

# HIV and Breastfeeding

## An Update on Global Public Health Guidelines

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### ABSTRACT

Most healthcare personnel who work in the United States know that the Centers for Disease Control recommends against breastfeeding if the mother is HIV-positive. Very few, however, are aware of global recommendations. With so many healthcare providers working overseas—in either a temporary volunteer capacity or a more permanent situation—it's critical to know the World Health Organization's (WHO's) global recommendations and rationale about breastfeeding by HIV-positive mothers. And, because American mothers have become more and more aware of means to reduce the risk for HIV transmission through the milk, breastfeeding advocates working here at home find themselves in the awkward position of teaching that breastfeeding is contraindicated here, but needing to explain why. (Those studying for the IBLCE exam should expect to be tested on this.) **The purpose of this presentation is to help healthcare professionals counsel mothers, and, if working outside of the US, apply the World Health Organization's principles and recommendations for infant feedings in the context of HIV.**

## Objectives

- Recognize own limitations of knowledge related to HIV concepts as they relate to breastfeeding management.
- Review basic vocabulary related to HIV and AIDS as related to breastfeeding
- Briefly review basic concepts related to HIV and AIDS
- Describe transmission of HIV in human milk in terms of how, when it occurs and factors that increase or decrease transmission
- When counseling an HIV-positive mother use the WHO's AFASS criteria to explain the risk/benefit of feeding options.
- Match clinical situations to (best) options for reducing threat of HIV transmission through mother's milk.

## Instructions

See the *ReadMeFirst* document in your account.

## Materials and Resources

See your ReadMeFirst document

Post-test items that are similar to those found on a certification exam.

## Vocabulary

Acceptable	Latent period
AFASS Criteria	Opportunistic
Affordable	Replacement feeding
AIDS	Retrovirus
Antiretroviral	Safe
Azulfidine	Seroconversion
Flash heating	Sustainable
HIV	T helper cells
Incubation period	

## Criteria for Earning Credits

See the *ReadMeFirst* document in your account.

## Accreditation

See the *ReadMeFirst* document in your account.

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## Faculty

Marie Biancuzzo RN MS IBCLC has achieved national recognition for her expertise in maternal-child nursing, breastfeeding, and continuing education. Her profile is on LinkedIn.

# HIV and Breastfeeding Management

## Warm-Up: HIV and Breastfeeding

### Basic Concepts Related to HIV and AIDS

What is HIV? What is AIDS?

Four Stages of HIV

### Transmission of HIV and AIDS

Authorities Speak on Transmission

Is Formula a Better Alternative?

### WHO Recommendations for Reducing MTCT of HIV

Exclusive breastfeeding, first 6 months

Early cessation of breastfeeding

Heat treatment or pasteurization of expressed milk

Microbicide treatment

Antiretroviral therapy during breastfeeding<sup>-19</sup>

Immunization of breastfed newborns

Drugs used to treat HIV

WHO. Options for Feeding

## Summary

Questions for the Author/Presenter:

Write your questions here!

1.

2.

3.

4.

5.

Email us at [info@breastfeedingoutlook.com](mailto:info@breastfeedingoutlook.com) if you have questions. Telephone is not as efficient, but you are welcome to call us at 703-787-9894.

## Warm-Up: HIV and Breastfeeding

*Mark the following statements as true or false.*

1. HIV is rarely transmitted through human milk.
2. Not all women who are HIV-positive transmit the virus to their breastfed infants.
3. Seroconversion in the breastfed baby (fed by the HIV-positive mother) is less likely to occur in the first 6 months, and more likely to occur if he continues to breastfeed.
4. The recommendations about breastfeeding from the Centers for Disease Control here in the United States are almost exactly the same as the recommendations from the World Health Organization.
5. Replacement feeding (i.e., formula) is a better option than breastfeeding ONLY if all 5 of these criteria are met: It must be culturally acceptable, feasible, affordable, sustainable, and safe.
6. If the mother is HIV-positive, the World Health Organization considers appropriately-diluted animal milk as an acceptable alternative for the mother's milk in resource-poor countries.
7. The HIV-positive mother who is taking an antiretroviral medication should be taught that the risk of transmitting the disease through her milk is less than if she was not taking an antiretroviral.
8. Flash heating (not to be confused with Holder Pasteurization) has gained the approval of the World Health Organization as a possible strategy for reducing the risk to breastfed infants.
9. If the HIV-positive mother does choose to breastfeed, she should exclusively breastfeed, NOT do both (breast and formula feed.)
10. According to the World Health Organization, the mother who can afford formula must also be able to afford heating fuel, soap, and access to medical care.

