HIV in India — A Complex Epidemic

Robert Steinbrook, M.D.

Since the human immunodeficiency virus (HIV) was found in Chennai in 1986, India has had an AIDS epidemic. In many respects, however, its extent and complexities have only recently begun to be appreciated (see map). India has a population of 1.1 billion people — one sixth of the world's population — and is home to perhaps one of every eight people with HIV infection. According to Denis Broun, the country coordinator for the Joint United Nations Program on HIV/AIDS (UNAIDS) in India, “It is not possible to control the overall HIV epidemic if it is out of control in India. Whatever success is recorded in India will immediately have an impact on the overall world situation just because of the sheer numbers.”

Earlier this year, I visited India to report on the AIDS situation. In 2006, UNAIDS estimated that 34.1 million to 47.1 million people worldwide were living with HIV. The estimate of 5.7 million HIV-infected people in India — as compared with 5.5 million in South Africa — captured wide attention. It remains uncertain, however, whether India has more infected people than any other country.

The epidemiologic data for India (estimates of the number of infected persons range from 3.4 million to 9.4 million) are far less precise than for South Africa (4.9 million to 6.1 million). The estimate for India is based primarily on anonymous testing data from public clinics for prenatal care and for patients in high-risk groups or with sexually transmitted infections. Although the number of surveillance sites is expanding, the data may still be skewed and inadequate. In 2005, no data were available for many of India’s more than 600 districts. The estimated HIV prevalence among people 15 to 49 years old in India is 0.5 to 1.5%, whereas in South Africa it is 16.8 to 20.7%. Moreover, HIV prevalence among 15- to 24-year-old women attending prenatal clinics in 4 southern Indian states decreased by 35% between 2000 and 2004; it was unchanged among women 25 to 34 years old in these states and in 14 northern states. These data suggest a slowing of any overall increase in prevalence.

Nevertheless, the 2006 estimates have served as a wake-up
In January 2007, Sujatha Rao, director general of India’s National AIDS Control Organization, said at a Mumbai conference on HIV–AIDS therapy, “We have come a long way from complete denial of the HIV epidemic when it was first discovered in 1986 to a complete acceptance of the fact that we have a problem.”

India is a nation of contrasts. The economy is modernizing, but the culture is largely traditional. There are multiple religions and languages and long-standing patterns of behavior in relationships between the sexes. Violence against women is common (see table) and is “the most important structural issue” for HIV prevention, according to Ashok Alexander, director of Avahan, the India AIDS initiative of the Bill and Melinda Gates Foundation. Discrimination by health care professionals against people with HIV also remains “a big problem,” according to Soumya Swaminathan, deputy director of the Tuberculosis Research Center in Chennai. And many adults still say they have never heard of AIDS (see table).

India has huge cities with large slums, but more than 70% of its people live in rural areas. The World Bank categorizes India as a low-income country: in 2005, the per capita gross national income was $720. Nearly half of children under the age of 3 years are underweight, and a majority of children who are 12 to 23 months old do not receive all recommended vaccines. Although adult literacy rates are only 73% among men and 48% among women, India has become a global leader in such fields as information technology, the outsourcing of business processes, pharmaceuticals, and telecommunications. Its gross domestic product (GDP) grew by 8.5% in 2004 and again in 2005 — one of the world’s fastest growth rates — but in 2004, a third of its population was living on $1 a day or less. When the rains are insufficient in agrarian areas, “women become sex workers,” according to Alexander.

The private health care industry is booming in Bangalore and other cities, with many technologically advanced hospitals opening. Public expenditure on health, however, is low. In 2003, India’s total expenditure on health was 4.8% of the GDP (as compared with 8.0% in the United Kingdom and 15.2% in the United States), with private expenditure accounting for three quarters and government expenditure for one quarter.

HIV Prevalence in India in 2005.

Data are for public prenatal clinics and are from the National AIDS Control Organization, Ministry of Health and Family Welfare, Government of India. The state prevalence is the average prevalence for all sites in each district. High HIV prevalence (Andhra Pradesh, Karnataka, Maharashtra, Manipur, Nagaland, and Tamil Nadu) was defined by a rate of HIV positivity of more than 1% among women visiting prenatal clinics and a rate of more than 5% among patients visiting clinics for sexually transmitted diseases. Moderate prevalence (found in Gujarat, Goa, and the Union Territory of Pondicherry) was defined by a rate of HIV positivity of less than 1% among women visiting prenatal clinics and a rate of more than 5% among patients visiting clinics for sexually transmitted disease. No data were available for many districts in the northern half of India.
India’s expenditure on HIV was $129 million in 2006, with most of the funding coming from outside the country. Spending on HIV and AIDS is poised to increase, but it is currently about 12 cents per capita annually.

Of India’s 35 states and territories, 6 had a high HIV prevalence in 2005, as defined by a rate of HIV positivity of more than 1% among women visiting prenatal clinics and a rate of more than 5% among patients visiting clinics for sexually transmitted diseases. Unfortunately, only an estimated 10 to 20% of those infected know that they are infected, which impedes treatment and prevention efforts. Perhaps 85% of HIV transmission in India is through sexual contact. Injection-drug use is an important factor in the northeast near Myanmar, in the northwest near Afghanistan and Pakistan, and in major cities. HIV is also transmitted perinatally and through breast-feeding. Few pregnant women receive HIV counseling and testing, few HIV-infected women receive antiretroviral prophylaxis, and many deliveries are not attended by medical personnel (see table). India still has many paid blood donors; contaminated blood and blood products account for about 2% of HIV infections.

