

Controlling the HIV/AIDS epidemic in India

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India is on the verge of having the greatest increase in the estimated number of people living with HIV/AIDS (PLWHA) in the world in the coming decades. With over 50 lakh PLWHA, India currently has the world's second largest number of cases. The Indian National AIDS Control Organization (NACO) projects that there will be 90 lakh HIV cases by 2010 (NACO 2005). By some projections, India is set to overtake South Africa as the country with the highest number of HIV/AIDS cases. This will create untold human suffering, cause severe stress on an already struggling public health system and have a catastrophic financial impact on families. One Indian study reports that families affected by HIV/AIDS can, on an average, spend 49% of household expenditure on treatment and this increases to 82% among low-income families (Duraisamy 2003).

In response, the Indian Government has undertaken a massive prevention and treatment programme targeting high-risk populations. The Government of India (GOI) has pledged to provide free antiretroviral drugs to 100,000 AIDS patients by the end of 2007. Global partners are also supporting the country's efforts to control the epidemic. Large-scale prevention programmes are being funded through the Bill and Melinda Gates Foundation and the Global Fund for AIDS, TB and Malaria (GFATM).

In the midst of these actions, however, there remain important systemic challenges to adequately scale-up the HIV/AIDS response to meet the potential increase in the epidemic in coming years. These challenges include, but are not limited to, an adequate health workforce, responsive infrastructure (including laboratory capabilities), comprehensive monitoring, and adequate and sustainable financing. This paper aims to provide an overview of the trends and characteristics of the HIV/AIDS epidemic in India, and the response to the epidemic by the GOI. Experiences of other countries in the region that have had success in controlling epidemics in their countries are included for comparison. Finally, the paper highlights some key health system constraints that face India in its attempt to alleviate the suffering of those living with HIV/AIDS and to meet the goal

of the Tenth Five-Year Plan of 0% increase in HIV/AIDS by 2007.

Method

This paper is based on a Medline search of original papers and reviews, information obtained from the internet, unpublished material, presentations and abstracts from recent meetings, reports of NACO, and personal communications with several programme managers and clinicians in India.

The global and regional HIV/AIDS situation

By the end of 2004, there were nearly 400 lakh PLWHAs worldwide; 22 lakh of them were children. More than 30 lakh deaths occurred due to HIV/AIDS in 2004, and each day nearly 14,000 new persons with HIV infections are added, with more than half of these occurring among young people under 25 years of age (UNAIDS 2004).

The South-East Asia Region (SEAR) is the second-most affected after sub-Saharan Africa, with more than 60 lakh PLWHA, 80% of whom live in India alone. There are multiple and diverse HIV epidemics in SEAR. Due to the large and dense population, and the presence of several factors that favour the spread of HIV, including poverty, gender inequality, mobility and social stigma, SEAR is likely to increasingly suffer the brunt of the epidemic. The majority of HIV infections in the region occur through unprotected sex between infected men and women. Commercial sex and injecting drug use are the main high-risk behaviours driving the HIV epidemic in Asia. In areas where the prevalence of the HIV infection has remained high among high-risk populations for some years, the infection has spread to lower-risk populations. There is a growing need for care and treatment of PLWHA in SEAR with an estimated 920,000 individuals in need. It is estimated that about 10% of eligible people are receiving antiretroviral treatment (ART) in the region (WHO 2005).

Although effective interventions to prevent HIV transmission and to provide care and treatment are currently being implemented, the HIV epidemic has not reversed in Asia with the notable exception of Thailand and Cambodia. The

key to success of the Thai HIV/AIDS control programme is political commitment at the highest level and allocation of sufficient resources for implementing a package of essential interventions aiming at national coverage. In Thailand, all sectors of society were involved in a multisectoral HIV/AIDS control programme, including strong advocacy and awareness campaigns. One key intervention was the targeted condom programme which promoted condom use among commercial sex workers (CSWs) in sex establishments, combined with empowerment of sex workers, screening for sexually transmitted infection (STI) and sanctions against brothel owners who did not comply (the 100% Condom Programme) (Rojanapithayakorn and Hanenberg 1996). Other interventions were the general strengthening of STI services, screening of blood units for blood-borne infections, HIV counselling and testing, prevention of mother-to-child transmission (PMTCT), a comprehensive continuum of care and ART since the early 1990s. None of the interventions was implemented in isolation but were part of a comprehensive prevention, care and treatment programme along with a strong HIV and STI surveillance system.

Recent epidemiological data from Cambodia indicate that the HIV epidemic has halted and begun to reverse. Cambodia followed the Thai example of establishing a multisectoral AIDS Commission under the chairmanship of the Prime Minister, allocating national resources, and implementing a package of essential interventions along with a strengthened advocacy and awareness campaign and HIV/STI surveillance. The '100% Condom Programme' is considered a key intervention contributing to the decreasing trend of HIV prevalence.

Although some progress has been made to prevent sexual transmission of HIV, HIV/AIDS among injecting drug users (IDUs) remains a neglected issue. Evidence shows that the HIV/AIDS epidemic among IDUs can be prevented, slowed, stopped and even reversed. For example, Dhaka, Bangladesh has maintained an HIV prevalence rate of below 5% among IDUs. The epidemic among IDUs in Nepal appears to have been delayed for several years. Studies in Asia have shown that the frequently adopted strategies of reduction of drug supply, enforcement of prohibitive laws and incarceration or forced detoxification programmes as a means of HIV prevention yield limited success (Centre for Harm Reduction and the Burnet Institute 2002).

The HIV/AIDS situation in India

Since the discovery of the first AIDS case in India in a female CSW in Tamil Nadu in 1986, HIV has now spread to all the States. Nationally, the HIV prevalence among adults (aged 15–49 years) is less than 1%, but with a population of more than 100 crore, India has the world's second-largest number of PLWHA—an estimated 51.34 lakh by the end of 2004 (NACO 2005b). In six States—Andhra Pradesh, Karnataka, Maharashtra, Manipur,

Nagaland and Tamil Nadu—the HIV epidemic is classified as a generalized one, with more than 1% of women attending antenatal clinics (ANCs) being infected and an HIV prevalence among STI clinic patients of more than 5%.

The prevalence of HIV remains the highest among CSWs and their clients, men who have sex with men (MSM), IDUs, truck drivers and patients with STIs, whose behaviour puts them at high risk for contracting HIV. Mumbai has the country's largest brothel-based sex industry, with over 15,000 sex workers. Up to 70% of sex workers in Mumbai are HIV positive. Data on MSM and transgendered persons in Mumbai found that 17% of men and 68% of transgendered people were HIV positive. Twenty-two per cent of MSM were married, and 44% had visited female CSWs (Ekstrand *et al.* 2003). The IDU epidemic is perceived as a problem mainly in the north-eastern States with a reported HIV prevalence of more than 70% in sentinel surveillance sites during the past years (Eicher *et al.* 2000). However, selected surveys point out the increasing evidence of IDU in other parts of India, including border areas. Major metropolitan cities such as Mumbai, Kolkata, Chennai and Delhi have seen a diffusion of injecting drug use within the past decade. A recent study showed that among 4648 drug users interviewed in 14 cities across the country, 43% had injected drugs (National Household Survey 2002; Dorabjee and Samson 2000). By 2001, an estimated 15%–35% of truck drivers nationwide were HIV positive (UNAIDS 2002). HIV infection rates among STI patients were 19.6% in Andhra Pradesh and 13% in Manipur (NACO 2005c).

