Commentary: Revisiting the Risk of HIV Infection from Breastfeeding

David Crowe, George Kent, Pamela Morrison, Ted Greiner

David Crowe HBSc
President
Alberta Reappraising AIDS Society
Box 61037, Kensington PO, Calgary, AB, T2N 4S6, Canada
Phone: +1-403-289-6609 Fax: -6658 Email: David.Crowe@aras.ab.ca

George Kent PhD
Professor of Political Science
University of Hawai'i, Honolulu, HI, 96822, USA
Phone: +1-808-389-9422 Email: kent@hawaii.edu

Pamela Morrison
International Board Certified Lactation Consultant
3 Barnsite Close, Rustington, West Sussex, BN16 3QH, United Kingdom
Email: PamelaMorrisonIBCLC@surfanytime.net

Ted Greiner PhD
Associate Professor, International Child Health
Uppsala University, Academic Hospital, Entrance 11, Uppsala, 75185, Sweden
(*Currently* Senior Nutritionist, PATH, Washington, DC, USA. Phone: +1-202-822-0033)
Email: tedgreiner@yahoo.com

Correspondence to: David Crowe David.Crowe@aras.ab.ca

History of this Paper

This paper has been submitted to Lancet (where the Dunn paper was originally published in 1992), the British Medical Journal in 2004 and the Journal of Human Lactation in 2005 and was rejected by all three. Lancet gave no reasons. BMJ sent the paper for review to a scientist with significant financial conflicts of interest with the formula industry. That reviewer implied that the Nduati studies from Kenya had largely supplanted Dunn, a contention we challenge here and in a letter published in JAMA. The JHL reviewer recommended against publication because the Dunn paper is so old. They noted that there is newer research, but only provided two citations for conference abstracts, not fully documented peer-reviewed papers, and one mathematical model, which is of course fully dependent on various assumptions, some of which we question.

We disagree that Dunn is irrelevant. The paper is still heavily referenced as a source for statements that breastfeeding comes with a 14% or 15% risk of HIV transmission. Furthermore, the flaws in the Dunn research have never been the subject of as much detailed discussion as in this paper. Many recent papers have relied on Dunn's conclusions, unaware of the deficiencies.

Rather than continue to try to find a journal willing to publish this information, and thus delay making it public even longer, we decided it was most appropriate to publish it on the internet so that people can make up their own minds on this important issue.

Biographical Statements

David Crowe: David Crowe has been the President of the Alberta Reappraising AIDS Society since its founding in 1999. He has had articles and letters on AIDS published in a number of magazines and scientific periodicals.

George Kent: George Kent is professor in the Department of Political Science at the University of Hawai'i. He works on human rights, international relations, peace, development, and environmental issues, with a special focus on nutrition and children. His book entitled *Freedom from Want: The Human Right to Adequate Food* was published by Georgetown University Press in 2005.

Pamela Morrison: Pamela Morrison worked in Zimbabwe as an International Board Certified Lactation Consultant in private practice from 1990 to 2003. During this time she also served as a Baby Friendly Hospital Initiative facilitator and assessor, as a member of the Zimbabwe National Multi-sectoral Breastfeeding Committee, and on committees formed to facilitate national legislation of the International Code of Marketing of Breastmilk Substitutes and to develop policy on HIV and infant feeding.

Ted Greiner: Ted Greiner has worked at policy, program and research levels on breastfeeding promotion since 1974 and on HIV and infant feeding since the first WHO Expert Meeting on HIV and Breastfeeding in 1987.

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Abstract

A 1992 meta-analysis by Dunn *et al* published in Lancet estimated that 14% of babies of HIV-positive mothers would become infected with HIV due to breastfeeding. This conclusion has been widely accepted, and is used to encourage formula feeding by HIV-positive mothers. The meta-analysis suffered from a lack of randomized trials for source data, the use of data which were neither then, nor later ever published, inconsistent definitions of HIV infection and of breastfeeding and no consideration of potentially confounding factors or of other health outcomes. The flaws in this meta-analysis may have led to errors in estimation of the risk of mother-to-child transmission of HIV through breastfeeding, making it inappropriate to use Dunn's final estimate of a 14 percent transmission rate as the basis for guiding current public health policy.

