

Extra drugs and slower weaning lowers HIV risk for newborns

Two new studies have shed light on how altering breast-feeding practices and drug delivery could help reduce the rate of mother-to-child HIV transmission in poor nations. Experts say the new results will have serious implications for future updates to policy guidelines on HIV and infant feeding by the World Health Organization (WHO).

"These are very important studies that have been very well conducted," says Anirban Chatterjee, a nutrition specialist at UNICEF who sits on the committee responsible for the WHO's HIV and infant feeding guidelines.

In sub-Saharan Africa, about 1.5 million pregnant women live with HIV. Without antiretroviral drug treatments, the likelihood that these women will pass on the virus to their child if they breast-feed—which most do for at least a year and a half—is perhaps as high as 45%, according to estimates from the WHO.

Because of this risk, babies born to women with HIV in Western countries are fed only formula to prevent viral transmission through breast milk. But this isn't an option in poor countries. Not only is formula expensive, but making it safely requires refrigeration and clean water. Moreover, children who are not breast-fed miss out on the enormous immunological benefits from the milk. They therefore have a much greater chance of dying from pneumonia, diarrhea or malnutrition.

"The main challenge is how can we make this breast-feeding period safe?" says epidemiologist Taha Taha of Johns Hopkins University in Baltimore.

A study led by Taha involving more than 3,000 infants in Malawi found that an extended regimen of the inexpensive antiretroviral drug nevirapine to infants during the first 14 weeks of breast-feeding significantly reduced the number of HIV infections recorded in the infants up until they reached nine months.

In most clinics within sub-Saharan Africa, a baby born to an HIV-positive mother will receive a single dose of nevirapine at birth. In Taha's new Malawi study, a control group of infants was given a single dose of nevirapine, while another group was given nevirapine daily until they were 14 weeks old.

At nine months, the infants given the extended nevirapine treatment had an HIV-infection rate of 5.2%, as compared with 10.6% of the control group (*N. Engl. J. Med.*, doi:10.1056/NEJMoa0801941; 2008).

A second study involving nearly 1,000 HIV-positive mothers in Zambia found that abrupt

weaning—a common practice previously recommended by the WHO—did not improve survival rates of babies who were not infected with HIV, and actually increased the mortality rates of babies who were infected with HIV (*N. Engl. J. Med.*, doi:10.1056/NEJMoa073788; 2008).

The WHO's current HIV and Infant Feeding guidelines were originally released in 1998, and updated in fall 2006 with preliminary data from this newly published study of abrupt weaning. For regions where safe formula-feeding is not available, the new guidelines recommend that HIV-positive mothers breast-feed exclusively up to six months and then continue to breast-feed while gradually introducing other foods.

It might be a long time, however, before these official updates trickle down to individual clinics. Despite the risk of bacterial contamination, formula feeding continues in some poor countries as part of a legacy from health recommendations issued in the early 1990s.

Virginia Hughes, New York

Among preemies, milk benefits girls most

Researchers have long known that breast-feeding protects against infant respiratory infections. But a new study hints that, at least with premature babies, this protective effect may be more pronounced in girls than boys.

For the study, published 2 June, scientists followed 119 premature babies in Buenos Aires for their first year of life. An analysis of the results revealed that half of the formula-fed girls needed hospitalization for their first respiratory infection after leaving the intensive care unit. By comparison, only about 6% of breast-fed girls required such treatment for respiratory infection. There was no difference between breast-fed and formula-fed boys: both groups had an 19% rate of hospitalization for respiratory infection (*Pediatrics*, doi:10.1542/peds.2007-1757; 2008).

Many scientists had thought that breast milk encourages similar immune protection in male and female infants thanks to immunoglobulin A, a type of maternal antibody that it contains. "But if that were the case, then there would be no reason to see a gender difference because everybody would be protected equally," says Fernando Polack, an immunologist at the Johns

Hopkins Bloomberg School of Public Health in Baltimore, who led the new study.

Instead, Polack suggests that breast-feeding activates some kind of protective immune system response in infants, one that is apparently more easily activated in girls than boys.

Because this sex difference has never been documented before, other researchers remain skeptical. Epidemiologist Julius Atashili of the University of North Carolina at Chapel Hill says that the sample size of the study was too small to make any definitive conclusions. Moreover, "there may be different reasons why the infants were very low birth weight to begin with," he says.

Others note that only four of the 119 infants in the study were exclusively breast-fed. "They're combining all kinds of feeding and calling it 'breast-fed'," says Miriam Labbok, director of the University of North Carolina's Center for Infant and Young Child Feeding and Care.

Polack is currently looking for a biological mechanism behind this observed sex difference.

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No simple formula: Breastfeeding carries risks