In India, infection may be due to both HIV-1 and the less pathogenic HIV-2. HIV-1 subtype C is predominant, while HIV-1 A/C recombinants have been described in Maharashtra. In the north-eastern States, other subtypes are present, including subtype B' (similar to the subtype found in Thai IDUs), E, C and B'/C recombinants.

AIDS case reporting

By the end of December 2004, 96,978 AIDS cases had been reported to NACO, with a significant increase in recent years, reflecting both the progression of the epidemic and the improvement in AIDS case reporting. The highest number of reported cases is among the 15–49 years age group. The overall male-to-female ratio showed a declining trend from 3.7 in 1998 to 2.3 in 2003 (NACO 2005).

HIV sentinel surveillance

Conducting HIV sentinel surveillance (HSS) in a country as enormous and diverse as India is a massive undertaking. In 1994, HSS was conducted in 55 sites and expanded to 180 sites in 1998. In 2003, 455 sites were conducting surveillance (NACO 2004). India's HSS system uses anonymous, unlinked blood sample screening for HIV antibodies to estimate the prevalence of HIV population groups in various States. Surveys are now conducted annually, and survey sites include

STI clinics and ANC, as well as sites that work with IDUs, CSWs and MSM. The most recent round of HSS was completed in 670 sites in 2004. These sites included 166 STI clinics, 271 ANCs, 124 rural ANC sites, 13 sites where IDUs were surveyed, 3 sites for MSM and 2 sites for CSWs (NACO 2004). The national working group on HIV estimations and projections commended NACO for adding sites that target IDUs, CSWs and MSM in addition to ANC and STI sites, to better monitor the trend of the HIV epidemic. The quality of HIV surveillance in India was described by an expert team of UNAIDS and WHO in 2001 as having the basic components of a high-quality surveillance system but lacking adequate representation, which has since been improved by adding rural sites and sites for core risk groups, and increasing the total number of sites.

Behavioural surveillance

NACO undertook the National Baseline Behavioural Surveillance Survey (BSS) from April through September 2001. Four groups were surveyed: general population, CSWs and their clients, MSM and IDUs. The general population included 3832 respondents 15–49 years of age (1916 males and 1916 females) with an equal number from urban and rural areas. A total of 5648 clients of CSWs and 5572 female CSWs were interviewed. In addition, control groups of CSWs were surveyed in Delhi, Mumbai, Kolkata and Andhra Pradesh, covering 1087 respondents. A total of 1387 MSM and 1355 IDUs were interviewed across all sampling units.

The National BSS found that the overall awareness of HIV/AIDS in India is 86%, though variance among States is significant (range 53.7%–99.2%) with major urban–rural (91%–74.6%) and gender differences (male-to-female: 86.2 to 73.1) (NACO 2001). Awareness among CSWs (94%), MSM (97%) and IDUs (97%) was much higher than in the general population. The high level of awareness contrasts with the low proportion of condom use during the last sexual contact in high-risk behaviour groups. Among CSWs, 50% reported consistent condom use with paying clients in the past 30 days. Among those brothel-based sex workers who had sex with a non-paying partner in the 3 months before the survey, only 21% reported using condoms consistently. Among MSM who had commercial sex in the month before the survey, only 13% reported consistent condom use with commercial male partners. This contrasts with the figure of 30% of MSM reporting consistent condom use with a non-commercial male partner in the month before the survey. Among the IDUs who reported sex with any non-regular partner in the 12 months before the survey, just 12% reported using condoms consistently with these partners (NACO 2001; NACO 2002).

The BSS found that among IDUs, 45.2% injected two to three times a day, whereas 16.1% injected more frequently. The majority of drug users in India are males. However, use of drug treatment data may underestimate the number of

female drug users, who remain a hidden population. Women seeking assistance for drug use face heavy stigma and discrimination, and their ability to access treatment is hindered by their myriad responsibilities and workload (e.g. child care). Drug abuse by women in the north-east is believed to be growing (UNODC 2003).

Data from the BSS indicate some overlap between sex work and injecting drug use. Of the 6% of CSWs reporting ever trying any addictive drugs, almost one-third had injected drugs in the past 12 months.

High-risk behaviour groups such as sex workers, MSM and IDUs are populations that are difficult to access. Although sex work is not illegal, concomitant activities including soliciting and brothel-keeping are penalized. The Human Rights Watch (HRW) reports that Indian CSWs are treated with contempt and commonly subjected to violations of their fundamental rights by the police, both at the time of their arrest and while in detention. HRW also documents increasing violence against outreach workers and peer educators who work with CSWs and MSM. The national BSS found that 61% of female CSWs were illiterate. Homosexuality is a taboo topic in India, and MSM are severely marginalized. Injecting drug use is illegal and strategies focus on reduction of drug supply, enforcement of prohibitive laws and incarceration. Because of complex social and political dynamics, reaching CSWs, MSM and IDUs with HIV prevention services remains a major challenge.

HIV/AIDS estimations

India's HIV prevalence estimates are based on HSS taking into account certain assumptions such as STI prevalence in urban and rural areas, urban–rural differentials in HIV prevalence among STI patients, HIV prevalence among ANC patients, female-to-male differential in STI patients and HIV prevalence rates. Additional data are derived from targeted intervention sites and community-based studies on STI (Fig. 1). The assumptions were refined and validated in 2003. The latest HIV estimate in India for 2004 is 51.34 lakh.

The evolution of the HIV/AIDS programme in India

Since the first cases of AIDS were reported in India, the GOI and society have addressed the epidemic with increasing concern and resources.

National AIDS Committee

To formulate a strategy for the implementation of an HIV/AIDS prevention and control programme, the Ministry of Health and Family Welfare constituted the National AIDS Committee in 1986, under the chairmanship of the Union Minister of Health and Family Welfare. The Committee brought together various ministries, non-governmental

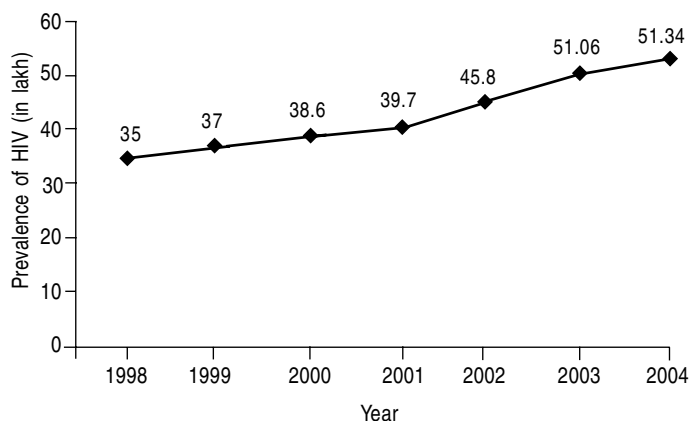


Fig. 1 HIV estimations in India 1998–2004

Source: National AIDS Control Organization 2005b

organizations (NGOs) and private institutions for effective coordination of programme implementation. The Committee acts as the highest-level body to oversee the performance of the Programme, to provide overall policy directions, and to forge multisectoral collaboration (NACO 2005).

