UCSF Center for AIDS Prevention Studies
AIDS Research Institute

is mother-to-child HIV transmission preventable?

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how does transmission occur?

Mother-to-child transmission (MTCT) of HIV, also called perinatal or vertical transmission, occurs when HIV is spread from an HIV+ woman to her baby during pregnancy, labor and delivery or breastfeeding. For an HIV+ woman not being treated for HIV, the chance of passing the virus to her child is about 25% during pregnancy, labor and delivery. If she breastfeeds her infant, there is an additional 12% chance of transmission.

Worldwide in 2001, 1.8 million women became infected with HIV. Approximately 800,000 children also became HIV infected, the majority of them via MTCT.[1] A large proportion of people newly diagnosed with HIV worldwide are between 15-24 years old. A very important component of MTCT prevention must be HIV prevention for young people, especially girls and young women before they become sexually active, and treatment for those already infected.

are all women equally at risk for MTCT?

No. More than 95% of HIV+ women in the world live in developing countries and most HIV+ children are born in developing countries. Global societal and economic inequities create a wide gap between women in developing nations and women in developed nations with regard to HIV prevention, voluntary counseling and testing and access to drugs which treat HIV infection and can prevent MTCT.[1]

In the US in 1994, the Public Health Service recommended HIV counseling and voluntary testing and AZT therapy for all pregnant women after the clinical trial known as "076" showed that AZT reduced rates of MTCT by two-thirds.[2] Since then, improved treatment for HIV+ women has helped further reduce MTCT in the US, from an estimated 1,500 cases in 1992 to between 300-400 per year currently.[3]

can MTCT be reduced?

Yes. Advances in treatment and new classes of drugs have provided the opportunity to greatly reduce rates of MTCT worldwide. However, these advances have not made their way to developing countries to the extent that is needed, and we have still not addressed the root cause of MTCT, mainly heterosexual HIV transmission. The best way to prevent MTCT is to prevent HIV transmission in the mother and father.

In order to reduce MTCT, all pregnant women should have access to free or low-cost prenatal care and voluntary HIV testing and counseling. If a pregnant woman is HIV+, she should have access to antiretroviral treatment both to treat HIV and improve her own health, and to decrease the chances of HIV infection in her infant. Treatment options for preventing MTCT include giving antiretroviral drugs to the mother after the first trimester of pregnancy and during labor, and to her infant for the first six weeks of life. In the US, these drug regimens have dramatically reduced the chance of transmission, from about 25% to 4-10% for women who did not breastfeed.[4]

MTCT can be further reduced to less than 2% if a woman is on antiretroviral drugs, has a low viral load, follows the recommended MTCT treatment regimen and does not breastfeed.[5] However, little is known about the long term impact of these drugs on the child. Taking greater care during labor and delivery can also help reduce MTCT, for example not artificially rupturing membranes or doing routine episiotomies, and providing cesarean delivery when indicated.

In developing countries, several studies have tested shorter and less complicated AZT regimens and found them to be effective, although less so than standard US regimens.[6] Other studies have found that using a single dose of nevirapine, a drug that is far less expensive than AZT, for the mother and the infant can also significantly reduce MTCT.[7]

The ultimate goal is to find the most effective and sustainable regimens for HIV treatment and MTCT prevention worldwide. Economics, politics, and poor infrastructure all pose significant challenges to providing this standard of care everywhere. Governments and pharmaceutical companies have begun to address these challenges by providing free or low-cost drugs, and should be encouraged to do more.

Says who?

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what are barriers?

Pregnant women face many difficult decisions, including decisions around HIV testing, treatment options and infant feeding. A woman's male partner(s), extended family, greater community and health care setting all influence her decision and ability to take advantage of MTCT prevention.[8]

In the developing world, there is a lack of access to medications in general and antiretroviral drugs in particular. In addition, there is very little access to good health care for women both before and after birth, limited HIV counseling and testing and high stigma and discrimination against HIV+ women.

what about breastfeeding?

Breastfeeding is usually the healthiest choice for both infants and mothers.[9] However, HIV transmission can occur during breastfeeding, with chances of transmission increasing the longer the infant is breastfed. 10-20% of HIV- infants breastfed by HIV+ mothers will become infected.[10,11] In the developed world, it is recommended that HIV+ mothers do not breastfeed, as formula feeding is safe, well accepted and readily available.

Formula feeding requires clean water for mixing formula. Many women in developing countries do not have access to clean water or sanitation and cannot afford formula, and therefore cannot avoid breastfeeding. In developing countries where breastfeeding is the norm, formula feeding may alert a woman's family or community that she is HIV+, which may result in stigma or other negative repercussions.

The World Health Organization recommends that HIV+ mothers avoid all breastfeeding when replacement feeding is "acceptable, feasible, affordable, sustainable and safe." Otherwise, exclusive breastfeeding (not combined with formula feeding) is recommended during the first months of life.[9]

what's being done?

In Thailand, the Ministry of Public Health provides routine prenatal counseling and voluntary confidential HIV testing integrated into existing maternal and child health care services. HIV+ women are offered AZT and free infant formula for 12 months. These interventions are acceptable to most women, and have reduced MTCT from an estimated 30% to 10%.[12]

In Ndola, Zambia, the Ndola Demonstration Project's goal is for HIV+ women to feed their infants without risk of transmission. The project integrated counseling on infant feeding practices and maternal nutrition and HIV voluntary counseling and testing into neighborhood health services. Before the project began, a 12-day training course was offered to health care workers and community service providers.[13]

In Kampala, Uganda, the Mulago Hospital post-natal clinic began a "post-test club" for women after discovering that many HIV+ women were exposed to domestic violence after disclosing their status to their husbands or partners. The post-test club actively recruited husbands of HIV+ women for voluntary HIV counseling and testing as a way to improve couple's communication. Through intensive health education, counseling and home visits, the club recruited couples and helped reduce subsequent pregnancies and break-up of marriages while enhancing behavior change.[14]

what still needs to be done?

HIV is a preventable disease. MTCT is best prevented by effective, accessible and sustainable HIV prevention, diagnosis and treatment programs for women, men and their children. Structural interventions are also needed that increase access to HIV treatments, clean water and formula.

All women have a right to be treated for HIV infection, not simply because they are bearing a child. Education and empowerment for all women in every country are essential, as are access to good medical care and nutrition for women and their children, whether they are HIV+ or HIV-.

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