## Basic Concepts Related to HIV and AIDS

### What is HIV? What is AIDS?

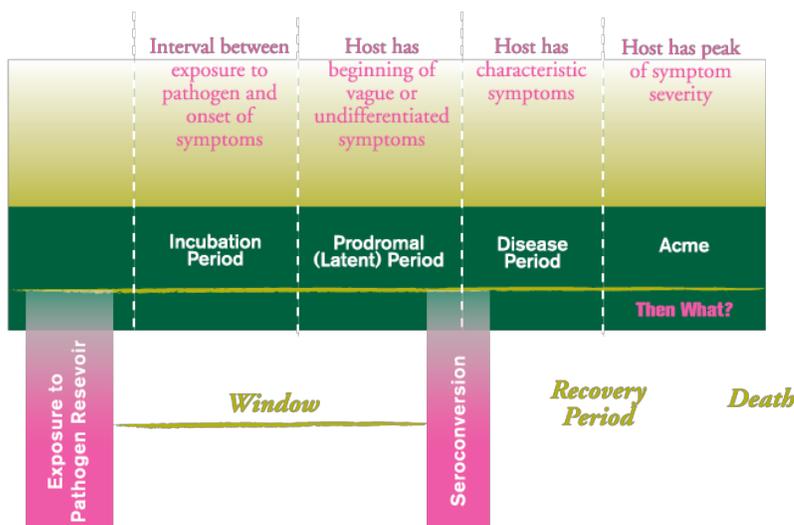
Definition of HIV	<ul style="list-style-type: none"> <li>• Human Immunodeficiency Virus (HIV) is the virus that causes AIDS.</li> <li>• HIV is a retrovirus</li> </ul>
Retrovirus	<ul style="list-style-type: none"> <li>• Viruses cannot reproduce themselves; rather, they depend on taking over the machinery of the human cell in order to reproduce.</li> <li>• Retroviruses (also called slow viruses) progress slowly.</li> </ul>
Pathophysiologic process	<ul style="list-style-type: none"> <li>• HIV virus infects and destroys cells of the immune system most notably, T-helper lymphocytes.</li> <li>• HIV enters the body through the mucous membranes or bodily fluid</li> </ul>
How HIV is transmitted	<ul style="list-style-type: none"> <li>• Pregnancy, delivery</li> <li>• Body fluid, including human milk (more on this later)</li> </ul>
4 Stages of HIV	<ul style="list-style-type: none"> <li>• Window</li> <li>• Seroconversion</li> <li>• Symptom-free</li> <li>• AIDS</li> </ul>

### Review, Reinforce and Expand Your Knowledge

- Recalling from your basic science courses, what are the 3 types of T cells?
- Which of the 3 types of T cells is most important in discussions about HIV?
- To help you with vocabulary and basic concepts related to HIV, see the accompanying Word Find document.

### Four Stages of HIV

Window	<ul style="list-style-type: none"> <li>This reflects the window of time between being infected and the time when the antibodies develop.</li> <li>When people are tested, the HIV test looks for antibodies not the virus</li> </ul>
Seroconversion	<ul style="list-style-type: none"> <li>This occurs when the body begins to develop specific antibodies to fight off the antigen.</li> <li>During this period a person may have flu-like symptoms, and they are thought to be very infectious</li> </ul>
Symptom-Free	<ul style="list-style-type: none"> <li>Even after antibodies have developed, a person may be symptom-free for months or years.</li> <li>It is unclear why some people are free of symptoms for longer periods than others.</li> <li>The virus slowly attacks the immune system, killing off healthy immune cells.</li> <li>As immune function is diminished or destroyed, condition leads to AIDS</li> </ul>
AIDS	<ul style="list-style-type: none"> <li>The final stage. Occurs when the T cell counts drop dramatically, and the person has one or more opportunistic infections.</li> <li>AIDS is the name given for a variety of disease manifestations caused by HIV virus.</li> <li>Like other <i>syndromes</i>, AIDS is a set of symptoms that indicate or characterize a particular disease</li> </ul>