Medium-term plan for HIV/AIDS control

In 1989, with the support of WHO, a medium-term plan for HIV/AIDS control was developed with a US\$ 10 million budget provided from external sources. This plan was implemented in 4 States and Union Territories (UTs) that were most affected, namely Maharashtra, Tamil Nadu, West Bengal, Manipur and Delhi. Initial activities focused on the reinforcement of programme management capacities as well as targeted education and awareness campaigns (IEC) and surveillance.

Phase I of the National AIDS Control Programme

Following a series of discussions with the World Bank and WHO, GOI prepared a comprehensive five-year (1992–97) National Strategic Plan for the Prevention and Control of HIV/AIDS Phase I. This brought about the establishment of the NACO. During this stage, activities focused on preventing transmission of HIV through blood and blood products, control of hospital infections, increasing awareness of the dangers of unsafe sexual behaviours with multiple partners and sharing of needles for injecting drugs and strengthening of clinical services for both STI and HIV/AIDS (World Bank 2003; NACO 2005d).

Efforts to reduce bottlenecks in the implementation of the Programme were further strengthened with the formation of the State AIDS Societies with decentralized administrative and financial power for more focused programme implementation to address priority issues at the local level.

Phase II of the National AIDS Control Programme

Phase II of the National AIDS Control Programme (NACP) began in 1999. It is a completely centrally sponsored scheme

Table 1. Objectives of the national HIV/AIDS policy

1. Prevent the spread of HIV/AIDS and reduce its personal and social impact. The main activities include control of STIs; promotion of condom use; provision of HIV testing and counselling, care, and support for people with HIV/AIDS; surveillance; harm reduction for injecting drug users; provision of safe blood and blood products; and support for research and development.
2. Generate ownership of the control programme by governmental and non-governmental organizations at the national, State and local levels.
3. Create an enabling environment for prevention and treatment efforts.
4. Decentralize HIV/AIDS control activities.
5. Strengthen programme management at all levels; promote introduction of control activities in other government programmes.
6. Provide support to vulnerable groups.
7. Provide support including treatment to people with HIV/AIDS.
8. Work with multilateral and bilateral donors.
9. Promote better understanding of HIV/AIDS, especially among high-risk groups.

Source: Over *et al.* 2004

implemented in 35 States and UTs by the State AIDS Control Societies and municipal corporations in the cities.

NACO assumed the responsibility for activities such as epidemiological surveillance for STIs and HIV/AIDS, training and capacity building, operational research, and monitoring and evaluation. NACO is also responsible for policy-level guidance, overseeing of the programme, allocation of public funds to the States, approval of proposed control activities and coordination with other donor partners. NACO works closely with the States and coordinates advocacy meetings. In 2002, the Government finalized and released the National AIDS Control Policy and the National Blood Policy. These policies were drafted following a wide range of consultations with governmental organizations (GOs) and NGOs, experts and partner agencies (Table 1) (Over *et al.* 2004).

Programme implementation largely depends on the capacities of State AIDS Control Societies, political commitment and administrative leadership, which vary across States. Administrative and financial management capabilities have been strengthened, but technical and management assistance are needed, mostly in strategic planning, priority setting and provision of key service delivery inputs to scaling-up interventions through public and private sector agencies.

The NACP is now planning Phase III, starting in 2006.

Targeted interventions to prevent HIV transmission

The main strategy in India to implement targeted interventions is to work through NGOs. By the end of 2004 (Khera *et al.* 2005), the State AIDS Control Societies had identified 930 NGOs to deliver targeted interventions among high-risk groups (Fig. 2). NACO estimates that 22 lakh people in high-risk groups/bridge populations were covered in 2004. These NGOs need technical support in understanding the complexities of HIV/AIDS issues and inputs for accelerating

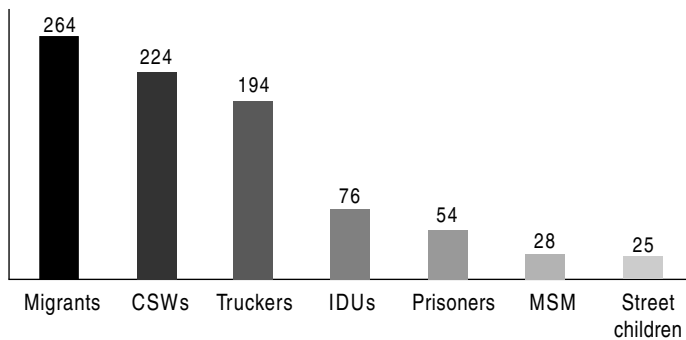


Fig. 2 Number of NGOs supporting interventions targeted at high-risk groups

NGO: non-governmental organization; CSWs: commercial sex workers; IDUs: injecting drug users; MSM: men having sex with men
 Source: National AIDS Control Organization 2004

prevention-oriented outcomes. The interventions are aimed at CSWs, migrant workers, truckers, street children, MSM, IDUs and prisoners, mainly to decrease transmission by reducing high-risk behaviours.

Sex workers and their clients (specifically truck drivers)

The southern State of Tamil Nadu was one of the earliest to be affected by the HIV epidemic. The State Government joined with community groups and other partners to confront the epidemic, running high-profile public campaigns to discourage risky sexual behaviour and making condoms, STI screening and treatment services readily available for those in need. The result has been a significant drop in at-risk sexual behaviour. Figure 3 shows data from a BSS survey among truck drivers and their helpers in Tamil Nadu. In 1996, before the prevention campaigns began, 30% of these men reported sex with a female sex worker in the preceding 12 months, and just over half of them had used a condom at the last sexual contact. This suggests that nearly 14% of truck drivers reported recent unprotected sex with a sex worker. By 2002, this figure had fallen to 2%, partly because there was less sex with a CSW and because condom use rose from 55% to over 90% during the 6 years of prevention programming (MAP 2004).

In 1992, the All India Institute of Hygiene and Public Health launched a programme to reduce the transmission of HIV in Sonagachi, a red-light district in central Kolkata. The project began with two key interventions: a health clinic and outreach activities by peer educators. In 1992, consistent condom use with clients in Sonagachi was 1%. By 1998, this figure had reached 50%. During the same period, syphilis prevalence among CSWs covered by the project fell from 25% to 11%. In 1998, HIV prevalence among CSWs was 5%. A key element of success in the Sonagachi Project has been the participation of CSWs. The Sonagachi model for increasing condom use and maintaining low HIV prevalence rates among sex workers has been successfully implemented in other Indian settings, including in West Bengal (Basu *et al.* 2004).

