Editorial

Breastfeeding and HIV Transmission

The United Nations joint programme on AIDS (UNAIDS) estimates that everyday 1500 children under 15 years of age become infected with the human immunodeficiency virus (HIV), largely through mother-to-child transmission. This may occur during pregnancy, during delivery or post-partum through breastfeeding. The transmission of HIV via breastfeeding was first described by Ziegler in 1985 in the breastfed baby of an Australian woman who had received a transfusion of HIV-infected blood after delivery. Since then evidence has accumulated that breastfeeding doubles the rate ofvertical transmission that would otherwise take place either before or during delivery. UNAIDS currently estimates that a child breastfeeding from a mother who is HIV positive, has a 15 per cent risk of infection by this route. This observation has resulted in policies that recommend avoidance of breastfeeding by HIV-infected women in the developed world, and under specific circumstances in developing countries. However, breastfeeding provides important immunological protection against common childhood infections such as diarrhoea, pneumonia, neonatal sepsis, and acute otitis media. Any reduction in breastfeeding will then only expose the child to increased risks of mortality related to diarrhoea and malnutrition through unhygienic artificial feeding. In a study from Brazil before the onset of the HIV pandemic there, the relative risk of infant death from diarrhoea was 14 times greater if the child had not been breastfed. HIV-positive mothers are then presented with a considerable dilemma about how to feed their babies; whether to proceed with the traditional practice of breastfeeding and risk the transmission of HIV or to elect to bottle feed with the attendant risk of morbidity and mortality from diarrhoea and malnutrition. This decision is further complicated by the stigmatizing effect of not breastfeeding in a society where this is the norm.

The extent to which breastfeeding can contribute to HIV transmission is illustrated by a randomized trial of breast vs formula feeding by cup and spoon in babies of HIV-infected women in Kenya. This showed a 44% reduction of HIV infection in the bottle-fed group. Breastfeeding transmission occurred predominantly during the first 6 months of life although transmission continued throughout the duration of breastfeeding exposure. Both HIV-1 and HIV-2 can be transmitted from mother to child, but HIV-2 (which is more prevalent in West Africa) is transmitted much less frequently as it is less pathogenic than HIV-1. The first reports indicating the possibility of HIV-1 transmission through breastmilk, were in the breastfed infants of women who were infected after birth through contaminated blood transfusion. There were then reports of infants with no known exposure to HIV who became infected through wet nursing and through consumption of pooled breastmilk. Transmission through breastfeeding seems to be related to the virus load in breastmilk as well as to the length of time the child was breastfed. Fetal gut cells are susceptible to infection with HIV-1 and this is facilitated by the absence of an acid environment in the newborn infants stomach that may allow HIV-1 to retain its infectivity. Thus free virus may penetrate the neonatal oral or pharyngeal mucosa or attach itself to intestinal cells. The respective roles of cell-free and cell-associated virus in breastmilk transmission are not known, nor is the association between plasma and milk virus levels understood.

Breastmilk transmission may be influenced by the type of milk ingested (i.e. colostrum vs later milk), and by maternal factors such as viral load, antibody content of the milk, and duration of the mother’s infection. Mothers with few or no symptoms can transmit infection to their children, although they do so less frequently than severely symptomatic women. There is evidence that women who sero-convert while breastfeeding are highly infectious to their infants around this time possibly as a result of the high viral load near the time of sero-conversion.

Strategies aimed at reducing breastmilk transmission include primary prevention by preventing HIV infection in women through health education and condom use, treatment of sexually transmitted diseases that facilitate co-infection with HIV, voluntary HIV screening, and antenatal counselling and testing. Clinical trials have also now proven the efficacy of several anti-retroviral drug interventions, including regimens applicable to less developed countries. The most exciting advance in preventing mother-to-child transmission for countries that can afford it, has been the report in 1994 from the Paediatric AIDS Clinical Trials Group (PACTG) protocol 076 that zidovudine (ZDV) given to a selected group of pregnant women known to be HIV positive during from the fourteenth week of pregnancy, intravenously through delivery and post-natally for 6 weeks to their infants, reduced the risk of vertical transmission by two-thirds but at the cost of US$ 1000 per pregnancy. A subsequent trial in Thailand showed that a shorter regime of ZDV given only during the last 4 weeks of pregnancy and during labour reduced the rate of mother-to-child transmission by one-half at less than
HIV-18 would be very important especially to breastmilk) reduces mother-to-child transmission of feeding the infant no other food or fluids except mother to infant. Confirmation of the finding in pregnancy would offer an intervention that could confirmed, malarial chemoprophylaxis during pregnancies and risk of HIV transmission in these shown, it has the potential in reducing preterm vitamin A supplementation because, even though examined. Further trials are needed on maternal immunodeficiency in the mother.17 If this finding is safe preparation of the feeds.

Early cessation of breastfeeding reduces the risk of HIV transmission by limiting the length of time that an infant is exposed to HIV through breastmilk. Women who are not able to provide adequate and hygienic replacement feeding for their infants from birth may consider this option in order to reduce the cumulative risk of longer breastfeeding duration. Treatment of breastmilk by pasteurization is a potential intervention strategy for developing countries. Wet nursing by HIV-negative women is another alternative which needs to be adequately examined. Further trials are needed on maternal vitamin A supplementation because, even though no reduction in perinatal HIV transmission has been shown, it has the potential in reducing preterm births and risk of HIV transmission in these pretermers.16 A study in Malawi suggests that placental malarial infection could be a marker of advanced immunodeficiency in the mother.17 If this finding is confirmed, malarial chemophrophylaxis during pregnancy would offer an intervention that could decrease the likelihood of transmission of HIV from mother to infant. Confirmation of the finding in South Africa that exclusive breastfeeding (i.e. feeding the infant no other food or fluids except breastmilk) reduces mother-to-child transmission of HIV-1 would be very important especially to women in developing countries as the overwhelming benefits of breastfeeding would be maintained while reducing the risk of transmission of HIV. This study found that at 3 months of age, 18.8 per cent of never-breasted children were HIV infected, 24.1 per cent of those who had been mixed fed compared to 21.3
defined risk of mother-to-child transmission of HIV by limiting the length of time that an infant is exposed to HIV through breastmilk. Women who are not able to provide adequate and hygienic replacement feeding for their infants from birth may consider this option in order to reduce the cumulative risk of longer breastfeeding duration. Treatment of breastmilk by pasteurization is a potential intervention strategy for developing countries. Wet nursing by HIV-negative women is another alternative which needs to be adequately examined. Further trials are needed on maternal vitamin A supplementation because, even though no reduction in perinatal HIV transmission has been shown, it has the potential in reducing preterm births and risk of HIV transmission in these pretermers.16 A study in Malawi suggests that placental malarial infection could be a marker of advanced immunodeficiency in the mother.17 If this finding is confirmed, malarial chemophrophylaxis during pregnancy would offer an intervention that could decrease the likelihood of transmission of HIV from mother to infant. Confirmation of the finding in South Africa that exclusive breastfeeding (i.e. feeding the infant no other food or fluids except breastmilk) reduces mother-to-child transmission of HIV-1 would be very important especially to women in developing countries as the overwhelming benefits of breastfeeding would be maintained while reducing the risk of transmission of HIV. This study found that at 3 months of age, 18.8 per cent of never-breasted children were HIV infected, 24.1 per cent of those who had been mixed fed compared to 21.3

References

HAFSAT KABIR NAKAURA (GUEST EDITOR)
type 1 with zidovudine treatment. N Engl J Med 1994; 331:
1173–80.
773–80.
773–80.
795–802.