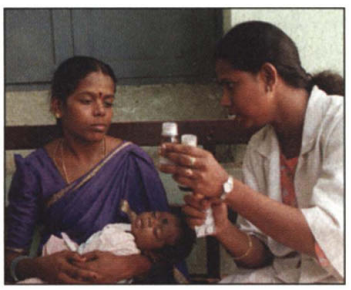
Mother-to-Child HIV Transmission and ARVs

ANTIRETROVIRAL (ARV) THERAPY IS USED FOR both treatment and prevention of HIV infection. It decreases patients' viral loads, dramatically improves their health, and delays death (*1*). ARVs also successfully reduce mother-to-child transmission of HIV (MTCT). Combined with avoidance of breast-feeding, ARV can almost completely prevent MTCT. A simple regimen is based on nevirapine (NVP) and was pioneered in Uganda (*2*). Efforts to make this intervention generally available to HIV-positive pregnant women are under way (e.g., by the UN Programme on HIV/AIDS, the World Health Organization, and UNICEF).

Initially, treatment costs were prohibitive to all but the wealthiest patients. Side effects and complex regimens have further constrained ARV use in resource-poor countries, where the HIV/AIDS epidemic is hitting hardest (*3*). The advent of generic drugs, often as simplified combination pills, has led to dramatic drops in costs. Bringing treatment to the millions who are currently denied access to it is considered a moral imperative by many. Brazil has taken the initiative by making ARVs available free of charge.



An Indian AIDS patient holds her child as she listens to a nurse at the Tamil Nadu Government Lying-In Hospital in Madras, India.

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Despite its effectiveness in reducing viral replication, ARV therapy does not cure—it delays the onset of AIDS. Most patients will eventually develop drug resistance and thereafter progress to AIDS and death. Although ARVs have turned HIV into a chronic disease (*4*), the impression that it no longer kills is misleading. An important reason for the development of drug resistance is lack of adherence to demanding drug regimens (*5*). In tuberculosis (TB) control, the Directly Observed Treatment (Short-course chemotherapy) [DOT(S)] strategy has successfully improved compliance and prevented resistance (*6*). This strategy has also been advocated for ARVs (*7*). Unfortunately, whereas TB therapy is curative and DOT(S) is required for months, ARV therapy is not a cure and is required indefinitely.

Although ARV therapy benefits patients, its impact on sexual transmission is unclear and not necessarily positive. As long as strains are drug susceptible, patients' viral loads can be suppressed, presumably reducing their infectiousness. However, infectiousness may increase again once resistance develops. The relative infectiousness of resistant strains remains largely unexplored. The empirical evidence that resistant strains can be transmitted effectively is overwhelming (*8*, *9*). Mathematical modeling suggests that widespread use of ARV therapy may lead to >50% primary resistance within decades (*10*). In addition to interfering with treatment, this could affect MTCT prevention. For example, NVP is one of the three compounds of Triomune, a drug marketed in India (*11*). Resistance to Triomune may render NVP useless, which would be disastrous. In India, over 20 million children are born annually. If HIV prevalence among pregnant women grows to 5% (modest by African standards), then—assuming that NVP reduces vertical transmission by 10% (e.g., from 30% to 20%, with continuing breast-feeding)—it could prevent 100,000 HIV infections annually in India alone.

It has been argued that prevention and treatment should be complementary in the struggle against HIV (*12*). But if drug resistance becomes widespread, MTCT prevention will fail, and more children will die of AIDS. Then, instead of being complementary, treatment will hinder prevention. Should this be accepted as an inevitable consequence of the benefits that ARVs give to millions of adult HIV patients? This dilemma could be avoided if some ARVs are exclusively reserved for preventing MTCT. These drugs should not be affected by (cross) resistance to drugs used for treatment. There are similar examples: For 40 years, rifampicin has been largely reserved for TB and leprosy. Had it not, short-course chemotherapy would now be impossible.

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Balancing Public Health and Civil Liberties

THE MODEL STATE EMERGENCY HEALTH Powers Act (MSEHPA), written by request of the Centers for Disease Control and Prevention, has galvanized the debate around the appropriate balance between public health and civil liberties (*1*). R. Bayer and J. Colgrove are widely known scholars who seek to

Letters to the Editor

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