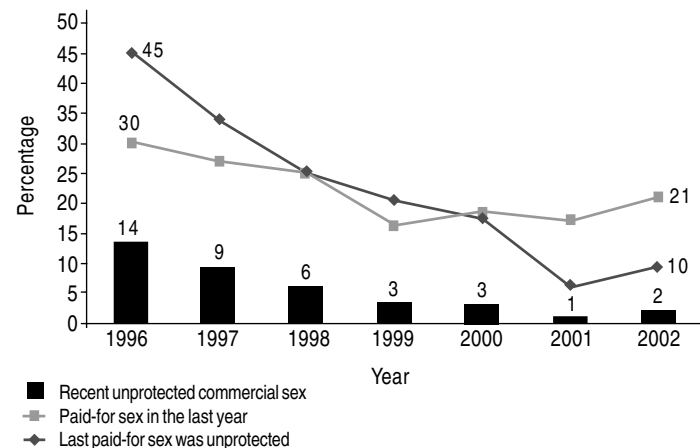


Fig. 3 Effect of high-profile prevention efforts in reducing unprotected commercial sex in Tamil Nadu, India

Source: MAP Report 2004

Injecting drug use

The Indian Ministry of Social Justice and Empowerment has established 450 drug de-addiction centres in partnership with NACO. Only 100 of these centres are staffed with an outreach worker.

The NACO supports harm-reduction activities provided by NGOs. Common activities include needle and syringe exchange programmes (NSEP), substitution therapy, de-addiction, peer education and outreach, primary health care, counselling, drop-in centres and vocational rehabilitation programmes. NACO had approved NSEP operating in Manipur, New Delhi, Mumbai, Kolkata and Chennai. Substitution therapy with the use of sublingual buprenorphine is currently ongoing in five major Indian cities: New Delhi, Kolkata, Imphal, Mumbai and Chennai.

HIV/AIDS prevention and care services in the State of Manipur seem well established. In 1996, Manipur was the first State in India to formulate a State AIDS Policy (SAP), which explicitly included a 'harm reduction' approach to HIV/AIDS prevention among IDUs. Since 1998, the Manipur State AIDS Control Society has implemented a rapid intervention and care programme in partnership with 10 NGOs. The programme is a comprehensive strategy to prevent HIV/AIDS and provide care for those affected in Manipur. Its components are NSEP, condom promotion and provision, referral for HIV testing, STI treatment, home-based care and counselling. Even though the programme had limited geographical coverage within Manipur, it was one of the largest harm reduction efforts in Asia (Sharma *et al.* 2003). It has been reported that while heroin injectors may use the drug two to four times a day, those using buprenorphine and pharmaceutical mixes tend to inject less frequently as a result of the longer effect of these drugs. There is a discernible shift from injecting pure heroin to pharmaceuticals (Kumar *et al.* 2000; Kumar 2000).

The key challenge in scaling up targeted interventions is

to understand the level of effort needed, identify the size and location of high-risk groups/populations, determine what activities are required to expand the coverage of interventions targeting high-risk populations, and identify and contract a sufficient number of credible and committed NGOs to deliver those targeted interventions. In addition, monitoring of the performance of the programme is required. It remains absolutely critical to scale up well-designed and high-quality targeted interventions with adequate coverage.

HIV testing and counselling

NACO has been expanding Voluntary Counselling and Testing Centres (VCTC) since 1998. Significant progress has been made during 2003–04 with the technical support of WHO and UNAIDS. Seven hundred and nine VCTCs have been established nationwide (655 in NACO and 74 in other GOI settings). All districts in the six high-prevalence States have at least one VCTC. Since 2001, the total number of clients tested was more than 19.2 lakh; 80% received pre-test counselling and 13.5% tested HIV positive. During 2002–04, the proportion of those receiving pre-test counselling out of those being tested for HIV has increased from 61% to 96%. The proportion of HIV-seropositive persons remained around 13%–14% during that time (Fig. 4).

Although the availability of VCTC increased under the project, the number of trained counsellors is insufficient. NACO is planning to expand VCTC to the subdistrict level in all States to improve the accessibility of services. A monitoring and supervision system for the performance and quality of VCTC has now been established. Although NACO is scaling-up training and improving the quality of HIV testing and counselling in the public sector, the quality is very limited or unknown in the private sector with no regulating mechanism in place.

Prevention of mother-to-child transmission

With the support of UNICEF, NACO launched the national prevention of parent-to-child transmission (PPTCT) programme. The key components included antenatal care, HIV counselling and testing, safe delivery practices, administering nevirapine (NVP) to the mother and baby, and counselling for infant feeding options. The Programme covers 286 institutions including nationwide private and government medical colleges and all the districts in the six high-prevalence States of India. A summary of data collected during the period from January to September 2004 shows that out of the 1,962,255 women registered with the PPTCT Programme, 74% of women received counselling. The HIV testing acceptance rate was good (86%) but with great variations from State to State and from institution to institution. The overall prevalence observed is around 1.3% with State-wise variation. However, intervention uptake is moderate with only 41% of seropositive mother–baby pairs receiving nevirapine (Fig. 5).

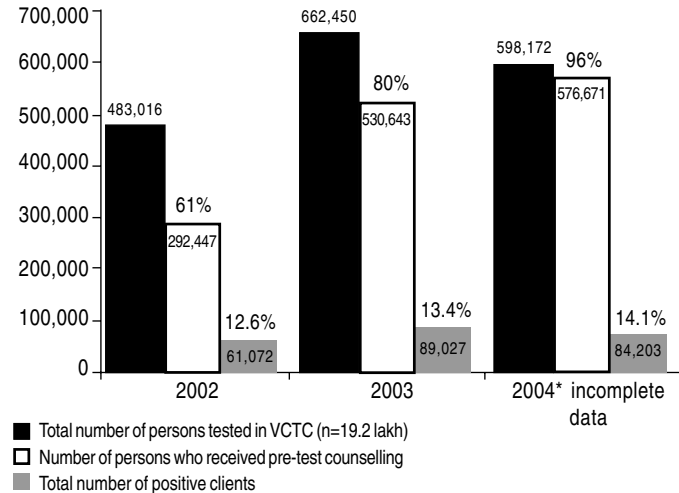


Fig. 4 HIV testing and counselling 2002–04

VCTC: Voluntary Counselling and Testing Centre
Source: National AIDS Control Organization 2004

Care and treatment

Since the launch of the second phase of the NACP in 1999, the GOI has demonstrated its commitment to provide low-cost care to PLWHA. This is reflected in the allocation of 12% of NACO's budget to care and support. The GOI started these activities with 25 community HIV/AIDS care centres across the country. A substantial amount of HIV/AIDS care and support is provided by NGOs and community-based organizations, including associations of PLWHA. These organizations deliver nutrition information, counselling for PLWHA and their families, school fee support, vocational training and, in some cases, provision of drugs for opportunistic infections (OIs). However, they struggle with highly inadequate financial and human resources, coupled with an increasing demand for their services. Many PLWHA experience difficulty in accessing such services because of the social stigma associated with HIV/AIDS (Solomon *et al.* 2002).