## Transmission of HIV and AIDS

- Statistics: Between 15 and 25% of children born to HIV-infected mothers get infected with HIV during pregnancy or delivery. About 15% of the children get infected through breastfeeding.
- HIV-1 can be transmitted prepartum, intrapartum, and postpartum (through human milk.) Experts and authorities (including the CDC and the AAP) state that breastfeeding is contraindicated for women living in the United States who are HIV positive.
- Outside the U.S., where lack of available formula or clean water is a serious problem, other recommendations may be made.<sup>1</sup>

Modes of Transmission	<ul style="list-style-type: none"> <li>• Sexual contact and/or contact with body fluids</li> <li>• Sharing needles and/or IV drug use</li> <li>• Receiving contaminated blood products</li> <li>• Mother-to-fetus from the placenta</li> <li>• Contact with blood and body fluids during delivery</li> <li>• Human milk.</li> </ul>
Factors that INCREASE risk for transmission if mother is HIV positive	<ul style="list-style-type: none"> <li>• recent infection with HIV</li> <li>• advanced HIV infection or AIDS</li> <li>• breast conditions such as clinical or sub-clinical mastitis, abscesses and cracked or bleeding nipples</li> <li>• longer duration of breastfeeding</li> <li>• mixed feeding</li> <li>• mouth sores or thrush in the baby</li> </ul>
Factors that DECREASE risk for transmission if mother is HIV positive	<ul style="list-style-type: none"> <li>• antiretroviral drugs given at the time of birth (to mother and baby)</li> <li>• Safer feeding practices (from WHO)             <ul style="list-style-type: none"> <li>○ Commercial infant formula</li> <li>○ Home-modified animal milk e.g., cow, goat, buffalo, camel, sheep, etc. (obviously, not a USA thing...)</li> <li>○ Exclusive breastfeeding</li> <li>○ Wet-nursing by an HIV-negative woman</li> <li>○ Expressing and flash-heating</li> <li>○ Use of pasteurized, donor human milk</li> </ul> </li> </ul>

## Authorities Speak on Transmission

World Health Organization	<ul style="list-style-type: none"> <li>• Is emphatic in saying that breastfeeding or not breastfeeding is a matter of risk/benefit.</li> <li>• For WHO, a major way of looking at risk benefit is through the AFASS criteria.</li> <li>• Say that the best authority for determining that risk/benefit is the national and sub-national public health authorities, so in the case of the United States, that would be the CDC</li> </ul>
Centers for Disease Control (CDC)	<ul style="list-style-type: none"> <li>• At this point, CDC says risks of breastfeeding far outweigh the benefit of replacement feedings (formula) for mothers/infants living in the United States.</li> <li>• Also, See the CDC’s “Universal Precautions for Prevention of Transmission of HIV and Other Bloodborne Pathogens” at <a href="http://www.cdc.gov/niosh/topics/bbp/universal.html">www.cdc.gov/niosh/topics/bbp/universal.html</a></li> </ul>
Occupational Safety and Health Administration (OSHA)	<ul style="list-style-type: none"> <li>• According to OSHA standards, gloves are not required for the routine handling of maternal milk. However, gloves should be worn “in situations where prolonged handling of human milk is likely”</li> </ul>

## Recalling, Reviewing and Reinforcing Knowledge

- What might be an example of situations where “prolonged” handling of milk might occur?

## Application to Clinical Practice

- Women who live in the United States sometimes decide to breastfeed, despite what we say, or what the CDC says. What is your role with these women? (There is probably no right or wrong answer to this...)

