The conundrum of infant feeding for HIV infected women continues

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Breastfeeding is an important intervention in the reduction of infant mortality.

Breastfeeding can potentially prevent up to 13% of child deaths. (1, 2) In an effort to improve the uptake and support for breastfeeding UNICEF launched the “Baby Friendly Hospital” initiative in 1991. This program encourages breastfeeding and actively discourages replacement feeding, bottles and artificial teats. (http://www.unicef.org/programme/breastfeeding/baby.htm).

What we have learned about breastfeeding associated HIV transmission

The first case of postnatal transmission of HIV through breastfeeding was published in 1985. (3) This initiated a heated debate on the risks and benefits of breast and replacement (formula) feeding for the HIV-exposed infants and also the effect of replacement feeding on breastfeeding in the general population. It was clear from the start that mothers, especially those with little access to resources and support, faced a difficult choice.

Subsequent lessons:(4)(5)(6)

1. The risk of transmission relates to the levels of HIV in breast milk. Higher maternal plasma viral load, lower CD4 count, lower maternal vitamin A, infrequent emptying and mastitis are also risk factors.

2. Although the majority of transmission occurs early in breastfeeding, the risk is cumulative.

3. Where breastfeeding infants are exposed to mixed feeding within the first 2 months of life the risk of transmission increases. Mixed feeding with solids has a 2.9 fold increase in the transmission risk in the first 6 months of life.

4. The viral load in breast milk increases during weaning with a potential increase in the risk of transmission in this time, especially when the weaning is accelerated.

5. Several studies of low resource settings showed that replacement fed infants and infants where breastfeeding discontinued early were at high risk of malnutrition and non-HIV related infectious morbidity and mortality.

Can breastfeeding be made safe?

There are ongoing efforts to facilitate safer breastfeeding. Giving either the mother combination antiretroviral therapy (cART) or individual antiretroviral drugs (ARVs) to the infant successfully reduces the risk of HIV transmission. Infant nevirapine (NVP) emerged as a safe and cost effective public health intervention in multicenter studies from Asia and Africa. This strategy, now also used in the South African public sector advises once daily NVP for the first 6 weeks of life in all infants. Where the mothers do not requiring cART for their own health, NVP is continued in the infant for the duration of breastfeeding. If mothers are on cART, NVP is discontinued at 6 weeks. Initial NVP dosing is based on birth weight and subsequent dosing on age. (6) Dosages for preterm and low birth weight infants have not been established.

Early diagnostic testing is still recommended. Where the 6-week PCR is negative, breastfeeding is encouraged for the first year of life followed by weaning and retesting 6 weeks after the last

exposure. Health care providers must also test children earlier if there is a clinical suspicion. In HIV infected infants, breastfeeding should be continued for as long as possible. Breastfeeding should be exclusive until 6 months of age, after which supplemental feeding, including solids should be commenced. This normal transition does not constitute mixed feeding. It is important to remember that cotrimoxazole should be continued for the duration of breastfeeding regardless of the results of the early HIV PCR and this can only be discontinued once the infant has weaned and follow-up testing is negative.

Although this strategy is attractive in low resource settings where the morbidity and mortality associated with replacement feeding is very high, it is important to note that there will still be HIV transmission, although fewer cases. With extended NVP and maternal cART breastfeeding-associated transmission between 6 weeks and 6 months was 2.6% and 1.1% respectively in 1 large study. (7). Also of note, these strategies do not consider maternal viral suppression or prior failure of maternal therapy.

In addition children, who convert while breast feeding and taking extended nevirapine will not only have the expected NVP and efavirenz resistance, but may also develop mutations to second generation NNRTI such as etravirine. (8) For mothers on cART, babies are exposed to low levels of ARV secreted in the milk, possibly contributing to resistance in infants becoming HIV-infected. This resistance will limit therapeutic options for the infants. Also, the long-term implications of prolonged ARV exposure over months through breast milk are unknown.

In the Public sector in South Africa access to free formula is currently phasing out and all HIV-infected women will be supported to breastfeed.

Should breastfeeding with ARV protection be encouraged in the private sector?

In mothers with reliable access to formula milk, the necessary means to support safe replacement feeds and the support from family, it will be prudent to advise against breastfeeding to absolutely reduce the risk of postnatal HIV transmission. Where the very early PCR (24-48 hours of life) is positive, one can still establish breastfeeding. Achieving Baby Friendly status is a goal for many public and private institutions, possibly harming mothers needing to formula feed for medical indications. HIV infected women should be carefully counseled on formula preparation and cleaning of bottles and teats. The substantial risk of mixed feeding should be made very clear by obstetric and paediatric staff. Issues around disclosure in the home are of particular importance and should be addressed.

Formula-fed HIV exposed infants are still at high risk for gastrointestinal and respiratory infections. This situation will be aggravated because of the lack of protection usually provided by breastfeeding. Therefore it is extremely important to ensure access to all vaccinations, especially rotavirus.

Soya-based feeds should not be given without a specific indication. Weaning and introduction of solids should also be conducted as for HIV unexposed infants.

Conclusion

Despite the reduced risk, breastfeeding remains a potential (but diminishing) source of postnatal HIV infection. Mothers with secure access to formula should be advised to use infant formula. Mothers with excellent virological control and viral load below the limit of detection on an ultra-sensitive assay may elect to breastfeed and in all likelihood, will do so safely.

References:

1. Black RE, Morris SS, Bryce J. Where and why are 10 million children dying every year? The Lancet. 2003;361:2226-2234.

2. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS. How many child deaths can we prevent this year? The Lancet. 2003;362:65-71.

3. Ziegler JB, Cooper DA, Johnson RO, Gold J. Postnatal transmission of AIDS-associated retrovirus from mother to infant. Lancet. 1985;1:896-898.

4. Bulterys M, Ellington S, Kourtis AP. HIV-1 and breastfeeding: biology of transmission and advances in prevention. Clinics in Perinatology. 2010;37:807-24, ix-x.

5. Kuhn L, Aldrovandi G. Survival and health benefits of breastfeeding versus artificial feeding in infants of HIV-infected women: developing versus developed world. Clinics in Perinatology. 2010;37:843-62.

6. World Health Organization. Guidelines on HIV and Infant Feeding 2010: Principles and Recommendations for Infant Feeding in the Context of HIV and a Summary of Evidence. Geneva: WHO. 2010

7. Shapiro RL, Hughes MD, Ogwu A et al. Antiretroviral regimens in pregnancy and breastfeeding in Botswana. New England Journal of Medicine. 2010;362:2282.

8. Fogel J, Hoover DR, Sun J et al. Analysis of nevirapine resistance in HIV-infected infants who received extended nevirapine or nevirapine/zidovudine prophylaxis. AIDS. 2011;25:911-917.

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