As mentioned earlier, 12% of NACO's budget is allocated to HIV/AIDS care, including prevention and treatment of OIs (about 16% of the total budget of the World Bank HIV/

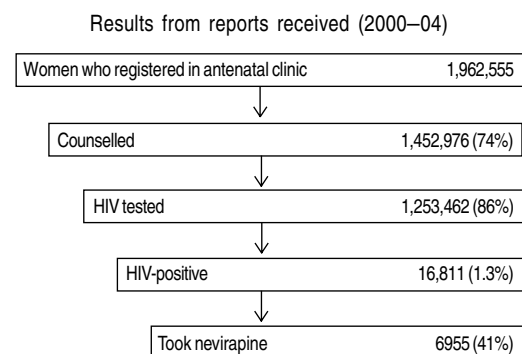


Fig 5. Prevention of parent-to-child transmission 2000–September 2004

Source: National AIDS Control Organization 2004

AIDS loan is designated for medicines to treat OIs). NACO's care strategy covers 30% of an estimated 500,000 PLWHA who seek treatment at government-run and some selected NGO hospitals (Over *et al.* 2004).

India's 2002 proposal to the GFATM states that only 1500 PLWHA are receiving (and adhering to) ART, and that another 8000–10,000 are intermittent users or poorly adherent (Kumarasamy *et al.* 1999). ART so far has primarily been prescribed for those who can pay or who are enrolled in research studies (Ekstrand *et al.* 2003).

During 2004, India made impressive progress in a short span of time since the announcement of a free ART programme on 1 December 2003. The target is that 100,000 patients should receive ART by the end of 2007. The GOI, with support from WHO, has held national and subnational technical consultations and review meetings, developed national treatment guidelines, prepared training materials and built up the capacity of medical teams. The free ART Programme was launched in April 2004 at eight tertiary hospitals in the six high-prevalence States of India plus the capital city, Delhi. Antiretroviral drugs were procured with the help of WHO. It is planned that by the end of 2005, the Programme will be expanded to 50 sites across the country and, by the end of 2005, to 50–100 tertiary hospitals. The remarkable progress made in such a short period of time is the result of administrative commitment, strategic planning, partnerships and, most importantly, the sheer hard work and compassion of the health workers at all levels. As of April 2005, a total of 7029 PLWHA have started treatment in the NACO-supported programme—34% of women and 4% children (NACO 2005). Analysis of data from a cohort of 143 patients from Tambaram, Chennai showed a three-fold increase in CD4 counts after 6 months of treatment, indicating marked clinical improvement after ART (Fig. 6).

Adherence and resistance

Treatment adherence is a critical issue. Poor adherence to ART leads both to poor clinical outcomes and to the transmission of drug-resistant viral strains, thus lowering the effectiveness of ART in the infected population. These

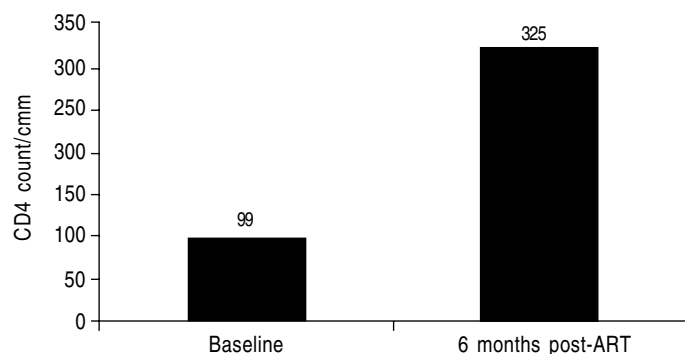


Fig 6. Pre- and post-ART (at month 6) CD4 counts in a cohort of 143 patients in Tambaram, Chennai in December 2004

ART: antiretroviral therapy

considerations strongly suggest that ART programmes should invest sufficient resources in supporting high levels of adherence to counselling and monitoring. Concerns about adherence and the spread of resistant viral strains may be particularly pertinent in India because the generic, low-cost, triple-drug formulations available in India include non-nucleoside reverse transcriptase inhibitors (NNRTI) such as nevirapine. Evidence suggests that an easily acquired single-point mutation can confer resistance to all the agents in the NNRTI class when the virus becomes resistant to nevirapine alone.

Although too few studies have been published on adherence to ART in resource-poor countries to draw firm conclusions, the results generated so far suggest that adherence rates are similar in resource-rich and resource-limited countries. Although high levels of adherence can be achieved, a wide range of adherence levels has been reported in both industrialized and developing countries. Drug cost can be a significant barrier to adherence. In a study on 100 patients on triple-drug ART treatment in India, 60% stopped treatment within a few months because of the high cost and because they preferred to take alternative treatment. Thus, operational research to identify effective adherence techniques specific to India is warranted (Ekstrand *et al.* 2003).

Access to medicines

The GOI has a mandate to provide access to treatment to all the employees working in various Central Government departments (Over *et al.* 2004). Some public sector provision is made through Central Government Health Scheme (CGHS), Employees' State Insurance Scheme (ESIS, the country's social security programme), the Railways and the Department of Defence. NACO has committed Rs 20 crore to antiretroviral medicines covering 25,000 PLWHA for the fiscal year 2005 in addition to GFATM funds.

To reduce prices, the Government is making efforts to exempt customs and excise duties on all antiretroviral drugs available in India. Indian pharmaceutical companies are currently manufacturing generic versions of ART and selling them at less than US\$ 1 a day. The manufacture of generic ART drugs has been an essential element in the dramatic reduction of drug prices. However, India signed the agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) as a member of the World Trade Organization in 1994. As a result, India had to change its patent law on 1 January 2005. In consequence, while Indian manufacturers may continue their existing production of generic versions of drugs that have been patented elsewhere in the world between January 1995 and December 2004, they may not be able to initiate the production of additional generic versions of drugs that fall into this category. This may affect some ART drugs, notably those used in second-line treatment regimens. Furthermore, future antiretroviral agents that may be developed will be even more affected; they will

receive a 20-year patent protection in India, and Indian companies will only be able to produce and sell generic versions of such new drugs after the relevant patents expire. These changes will affect not only the cost of ART programmes in India, but also in countries supplied inexpensive ART drugs by Indian companies.

Health system challenges to scaling up

India's public health system has struggled to provide a basic level of care for the poor and marginalized and, in the wake of a growing epidemic, the system will be under considerable more stress to provide testing, counselling, prevention, education, treatment and palliative care in a coordinated and sustained manner. The reasons for system constraints on scaling up HIV/AIDS interventions are complex, and reflect a number of broader public health system challenges as well as social challenges such as stigma and social exclusion.

Working Group 5 of the Commission on Macroeconomics and Health (Jha and Mills 2002) described the health system constraints that need to be removed to expand access to interventions at several levels, from the level of governance, public policies cutting across sectors, and health sector policy and strategic management to the levels of health services delivery, and community and household participation. This systematic review of constraints was applied to the scaling up of HIV/AIDS interventions in India and a modified and expanded version is presented in Table 2 (Sheshadri 2001).

