Prevention of Mother-to-Child Transmission of HIV Infection

Katherine Luzuriaga and John L. Sullivan
Program in Molecular Medicine, University of Massachusetts Medical School, Worcester

(See the article by the European Collaborative Study on pages 458–65)

It has been 10 years since a study of perinatal zidovudine regimen showed that it prevented mother-to-child transmission of HIV in 67% of cases [1]. The article from the European Collaborative Study in this issue of Clinical Infectious Diseases [2] summarizes how far we have come over the past 10 years in the developed world. Treatment of HIV-infected pregnant women has increased such that >90% of HIV-infected women receive HAART. The overall rate of mother-to-child transmission of HIV has been dramatically reduced to <1%. The European Collaborative Study [2] confirm that maternal viral load is the key risk factor for mother-to-child transmission of HIV and that the suppression of viral replication through administration of potent combinations of antiretroviral drugs markedly reduces the risk of mother-to-child transmission. In HAART recipients, the only other intervention that significantly reduced mother-to-child transmission of HIV was elective Caesarean section delivery. Although the European Collaborative Study article [2] suggests that elective Caesarean section delivery and receipt of combination antiretroviral therapy may reduce mother-to-child transmission rates more than combination antiretroviral therapy alone, many physicians in the developed world will likely balance the potential risks of the procedure with its potential benefits and reserve this mode of delivery for those women with detectable viral loads (i.e., >50 copies/mL).

These are remarkable achievements that should make all persons who work to eradicate mother-to-child transmission of HIV proud. But what do these results mean for the developing world? In 2003, an estimated 2.0 million children were born to HIV-infected pregnant women in resource-poor settings, and ~700,000 children were infected (http://www.unaids.org). This represents almost 2000 new infections per day, >90% of which currently occur in sub-Saharan Africa, where >50% of these infected infants will die by their second birthday [3].

Access to potent antiretroviral agents is no longer a barrier to prevention of mother-to-child transmission of HIV in limited-resource settings. Five years ago, Guay et al. [4] demonstrated that an inexpensive simple peripartum nevirapine regimen is effective for prevention of a significant proportion of peripartum transmissions of HIV. In 2000, at the International AIDS Conference in Durban, Boehringer-Ingelheim announced that nevirapine would be offered free of charge to developing countries for the prevention of mother-to-child transmission of HIV. After this announcement, major funding was directed to putting an infrastructure in place to implement the simple 2-dose nevirapine prophylactic regimen. In spite of valiant efforts by many individuals and organizations to implement this stop-gap measure, 95% of HIV-infected pregnant women who could benefit from this prevention regimen still do not have access to it because of a continued lack of infrastructure. Although the 2-dose regimen of nevirapine reduces overall rates of perinatal mother-to-child transmission of HIV to ~6%–12%, it has no effect on prevention of transmission of virus via breast milk, and mothers who do not receive treatment die and leave orphaned children behind. Even with access to the best 3-drug HAART regimens, the lack of medical infrastructure will continue to hamper our efforts to markedly impact mother-to-child transmission of HIV. This can only be fixed with an enormous infusion of resources from the developed world. These resources are not limited to money, but they require large numbers of trained physicians and nurses to collaborate with their colleagues in resource-limited settings to develop the most appropriate measures for prevention and treatment of HIV infection. The In-
fectious Diseases Society of America is among the organizations that sponsor such efforts, and we would urge all interested persons to participate to make a difference.

Acknowledgments

Potential conflicts of interest. J.L.S. was on the Scientific Advisory Board for Boehringer-Ingelheim Pharmaceuticals. K.L.: no conflicts.

References