## Is Formula a Better Alternative?

The WHO says that in order for formula to be a better alternative to breastfeeding, the formula must have all 5 components of AFASS. AFASS is verbatim below:

Acceptable	<ul style="list-style-type: none"> <li>• The mother perceives no barrier to replacement feeding.</li> <li>• Barriers may have cultural or social reasons, or be due to fear of stigma or discrimination.</li> <li>• According to this concept the mother is under no social or cultural pressure not to use replacement feeding. She is supported by family and community in opting for replacement feeding, or she will be able to cope with pressure from family and friends to breastfeed. She can deal with possible stigma attached to being seen with replacement food.</li> </ul>
Feasible	<ul style="list-style-type: none"> <li>• The mother (or family) has adequate time, knowledge, skills and other resources to prepare the replacement food and feed the infant up to 12 times in 24 hours.</li> <li>• According to this concept, the mother can understand and follow the instructions for preparing infant formula, and with support from family she can prepare enough replacement feeds correctly every day and night, despite disruptions to preparation of family food or other work</li> </ul>
Affordable	<ul style="list-style-type: none"> <li>• The mother and family, with community or health-system support if necessary, can pay the cost of purchasing/producing, preparing and using replacement feeding, <i>including all</i> ingredients, fuel, clean water, soap and equipment, without compromising the health and nutrition of the family.</li> <li>• This concept also includes access to medical care, if necessary, for diarrhea and the cost of such care.</li> </ul>
Sustainable	<ul style="list-style-type: none"> <li>• Availability of a continuous and uninterrupted supply, and dependable system of distribution for all ingredients and products needed for safe replacement feeding, for as long as the infant needs it, up to one year of age or longer.</li> <li>• According to this concept, there is little risk that formula will ever be unavailable or inaccessible. Also, another person is available to feed the child in the mother's absence and can prepare and give replacement feeds.</li> </ul>
Safe	<ul style="list-style-type: none"> <li>• Replacement foods are correctly and hygienically prepared and stored and fed in nutritionally adequate quantities with clean hands and using clean utensils, preferably by cup</li> <li>• According to this concept, the mother or caregiver:             <ul style="list-style-type: none"> <li>• has access to a reliable supply of safe water (from a piped or protected well source);</li> <li>• prepares replacement feeds that are nutritionally sound and free of pathogens;</li> <li>• is able to wash hands and utensils thoroughly with soap and to regularly boil the utensils to sterilize them</li> <li>• can boil water for preparing each of the baby's feeds;</li> <li>• can store and prepare feeds in clean, covered containers and protect them from rodents, insects and other animals</li> </ul> </li> </ul>

## WHO Recommendations for Reducing MTCT of HIV

The World Health Organization has published several documents related to transmission of HIV, and related to breastfeeding and HIV. One should realize that the latest WHO documents are not always published within the last few years, partly because the WHO needs time to look at global data to make recommendations, and partly because the document may not be translated into English until a few years after the actual document was written. A most common example of this is the 2010 document which was not translated into English until 2012.

### Exclusive breastfeeding, first 6 months

- Statistics show decreased postnatal transmission of HIV for exclusively breastfed infants, compared mixed feeding.
- Rationale: Micro-hemorrhages in the gut due to formula

### Early cessation of breastfeeding

- If not taking an antiretroviral: early cessation is basically 6 months
- If taking an antiretroviral, cease breastfeeding by 1 year.
- Early cessation substantially decreases likelihood of transmission through milk.
- Benefits of early cessation have to be balanced with potential risks for infant's health.

### Heat treatment or pasteurization of expressed milk

- Reduces postnatal transmission of HIV
- Pretoria Pasteurization can effectively inactivate the virus in breast milk from HIV-infected mothers.<sup>3-8</sup>
- Flash Heat Treatment can effectively inactivate the virus in breast milk from HIV-infected mother. A number of studies have been published suggesting that flash heating is safe and effective in some situations.<sup>5,9-15</sup>
- These methods eliminate potential contaminants and inhibit bacterial growth, while retaining nutrients contained in breast milk.

### Microbicide treatment

- Any drug, chemical, or other agent that can kill microorganisms in expressed milk
- Sodium Dodecyl Sulfate (SDS) treats HIV-infected milk
- This treatment could be helpful to protect infants from postnatal transmission after six months, where heat treatment is not feasible.
- The feasibility, acceptability and safety of SDS have not yet been studied.

### Antiretroviral therapy during breastfeeding<sup>-19</sup>

- From WHO's most recent statement (The most recent statement was 2010, but it was not translated and released in English until 2012.)