The matrix is not exhaustive and the GOI and partners have made significant progress on many of these factors, as can be seen by the escalating control efforts over the past few years. Of course, the systemic challenges to the scaling up of HIV/AIDS mirror the broader public health system constraints that impact the prevention and care of any disease. For the purposes of this report, we will focus on issues at the level of health service delivery that have a significant impact on the control of the HIV/AIDS epidemic, including monitoring of the epidemic and impact of interventions, human resources, and the role of the private sector and NGOs.

Monitoring the epidemic

Tracking the epidemic and implementing effective programmes is made even more complex by the fact that the epidemic can be described as several localized subepidemics representing diverse risk factors and socioeconomic settings. A reliable and regular surveillance and data collection system on the prevalence, distribution and modes of transmission of HIV/AIDS is necessary for effective setting of priorities and planning a responsive control strategy (Bajpai and Goyal 2004). As described previously, NACO has expanded the sentinel surveillance programme in ANC and STI clinics. Still, it is generally thought that there is a need to strengthen and address the gaps in the surveillance system in the following areas:

- Conduct BSS at regular intervals;
- Expand sentinel surveillance to better represent high-risk groups including IDUs, CSW and MSM, and improve the mapping and size estimation of high-risk groups;
- Initiate better STI surveillance as an objective marker of behavioural change;
- Establish the pattern of disease in rural and migratory populations, high-risk occupational groups and other difficult-to-access groups;
- Understand the factors contributing to transmission of the disease from high-risk to low-risk groups;
- Carry out systematic data collection from private sector settings through establishment of public-private partnerships in surveillance (the private sector delivers over 80% of health care in India overall and delivers care to 80% of patients seeking treatment for STIs) (Ekstrand *et al.* 2003);
- Carry out external validation of the findings of the current surveillance system.

Data collection on the HIV/AIDS epidemic at the State and district levels is the key to effective planning and management in a decentralized programme, which needs to be operationalized by capacity building of personnel in State AIDS Control Societies. Tamil Nadu's early success in

Table 2. Health system constraints to scaling up HIV/AIDS interventions

Governance and overall policy framework	<ul style="list-style-type: none"> • Political will and commitment • Unwillingness of bureaucrats to involve themselves in a programme perceived as dealing with a taboo subject • Lack of a sense of urgency to tackle the impending epidemic
Health sector policy and strategic management	<ul style="list-style-type: none"> • Unpredictable funding from the Centre to the States • Inadequate technical and management capacity of programme managers • Inadequate advocacy efforts and sense of ownership at the State level
Health service delivery	<ul style="list-style-type: none"> • Inadequate capacity in terms of people who could manage the process as well as organizations such as NGOs to effectively implement well-designed programmes, for example, targeted interventions, care • Inadequate capacity for maintaining an accurate database and tracking the epidemic • Inability to regulate or monitor the provision of services by the private sector
Community/household demand/impact	<ul style="list-style-type: none"> • Non-availability of effective NGOs in high-risk areas due to lack of funding for such activities in the past • Lack of awareness among community members and implementers of the risk and unwillingness to admit that this is possible in their community

controlling the epidemic has been well recognized. The State's success has been attributed to an early autonomous and comprehensive strategy that built capacity on many levels including programme management, targeted interventions, community awareness and support, and surveillance. The Tamil Nadu State AIDS Control Society initiated a systematic data collection system early on, which included behaviour, awareness and sentinel surveys. These early surveillance efforts increased the understanding of the epidemic patterns, including spread to the general population, especially women and the increase in rural prevalence, helping to target the interventions by the State's AIDS control effort (Sheshadri 2001).

The surveillance for AIDS and STI, though started during the first phase of the Programme, needs strengthening. The number of cases with both STI and AIDS may not be accurate since the shame and stigma associated with these diseases deter patients from accessing government health services, and the majority seek relief from private practitioners who may not be qualified. Since there is no regulatory mechanism for obtaining information from NGOs and private clinics or testing centres, many cases are missed out.

Monitoring the programme

The effective implementation of ARV therapy is complicated by a lack of public infrastructure for monitoring adherence and resistance to, and outcomes of, therapy. Monitoring requires laboratory capabilities to confirm CD4 count levels, and the infrastructure and human resources to follow up adverse effects and patient tolerance to drug regimens. In light of the growing prevalence of drug-resistant HIV strains worldwide, the health system's capability to monitor and ensure drug availability and patient adherence to therapy is vital. Further, surveillance and evaluation of the impact and effectiveness of treatment of opportunistic infections as well as the interaction of other interventions in areas such as nutrition and sanitation also need to be targeted (Willbond *et al.* 2001).

Another area where monitoring is vital is the evaluation of the impact of an increasing emphasis on treatment and prevention, both at a programme level and with respect to personal behaviour. The strengthening of behavioural surveys will be important to monitor any decrease in preventive activities or increase in high-risk behaviours stemming from increased availability of treatment (Over *et al.* 2004).

Human resources and facilities

In an environment where access to primary care centres and health care workers is already low, an epidemic such as HIV/AIDS can put massive pressure on an already stretched Indian public health system. The related increases in deaths and infections will stress capacities of both primary care clinics and hospitals. Additionally, the public health system in India is experiencing critical staff shortage, especially in

rural areas. Public health care staffing suffers from a lack of equitable geographic distribution, absenteeism, and monitoring of competence and quality of care. One estimate reports that out of almost 30,000 rural health posts for doctors, over 4000 remain unfilled and about 40% absenteeism has been estimated among doctors and other health care workers (Willbond *et al.* 2001). An unregulated and, for the most part, unaccountable health work force in the public and private sectors makes it difficult to monitor the impact and effectiveness of health service delivery.

Specifically, human resources for HIV/AIDS require specialized training in the disease, its risk factors and treatment options. Although India has a large pool of doctors and other health professionals, practical experience in the clinical management of AIDS patients or ART is limited (WHO 2003). Without the appropriate incentives, adequate training, and systematic tracking of health facilities and staff, successful expansion of the control programme will not be feasible. Prescriptions of wrong drug combinations or dosages and the inability to follow up patient treatment regimens decrease the effectiveness of treatment and increase the risk of drug resistance (Cohen 2004).

Role of the private sector and NGOs

The private sector in India plays a large and important role in the delivery of health care and is, overall, an important partner of the GOI in the care of patients with HIV/AIDS and associated infections. It has been estimated that 80% of doctors, 75% of dispensaries and 60% of hospitals in India are in the private sector (Ekstrand *et al.* 2003).

However, the prominence of the private sector in health delivery in India has also been an area of concern. Many Indian doctors and government officials believe that greater access to ART could lead, particularly in the largely unregulated private sector, to faulty prescription practices that might set the stage for the emergence of drug-resistant HIV strains (Mudur 2002). These concerns are reflected in the findings of a recent multicentric study of the causes of failure of ART in India. In the study, led by the personnel of the Grant Medical College and GT Hospital in Mumbai, only 10% of the patients were counselled before initiating ART. Adherence was observed in only 10% and all were on suboptimal regimens (Saple *et al.* 2002).

