-fed Infant Screening

During HM provision:
Birth
14-21d
1-2m
Q3m while receiving HM

After cessation:
4-6w
3m
6m

Positive Test in Infant

Immediate repeat for confirmatory testing

Continue to provide HM

Perinatal Exposure

Administer within 6 hours of delivery
Use table to ID regimen and dosing based on gestational age and risk

- ARV ppx
- Presumptive HIV therapy
- HIV therapy

Infant ARV Ppx During Provision of HM

No consensus

WHO: 6w NVP w/parent on ART in resource-limited areas

Infant ARV Ppx During Provision of HM

BAN trial Malawi

RCT 676 dyads

- Maternal ART (4%) v neonate ppx (4%) v control (7%)
- No transmissions if maternal VL less than 100copies/mL
- 48w follow up

Infant ARV Ppx During Provision of HM Regimen Options

ZDV for 2 weeks – recommended, panel agreement

Optional regimens, panel disagreement

- ZDV 4 to 6 weeks
- NVP for duration of breastfeeding (>32w gestation)

*See Table 12 for dosing schedules

Clarifying

Provision of HM continues to be "not recommended" for newborns at high risk of perinatal HIV acquisition

- e.g. VL not suppressed, recent initiation of ART, recent acute or primary infection, not on ART
- If a newborn at high risk is provided HR HM, panel recommends 6w presumptive HIV therapy followed by daily NVP until 1-4w after weaning

Ethics Considerations

**If VL chronically suppressed, partner treatment with PrEP is optional – consent?

**Risk of transmission in VL-suppressed patients comparable in pregnancy/labor/provision of human milk

National Resource Hotline

1-888-448-8765

24/7 Resource for phone consultation regarding Perinatal HIV/AIDs via the National Clinician Consultation Center based out of UCSF

Resources

Centers for Disease Control and Prevention. (2023, March 17). *Breastfeeding: Recommendations and benefits.* Centers for Disease Control and Prevention. https://www.cdc.gov/nutrition/infantandtoddlernutrition/breastfeeding/recommendations-benefits.html#:~:text=The%20U.S.%20Dietary%20Guidelines%20for,12%20months%20old%20or%20older

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Resources

CDC Based-Resources, Updated January 2023

Recommendations for the Use of Antiretroviral Drugs During Pregnancy and Interventions to Reduce Perinatal HIV Transmission in the United States

- "Antiretroviral Management of Newborns with Perinatal HIV Exposure or HIV Infection." https://clinicalinfo.hiv.gov/en/guidelines/perinatal/management-infants-arv-hiv-exposure-infection?view=full table 12, slide 49
- "Diagnosis of HIV Infection in Infants and Children." https://clinicalinfo.hiv.gov/en/guidelines/perinatal/management-infants-diagnosis-hiv-infection-children?view=full
- "Infant Feeding for Individuals with HIV in the United States." https://clinicalinfo.hiv.gov/en/guidelines/perinatal/infant-feeding-individuals-hiv-united-states
- "Postpartum Follow-Up of People with HIV." https://clinicalinfo.hiv.gov/en/guidelines/perinatal/postpartum-follow-up