Within high-prevalence areas, the HIV epidemic reflects diverse social, cultural, religious, and sexual practices. There are “hot spots,” where commercial sex work is common, such as in coastal Andhra Pradesh, northern Karnataka, and southern Maharashtra. In rural areas, there are traditional forms of sex work, such as the tradition in Karnataka and other states of devadasi, in which young women are “married” to a temple or deity and provide sexual services to priests and patrons.

Female and male sex workers, men who have sex with men, and injection-drug users have the highest rates of infection — surveys typically find a prevalence of 10 to 20%. These high-risk groups are the targets of both public-health outreach efforts and law-enforcement activities; prostitution, homosexuality, and injection-drug use are all illegal. Although the laws are selectively enforced, they contribute to harassment, stigma, and discrimination. Estimates of the size of these groups vary widely — from 832,000 to nearly 2 million for female sex workers, from 106,000 to 223,000 or more for injection-drug users, 235,000 for male sex workers, and 2.35 million and up for men who have sex with men.

The epidemic spreads from these groups to others in various ways, including through the clients of sex workers, bisexual men (many of whom are married), and “bridge populations,” the most important of which appear to be long-distance truckers and men who migrate between states for seasonal work in construction and other industries. Sex workers migrate as well, sometimes within rural areas, sometimes to large cities.

India has perhaps 5 million truck drivers. About half drive long-distance routes that keep them away from home for a month or more; often they have a young male helper. Truckers are more likely than other men to be clients of sex workers, and sex work is common along major truck routes. The Golden Quadrilateral, an express highway that links India’s four largest cities — New Delhi, Mumbai, Chennai, and Kolkata — traverses many areas where the rate of sexual transmission of HIV is high (see map).

Truckers and migrants may become infected while away and infect their wives when they return home. The transmission of HIV may stop there. Such “truncated epidemics” are characteristic of rural areas of India and Pakistan, since men may not engage in high-risk behaviors when they are close to home, according to James Blanchard of the University of Manitoba. However, an increasing number of apparently
monogamous women are becoming infected. At Y.R.G. CARE, a nongovernmental treatment, research, and education facility in Chennai, about a quarter of HIV-infected patients are housewives. According to Suniti Solomon, the center’s director and an author of the first report on HIV in India, “marriage is a must” in India, but protecting married women from infection “is a major problem. It is not socially appropriate for a wife to discuss using condoms with her husband. She is not able to negotiate safe sex.”

Prevention of HIV transmission is hampered by gaps in knowledge and by cultural, legal, and medical factors. For example, the most common means of contraception in India, particularly in the south, has historically been sterilization of women, typically done before they turn 30 (see table). In Andhra Pradesh, female sterilization is used for family planning by 62.9%
of married women and condoms by only 0.5%. Advocating the use of condoms has been viewed as promoting promiscuity. The acceptance, availability, and use of condoms are increasing, but primarily among sex workers and outside of marriage. According to Broun, of UNAIDS, “In Africa, a woman who is not pregnant is probably using condoms as a method of contraception, so is therefore also protected against HIV. In India, a woman who is not pregnant is most probably a woman who has been sterilized and her behavior toward HIV is not known.”

Injection-drug use appears to be increasing and spreading to new regions. Unfortunately, treatment, where it is available at all, relies on detoxification and is often ineffective. Access to needle-exchange programs is limited, and oral substitution therapy is almost nonexistent. Methadone is not sold in India, and buprenorphine, which is more expensive, is part of treatment programs at only a handful of sites.

Of the high-risk groups, the least is known about men who have sex with men, including the extent to which they contribute to the epidemic. For many Indians, sex between men is not sex but “mischief,” and many men who have sex with men do not identify themselves as homosexual. Moreover, the array of subgroups and sexual practices is large and “very complicated,” according to Ashok Row Kavi, chairman of the Humsafar Trust, a nongovernmental organization in Mumbai that works with men who have sex with men. There are hijras, many of whom were ritually castrated; male temple prostitutes called jogs; male sex workers; and men who are vulnerable to same-sex activities because of their occupations. There are bisexual men, transgender men, and men who are homosexual in the Western sense. To complicate matters further, homosexuality is illegal and punishable by imprisonment under Section 377 of the Indian Penal Code of 1860, a law that equates homosexual sex with sex with animals and pedophilia and that is also used to prosecute the sexual abuse of children. There are ongoing efforts to convince the courts to overturn, or the parliament to rewrite, the provisions of the code that pertain to same-sex activities between adults. So far, the code has not changed.

India is so populous and complex that it is easy to despair that the task of controlling HIV within its borders is hopeless and overwhelming. Yet India also has substantial resources and a record of accomplishment in fighting polio, smallpox, and tuberculosis, among other diseases. Since the vast majority of people in India are not infected with HIV, an effective, multifaceted response could avert an even more catastrophic epidemic.

Editor’s note: The ongoing challenges posed by HIV in India are discussed in the next issue of the Journal.

Dr. Steinbrook (rsteinbrook@attglobal.net) is a national correspondent for the Journal.