Another study led by this hospital examined the knowledge and practices of family physicians and consultants in three low- and high-prevalence States each. In the low-prevalence States, 70% of family physicians were unaware of the availability of an HIV-ELISA test, and 80% unaware of the various ARTs available except zidovudine (ZDV). CD4 counts and viral load monitoring facilities are unavailable and counselling concepts alien. In high-prevalence States, 85% of family physicians knew of ELISA and the Western blot tests. Elementary counselling concepts are known but seldom practised. Parameters to initiate therapy, drug

regimens, drug combinations and patient monitoring are poorly known. About 5% of family physicians attempt to use ART, with ZDV+3TC the most frequently used regimen, though monotherapy is also common. Internists, chest physicians and dermatologists/venereologists also practise HIV medicine, but only 60% of them know of HIV/AIDS drugs and regimens. Their knowledge of patient selection criteria and monitoring, including CD4 counts and viral load, is very limited. Over 90% are not familiar with salvage therapy (Vaidya and Deshpande 2002; Brugha 2002). Without more accountability from the private sector and better data from these sites, it is difficult to accurately say what percentage of HIV/AIDS diagnoses, treatment and care is imparted by the private sector and what is the impact. Therefore, capacity building should include strengthening the private sector.

As described previously, NACO has actively promoted community-based organizations and NGOs. NGOs are an integral partner in the scaling up of HIV/AIDS interventions, especially in their role as primary implementers of community-level interventions. The involvement of NGOs strengthens the implementation of the control programme at the grassroots level, improves its reach to marginalized populations and promotes greater community partnership and ownership. This involvement complements the decentralized approach through the State AIDS Control Societies. NGOs are involved in all aspects of HIV/AIDS control, including education, counselling, treatment and social support, especially among high-risk groups and schoolchildren through the School AIDS Education Programme (NACO 2005).

Capacity building should therefore include strengthening the role of NGOs at all levels of the control strategy—in policy development, implementation and evaluation of programmes—so that targeted interventions reach those most in need and greater political commitment and action can be advocated.

Financing challenges

If uncontrolled, the HIV/AIDS epidemic can have serious economic challenges for India, especially at the household level. The need for responsive, effective, and sustained preventive and treatment interventions necessitates commitment of national resources as well as sustained collaboration with international and national partners. Though the cost of treatment has been drastically reduced with the advent of generic drug production in India, the cost of therapy is still too expensive for millions of individuals and thus needs to be funded through public and other sources. As India's commitment to controlling HIV/AIDS and improving the quality of life of those suffering from the disease is growing, so are the challenges to finance the Programme.

Health sector resources

The GOI has expressed its commitment to increase its

spending on social services including health, and to target the protection of the most vulnerable from the burden of expenditure on health. Currently, India spends 6.1% of its GDP on health (US\$ 30 per capita). Of the total amount spent on health, general government expenditure accounts for 21.3% (US\$ 6 per capita), while private spending contributes 78.7%. This is similar to what can be found in many developing countries where private health expenditure constitutes 73% of the total health expenditure (WHO 2004).

States account for 51% of general government spending and fund about 75% of total public health expenditures (World Bank 2001). However, the proportion of health to total expenditure in States through the 1990s actually declined from 6%–7% to just over 5% (Misra *et al.* 2003). Moreover, the level of Central Government spending for the States has not been found to reflect 'differences in health needs, performance of health systems or the amount of fiscal effort put in by the States' (Peters *et al.* 2003).

Of private expenditure, the majority is in the form of regressive out-of-pocket (OOP) spending (98% of private expenditure). This scenario is a familiar one in developing countries. Poor households are the most likely to require basic, essential services and the most likely to be pushed into poverty (or deeper into poverty) by OOP health spending. In 1995–96, nearly 40% of Indians who were hospitalized fell into debt to pay for hospital expenditures and nearly one-quarter fell below the poverty line as a result (Peters *et al.* 2002). A recent World Bank study on India concludes that OOP health expenses may push 2.2% of the population below the poverty line each year (World Bank 2001)

Over the past year, the GOI has made a commitment to increase investments in the health sector. In fact, this commitment has been promoted through the Government's Common Minimum Programme (CMP). The health component of the CMP calls for a doubling of public health spending over the next five years (with a focus on primary health care and communicable diseases), the development of a Universal Health Insurance scheme and increased emphasis on the poorest, least serviced districts. In its most recent budget, the Government has pledged an increase of Rs 10,280 crore for health.

Spending on HIV/AIDS

The NACP, including the National AIDS Control Project Phase II, and related projects by the US Agency for International Development (USAID) and the UK Department for International Development (DFID) require funding of Rs 1425 crore (phased in 1999–2005), of which a majority (Rs 1155 crore) is a combination of World Bank IDA credit (Rs 959 crore) and Government spending (Table 3). The funding that is allocated to each programme component is shown in Table 4. NACO has committed Rs 20 crore for antiretroviral medicines covering 25,000 PLWHA for the fiscal year 2005, in addition to GFATM funds.

Several donors have increased their funding for targeted

Table 3. Funding of National AIDS Control Project Phase II

Funding of the National AIDS Control Project Phase II	Rupees in crore
IDA credit (1999–2004)	1155
USAID assistance for AVERT Project in Maharashtra	166
DFID assistance for sexual health projects for the States of Andhra Pradesh, Gujarat, Kerala and Orissa	104
Total	1425

Source: National AIDS Control Organization 2005g

intervention programmes in India. The Bill and Melinda Gates Foundation has committed US\$ 200 million to the initial 5 years of the Avahan Programme to reduce HIV-1 and STI transmission in selected high-risk populations (primarily female sex workers and their clients, and IUDs) in 65 high-prevalence districts in 4 States. The Programme will also support monitoring through behavioural and biological surveys. The Global Fund has approved US\$ 100 million to India for counselling pregnant women and their families, and treatment to prevent MTCT. Such focused intervention strategies are supported by models that show upto 80% reduction in HIV incidence over the next three decades with consistent, high levels of condom use by CSWs, levels that are achievable with currently available interventions (Nagelkerke *et al.* 2002).

Though beyond the scope of this report, several challenges must be addressed, which have important implications for the sustainability of the scaling up and public financing of ART, even with subsidization of costs by external partners. These challenges include the implications of TRIPS-induced patent protection on the cost of drugs, facilities for testing and counselling, laboratory support for the monitoring of CD4 counts, training of and access to trained health care workers, and sustained strategies for procurement, transportation, and storage of medications. Already several countries such as Brazil have seen a massive increase in demand after the introduction of free or low-cost treatment (Willbond *et al.* 2001).