Keywords

HIV • AIDS • Breastfeeding • MTCT (Mother-to-Child Transmission) • PMTCT (Prevention of MTCT) • Meta-analysis • Transmission

Background

One of the most influential papers published on mother to child transmission of HIV through breastfeeding was the meta-analysis of Dr. David Dunn and his colleagues.[1] As of January 30, 2004, 389 scientific papers have referenced this meta-analysis.[2] Using the results of six previous studies, Dunn estimated that the rate of mother-to-child transmission of HIV for breastfed children would be 14% higher than for those who were formula fed.[1] Our concern is that current public health policies are based on this conclusion. It is particularly important for health workers advising HIV-positive mothers of the safest feeding method.

UN agency policy recommends that "It is therefore important that women be empowered to make fully informed decisions about infant feeding, and that they be suitably supported in carrying them out."[3] However, in many PMTCT (Prevention of Mother To Child Transmission) programs all mothers are strongly discouraged from breastfeeding or are pressured to start weaning as early as three months postpartum and often to complete it in two weeks or less. We find no evidence to support the safety of such practices. Without such evidence, and since most MTCT occurs in areas in Africa where the risk of illness or death from not breastfeeding is likely to be higher than the risk of illness or death from being infected by HIV by breastfeeding,[4] it is plausible that for the overwhelming majority of babies the best overall outcome may be achieved if they are breastfed as long as mother and baby desire.

HIV-positive mothers in industrialized countries are rarely supported if they choose to breastfeed their infants, and indeed they may be threatened with loss of custody.[5] In at least one case, breastfeeding by an HIV-positive mother was prevented through legal proceedings.[6]

Methods

We reviewed Dunn's research, and all the source studies used in the meta-analysis. We examined the studies for methodological flaws not considered by Dunn. We also examined more recent research that has attempted to quantify the risk of HIV-transmission due to breastfeeding, including using a search of the Cochrane Database for the combined term "HIV and breastfeeding" to ensure all relevant papers were identified. We only included studies that attempted to estimate the postnatal transmission rate, and that included both breastfeeding and formula-feeding mothers.

We specifically considered the definitions of HIV-infection and breastfeeding used by Dunn's source studies, possible confounding factors, including the duration of breastfeeding and other health risks, and examined these studies for information on health outcomes.

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Findings

Dunn *et al* recognized that it is not easy to distinguish transmission of HIV *in utero* and during birth from early transmission through breastfeeding. The use of HIV antibody tests before a child is 15-18 months old is not reliable because of the persistence of maternal antibodies in infants of HIV-positive mothers.[7] To avoid this problem, the results of six studies including both breastfeeding and formula feeding mothers were used to estimate the excess rate of HIV transmission due to breastfeeding. The studies were from Europe,[8] Miami, USA,[9] France,[10] Switzerland,[11] Kinshasa, Zaire,[12] and Australia.[13]

The researchers calculated the weighted average of the difference between the rates of HIV transmission in the breastfeeding group and in the formula feeding group.[1] The rates of HIV infection in the breastfeeding group, when compared to the rates in the formula feeding group, varied substantially from 5% lower in one study,[9] to 33% higher in another.[13]

More Recent Research

Since Dunn's study was published in 1992, there has been little research on pediatric HIV infection due to breastfeeding in industrialized countries, primarily because of the difficulty of finding openly breastfeeding HIV-positive mothers.[14,15] Many health professionals in these countries now consider it unethical to 'allow' HIV-positive mothers to breastfeed.[6]

There have been more recent attempts to estimate the risk of HIV transmission through breastfeeding in non-industrialized countries. A review paper by de Cock *et al*[16] cites Dunn as well as a Côte d'Ivoire study,[17] an international analysis[14] and a study from Malawi.[18] All of these later studies used a different cutoff to attempt to distinguish breastfeeding transmission ('late postnatal transmission') from transmission during pregnancy or birth. The cutoffs were 6 weeks,[18] 2·5 months[14] and 3-15 months.[17] The two African studies did not include a comparison group of non-breastfeeding mothers[17,18] and the international pooled analysis had scant information on breastfeeding in Western countries (151 months out of 62,568 total months of follow-up), and little on formula feeding in African countries (2,466 months out of 20,950 total months of follow-up).[14] A recent study in Zimbabwe was similar, but did not attempt to estimate