

Human Milk, Breastfeeding, and Transmission of Human Immunodeficiency Virus in the United States

Committee on Pediatric AIDS

ABBREVIATIONS. HIV, human immunodeficiency virus; AAP, American Academy of Pediatrics; OSHA, Occupational Safety and Health Administration.

THE PROBLEM

Physicians caring for infants born to women infected with human immunodeficiency virus (HIV) or at risk for HIV infection are likely to be involved in making recommendations concerning the appropriateness of breastfeeding or the use of expressed human milk. Because the number of women with HIV infection in the reproductive age range is increasing rapidly, the importance of understanding the potential risk of HIV transmission to infants via human milk is critical.

BACKGROUND

Breastfeeding provides numerous health benefits to infants. Besides being an excellent source of nutrition, human milk protects against morbidity and mortality from infectious diseases of bacterial, viral, and parasitic origin, and the act of breastfeeding establishes a bond between mother and infant. Human milk also has a low likelihood of contamination by environmental pathogens. The American Academy of Pediatrics (AAP) strongly supports the promotion of breastfeeding of infants.¹

It is well-known that HIV, the virus that causes acquired immunodeficiency syndrome, can be transmitted from mother to infant during pregnancy as well as during the peripartum period. In addition, recent reports from throughout the world have documented the transmission of HIV through human milk.²⁻⁴ Despite the multiple anti-infectious, protective substances that have been identified in human milk, HIV may be recovered from human milk and has been shown to be the source of HIV infection in some infants.³

Research studies are presently investigating factors associated with infectivity as well as the potential protective elements of breast milk. Such factors include potential differences in the virus content of colostrum and early human milk compared with later milk, the relationship of the duration of breastfeeding to transmission, the role of the immature gastrointestinal tract of the young infant in viral

transmission, and the potential protective effect of HIV-specific immune globulins in human milk⁴ and of human milk glycosaminoglycans, which appear to inhibit HIV binding to the CD4 molecule.⁵

Currently no randomized clinical trials are available that accurately document the incremental risk of HIV transmission through breastfeeding over that occurring during the intrauterine and intrapartum periods. Evaluation of populations that vary only by method of infant feeding have been limited to date, due to the homogeneity of feeding practices in current cohorts, with breastfeeding the norm in developing countries and formula feeding the norm in industrialized countries.

Although some studies do not indicate an increased risk of transmission of HIV by human milk,⁶ a recent meta-analysis of data from cohort studies in which some infants were breastfed and others were exclusively bottlefed indicated an increased risk of transmission attributable to breastfeeding.⁷ Mothers who develop primary HIV infection while nursing may pose an especially high risk for transmitting the infection via human milk because the infant potentially is exposed to secretions or cells containing a higher virus burden.⁸ In the meta-analysis, the risk of transmission by breastfeeding from mothers who developed primary infection during the postpartum period was 29% (95% confidence interval, 16% to 42%).⁷

The interpretation of the results from the meta-analysis has caused a great deal of controversy. This approach to data analysis indicates that the incremental risk of transmission by breastfeeding from mothers with established infection before pregnancy is 14% (95% confidence interval, 7% to 22%).⁷ Recent reports note the incremental risk of transmitting HIV infection to the breastfeeding infant to range from 3% to 12% in various African populations.^{9,10}

The use of expressed human milk for nutrition of sick, premature, and recuperating neonates in intensive care units has become commonplace, and some mothers may express milk for their infants in a child care setting. Breast milk is not included in the Occupational Safety and Health Administration (OSHA) standards definition of "other potentially infectious materials."¹¹ Although human milk has been implicated in perinatal transmission of HIV and the hepatitis B surface antigen has been found in the milk of mothers infected with HBV,¹² contact with breast milk does not constitute occupational exposure as defined by the OSHA standards. The determination

The recommendations in this statement do not indicate an exclusive course of treatment or procedure to be followed. Variations, taking into account individual circumstances, may be appropriate.

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that human breast milk has not been implicated in the transmission of HIV¹³ or the hepatitis B virus to workers, was based on separate findings of the Centers for Disease Control and Prevention, and the World Health Organization.¹³ Gloves are not recommended for the routine handling of expressed human milk; but should be worn by health care workers in situations where exposures to breast milk might be frequent or prolonged, for example, in milk banking.¹³

Whatever the actual risk of HIV transmission through breastfeeding is in the United States, the potential for infection through human milk exists and must be examined in the context of the prevalence of HIV in women of childbearing age, the low incidence of breastfeeding in populations with the highest incidence of HIV infection, and the known general benefits of human milk.

CONCLUSIONS

When making recommendations concerning feeding options for infants, health care providers in the United States must balance the potential for transmission of HIV through human milk with the known benefits of breastfeeding. Additional epidemiologic studies are needed to assess accurately the actual risk of HIV transmission to infants from human milk in the United States. However, because HIV transmission via human milk is possible, knowledge of the HIV serostatus of pregnant women is important to determine whether breastfeeding is appropriate.

RECOMMENDATIONS

The World Health Organization has developed recommendations for breastfeeding in the developing world.¹³ The following recommendations are made by the AAP for the United States, where infectious diseases and malnutrition are not major causes of infant mortality and where safe alternatives to breastfeeding are available.

1. Women and their health care providers need to be aware of the potential risk of transmission of HIV infection to infants during pregnancy and in the peripartum period, as well as through human milk.
2. The AAP recommends documented, routine HIV education, and routine testing with consent of all women seeking prenatal care so that each woman will know her HIV status and the methods available both to prevent the acquisition and transmission of HIV and to determine whether it is appropriate to breastfeed.
3. At the time of delivery, provision of education about HIV and testing with consent of all women whose HIV status during this pregnancy is unknown are recommended. Knowledge of the woman's HIV status assists in counseling on breastfeeding and helps each woman understand the benefits to herself and her infant of knowing her serostatus and the behaviors that would decrease the likelihood of acquisition and transmission of HIV.
4. Women who are known to be HIV-infected must be counseled not to breastfeed or provide their milk for the nutrition of their own or other infants.
5. In general, women who are known to be HIV-seronegative should be encouraged to breastfeed. However, women who are HIV-seronegative but at particularly high risk of seroconversion (injection drug users and sexual partners of known HIV-positive persons or active drug users) should be provided education about HIV with an individualized recommendation concerning the appropriateness of breastfeeding. In addition, during the perinatal period, information should be provided on the potential risk of transmitting HIV through human milk and about methods to reduce the risk of acquiring HIV infection.
6. Each woman whose HIV status is unknown should be informed of the potential for HIV-infected women to transmit HIV during the peripartum period and through human milk and the potential benefits to her and her infant of knowing her HIV status and how HIV is acquired and transmitted. The health care provider needs to make an individualized recommendation to assist the woman in deciding whether to breastfeed.
7. Neonatal intensive care units should develop policies that are consistent with the above recommendations for the use of expressed human milk for the nutrition of neonates. Current OSHA standards do not require gloves for the routine handling of expressed human milk.¹¹ However, gloves should be worn by health care workers in situations where exposure to breast milk might be frequent or prolonged, for example, in milk banking.¹³
8. Human milk banks should follow the guidelines developed by the United States Public Health Service, which includes screening all donors for HIV infection and assessing risk factors that predispose to infection, as well as pasteurization of all milk specimens.

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