Overall, the per capita AIDS-related spending in India is lower than other countries that have had success in controlling their epidemic. India spends US\$ 0.17 per person, as compared to US\$ 0.55 in Thailand and US\$ 1.85 in Uganda (*The Economist* 2004). Scaling up of the HIV/AIDS control intervention will require high expenditure and innovative schemes to protect poor families from an even greater financial burden. More information is needed on the HIV/AIDS budget to adequately comment on the efficiency in allocating resources or financing gaps. Also, further directed cost analysis is required to evaluate the financing of the scaling up of HIV/AIDS interventions in relation to the limited financial resources and capacity of overall health systems. However, it is evident that the Government needs a sustained commitment for funding HIV/AIDS control programmes, reflecting recent government pledges to increase overall health sector expenditures.

Table 4. Funding of the National AIDS Control Programme, by component

Component allocation of NACP-II	Rupees in crore
Targeted interventions for groups at high risk	265.6
Preventive interventions for the general community	389.1
Low-cost AIDS care	163.3
Institutional strengthening	286.5
Intersectoral collaboration	50.5

Source: National AIDS Control Organization 2005g

Discussion

There are an estimated 51 lakh PLWHA in India and the number, by all projections, is expected to rapidly increase. The increased burden of this disease on an individual basis will result in untold suffering, death and devastation of families. As witnessed in several sub-Saharan African countries, the HIV/AIDS epidemic in India has the potential of eliminating recent growth and development milestones. According to *Thailand Health Profile 1999–2000*, HIV/AIDS accounted for the most common cause of deaths among all age groups in 2000.

The GOI has necessarily implemented a comprehensive, targeted and ever-mounting HIV/AIDS Programme. The Government's commitment to controlling the disease is evidenced by the ambitious HIV/AIDS targets of its Tenth Five-Year Plan (India Planning Commission 2002). The goals are:

- 80% coverage of high-risk groups through targeted interventions
- 90% coverage of schools and colleges through education programmes
- 80% awareness among the general population in rural areas
- reducing transmission through blood to less than 1%
- establishing at least one VCTC in every district
- scaling up of PMTCT activities up to the district level
- achieving zero-level increase of HIV/AIDS by 2007.

These goals are to be viewed in the light of the launching of the National Rural Health Mission (NRHM), which has the ingredients to facilitate their successful fulfilment. Further, each of these challenges such as surveillance strengthening, especially in rural areas and the private sector, scaling up of public resources, infrastructure and trained human resources, increased involvement of NGOs and partnerships with the private sector can each be handled by the various components of the Programme. The strategies under the NRHM aim at decentralization of the Programme at the district level, especially in the Empowered Action Group (EAG) States, which are also the States vulnerable to HIV/AIDS—Uttar Pradesh, Bihar, Madhya Pradesh, Chhattisgarh, Jharkhand, Rajasthan, Himachal Pradesh, and Jammu and Kashmir. The list also includes the north-eastern States where HIV prevalence is either very high or on the rise.

The key components for operationalization envisaged under the Programme facilitate better implementation of prevention and control strategies for HIV/AIDS. There is provision in the Programme for a cadre of accredited social health activists (ASHA) in each village. Her job includes generation of awareness on HIV/AIDS and reproductive tract infection (RTI)/STI. Incidentally, the States chosen for focused implementation of the Programme are the very States where the BSS has noted that awareness among rural women is as low as 20%–27%. Under the Tenth Plan, NACO has fixed the target of achieving 80% awareness among the rural population. ASHA would act as agents for creating awareness at the grassroots level, and for bringing about a behavioural change for better reproductive health, including HIV/AIDS. They would also facilitate the detection of high-risk groups and behaviour in the local area, so that timely action can be taken. Besides, ASHA will offer counselling services, provide links with the primary health care system, private practitioners and others for meeting the needs of the beneficiaries. She will also be a source of condoms and other mother- and child-related services, the necessity for which would be acute, as more women and children are drawn into the HIV/AIDS epidemic in rural areas. She is likely to succeed since her earning is performance-linked; remuneration is to be given by the system for the work done.

Strengthening of the more than two thousand community health centres in the country to the level of Indian Public Health standards would eventually support the opening of VCTC, provision of PPTCT services and Directly Observed Treatment, Short-course (DOTS) under one roof and closer to the client in rural areas. The strengthening of district- and *taluk*-level hospitals can result in their acting as centres for dispensing and monitoring ART in the local area, thus solving issues regarding adherence to and monitoring of ART. Accredited private sector organizations with appropriate regulatory mechanisms, as envisaged in the NRHM, would pave the way to also utilize them for providing drugs and monitoring patients on ART in rural areas under the '3 by 5' initiative undertaken by NACO, whereby 1 lakh AIDS cases would be given ART by 2005 (NACO/MoHFW 2004).

Capacity building of programme managers to provide effective technical and managerial support at all levels from the national to the district level and below should provide the much-needed support to the Panchayat in the delivery of health care and for the initiation of District Health Mission and Village Health Committees. This would result in the formulation and implementation of area prevention strategies in localized pockets of high prevalence, and help to stall the progress of the epidemic.

Since the social and economic ramifications of HIV/AIDS are felt more than the health aspect, those affected would benefit immensely from health insurance schemes mooted for the rural poor. With the majority of the HIV-positive being from rural areas, and lower socioeconomic strata (NIHFW/NACO 2003), the introduction of such

schemes would prevent families from being driven further into poverty.

Supportive policy reforms in the areas of Public Health Management, medical education, integrating Indian Systems of Medicine (ISM) into the mainstream and regulation of health providers can all be spheres for spearheading HIV/AIDS/STI programme components; e.g. in medical education, essential training of doctors in diagnosis, and in the management of ART among adults and children. It also provides an opportunity for initiating vocational courses on community-based counselling and providing care and support at home and in hospitals.

Although there is convergence of funds at all levels for the major health programmes under the NRHM, the funds for NACO would remain separate for all activities except for services integrated with the Reproductive and Child Health (RCH) Programme.

The integration of services for HIV/AIDS below the district level with the RCH and the common pooling of funds at the district level enable local authorities to spend funds according to the disease profile and other health needs of the community in the area.

Conclusion

In conclusion, it may be stated that though challenges exist, modalities and opportunities for handling them successfully are also available, and the formation of programme management units at the district level under the NRHM ensure that the pitfalls encountered earlier in the implementation of the HIV/AIDS Programme in India are prevented in the future.

The aim of this report has been to provide an overview of the HIV/AIDS epidemic in India, the direction of control efforts, relevant experiences from other countries, and to highlight some of the systemic constraints to scale-up that require immediate attention. It also discusses the potential of the newly introduced health programme, and the NRHM implemented from April 2005 (MoHFW 2005), which can help boost the implementation of the HIV/AIDS Programme in many spheres.

Over the past several years, India has shown a true commitment to improving and investing more in health and specifically for the control of HIV/AIDS. India's epidemic is multiple and diverse, and so the intervention strategies will have to be adapted to the diverse risk and behavioral characteristics. Consistent and regular information about the epidemic is needed, which well represents local data and high-risk groups. It is clear from experiences from other countries and the history of the Indian epidemic so far that to reach the MDG target of stopping the spread of HIV/AIDS by 2015 will require expansion of targeted interventions for high-risk populations, strengthening of the health system at large, improving partnerships with the private sector and civil society, and the backing of these activities with sufficient and sustained funding.

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