“The most compelling recent evidence concerns the use of antiretrovirals (ARVS) to greatly reduce the risk of HIV transmission through breastfeeding, while simultaneously ensuring the mother receives appropriate care. If an HIV-positive mother breastfeed her infant while taking ARBs herself or giving ARVS to her infant each day, the risk of transmission over 6 months of breastfeeding is reduced to about 2%. If she breastfeeds for 12 months while taking ARVs or giving them to the infant, then the risk is about 4%. Without these ARV interventions, about 14–17% of breastfed infants of HIV-positive mothers would become HIV infected by 18 months of age.”

- <http://www.epidem.org/Publications/MTCTratesworkingpaper.pdf>

### Immunization of breastfed newborns

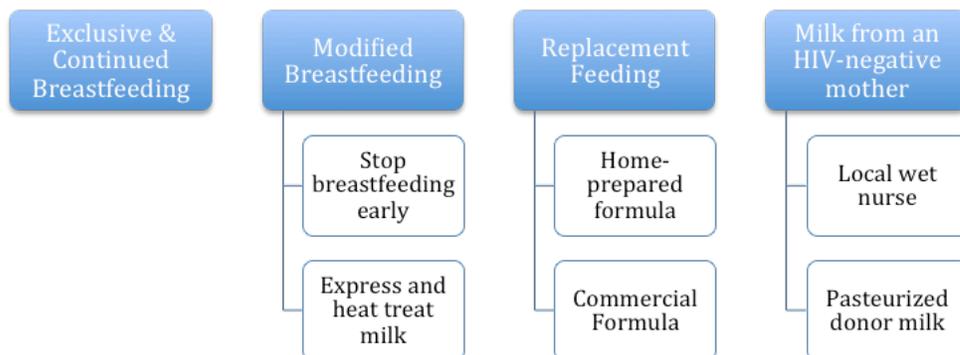
- In experimental stages

### Drugs used to treat HIV

- There are a number of drugs that are being used to treat HIV.
- We will need more science before we can determine how useful these are for breastfeeding mothers and infants.

### WHO. Options for Feeding

The HIV and Infant Feeding Counseling document from WHO outlines four basic feeding options at the global level. The WHO refers to breastfeeding by an HIV negative woman; I have expanded this wording to “milk from”, since the milk does not necessarily need to be obtained at the breast. I have added the possibility of pasteurized donor milk. This diagram is NOT from the WHO; it is merely my understanding of what they are trying to say.



## Recalling, Reviewing and Reinforcing Knowledge

### Matching Exercise

*Instructions: Using World Health Organization's guidance, determine which of the options in the right-hand column is probably the BEST fit for the situation in the left-hand column. In each of these cases, the mother is HIV positive.*

1. The mother is not taking antiretroviral medication, nor is her infant	A. Use milk from a wet nurse
2. The mother IS taking antiretroviral medication	B. Use home-prepared formula with milk from local animal
3. The mother is afraid she will be ridiculed if she does not breastfeed, and she has very little money. She has plenty of fuel for heating, but food is in short supply. She takes no medications, and has no friends or family willing to nurse the baby.	C. Use commercially-prepared formula
4. The mother has adequate income, formula is affordable, feasible, culturally acceptable, sustainable and safe.	D. Exclusively breastfeed for 12 months, then discontinue
5. The mother's sister also has a young infant; she is HIV negative and willing to nurse another baby.	E. Exclusively breastfeed for 6 months, then discontinue
6. The baby is six months old; the mother is not taking antiretrovirals. Formula, although available sometimes, is not always available.	F. Heat treat the mother's milk

## Summary

- Unquestionably, HIV is transmitted by the mother's milk.
- Not all women who are HIV positive transmit the virus to their breastfed babies.
- Seroconversion is less likely to occur in the first 6 months, and more likely to occur thereafter.
- Unlike the directives here in the United States, the World Health Organization does not recommend replacement feedings unless those feedings are culturally acceptable, feasible, affordable, sustainable, and safe.
- Unlike the directives here in the United States, the World Health Organization sees animal milk (diluted appropriately) and the milk of another mother as an acceptable for replacement feedings.
- Antiretrovirals therapy has reduced the risk for transmission of the HIV virus to breastfed babies.
- Flash heating has gained the approval of the World Health Organization as a possible strategy for reducing the risk to breastfed infants. That strategy has not yet been accepted here in the United States.
- For those infants who are breastfeeding, exclusive breastfeeding (rather than partial) is a key strategy.

## VII. References

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### Additional Resources

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