Reducing the Risk of HIV/AIDS among Female Sex Workers in India

**PROJECT DATA**

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**ORGANIZATION TYPE:** Multilateral

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**DEVELOPMENT CHALLENGE:** Infectious disease spread

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This case study was prepared by Sameh El-Saharty, senior health policy specialist, and Bathula Amith Nagaraj, operations officer, Health, Nutrition, and Population Global Practice, the World Bank. The case study benefited from comments received from Kees Kostermans, lead health specialist, and Shiyong Wang, senior health specialist, the World Bank. The case study benefited from inputs from Ranjan Verma, management consultant; and P. C. Kasinath, public health consultant, the World Bank.

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The effects of the HIV/AIDS epidemic have been felt globally. For individuals, the consequences can be devastating: they can include loss of income, lower savings rates, and high morbidity and mortality. In India, HIV/AIDS was first detected in 1986, when Dr. Jacob John and Dr. Suniti Solomon identified 10 HIV-positive samples in a group of 102 female sex workers from Chennai. Soon, surveys from many urban centers among groups such as blood donors, female sex workers, and injecting drug users revealed that the HIV infection was established among these high-risk groups. HIV was subsequently found to be widespread in the country but, at that time, still limited to those with high-risk behavior or to recipients of infected blood.

The government of India was faced with the emerging consequences of the epidemic. It responded by developing and implementing a national program for the prevention and treatment of HIV/AIDS: the National AIDS Control Program (NACP). NACP ran in three phases during 1986–2012 and involved implementing a package of key services of targeted interventions intended to control the epidemic by focusing efforts on specific high-risk groups, including female sex workers. The package pursued four strategies: outreach, condom promotion and distribution, clinical services, and community mobilization and social support services.

Executive Summary
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The pressing delivery challenge facing the government was how to reach the population of female sex workers and adapt these interventions to their specific needs.

During the time that the government was implementing these targeted interventions, HIV/AIDS declined among the targeted population of female sex workers. A decline in infection among the general population was also observed. The estimated annual new HIV infections in India among the adult population were reduced by 57 percent from 274,000 in 2000 to 116,000 cases in 2011. In the high-prevalence states, a reduction of 76 percent was noted during the same period. Prevalence of HIV/AIDS among female sex workers declined from 15 percent to 5 percent in Karnataka and from 20 percent to 7 percent in Andhra Pradesh from 2003 to 2011.

This case study focuses on the delivery of HIV/AIDS prevention and treatment services in two states: Andhra Pradesh (AP) and Karnataka. The case study is based on a literature review, program documents, primary data collection, structured interviews, and field visits conducted in July 2013 and May 2014 to the National AIDS Control Organization and the states of Andhra Pradesh and Karnataka (for a full list of interviewees, see appendix A). It describes the implementation process and the adaptation of targeted interventions for HIV/AIDS prevention to a specific population in response to changing contextual and programmatic factors.

The key question addressed here is, How were the targeted interventions implemented and adapted to the needs of female sex workers? A better understanding of service delivery sheds light on several relevant factors:

- Implementation seemed to work largely because the targeted interventions followed a broad path as well as an adaptive approach, including modifications to the outreach and condom promotion strategies; expansions of the clinical services for sexually transmitted infections and HIV testing from stand-alone clinics to government facilities; and decentralization of program implementation to the district level.
- The programs put female sex workers, as one of the high-risk groups, at the center. This meant carrying out rigorous needs assessments during program design. A major advance occurred with the introduction of peer educators, as well as their training and orientation, who then became an indispensable means of reaching out and communicating with the female sex workers.
- Coordination and alignment of services were essential. While initially HIV/AIDS and other sexually transmitted infections were treated at separate locations, these services were integrated over time. HIV services for female sex workers were thus incorporated into the public health system, and the health care providers from government facilities were trained for the HIV program. See appendix B for full list of institutions engaged in providing HIV/AIDS services.
- Relying on a broad variety of local, state, and national sources of data, systems intelligence was used for planning and implementation of targeted interventions. The different sources of data were regularly triangulated to ensure their validity before decision making and strategy refinement.

Ultimately this is a case about improving citizen outcomes. The impact of the program was measured by two indicators: incidence (new infections) and prevalence (old and new infections). In new HIV infections (incidence), the two states saw declines among adults from 2007 to 2011 of 25 percent (Andhra Pradesh) and 19 percent (Karnataka). In HIV prevalence among adults, Andhra Pradesh saw a decline from 0.97 percent (489,063 people) to 0.75 percent (419,180 people) between 2007 and 2011 and Karnataka saw a decline in prevalence from 0.67 percent (239,894 people) to 0.52 percent (209,368 people) over the period. After 2010, the epidemic generally stabilized in the two states. The National AIDS Control Program IV is now under way; remaining service delivery challenges include the need to scale up targeted interventions to other states, to improve the quality of clinical services, to foster the evolution of the community groups, and to continue to streamline the work of government departments. This story of progress continues today, with lessons for other countries facing the HIV/AIDS epidemic in Asia and around the world.

Introduction

Ashi’s Story

“We thank HIV/AIDS!” These were Ashi’s words ‘thanking’ the disease that then resulted in the implementation of the HIV/AIDS prevention program. Ashi shared her story with a team implementing the program during their visit to a community-based organization (CBO) on the outskirts of Hyderabad, the capital city of Andhra Pradesh. Ashi, a 34-year-old woman, works as a peer educator, providing services related to HIV/AIDS prevention and treatment to a group of female sex workers in the surrounding community.
Ashi, who was herself a sex worker, came from a nearby village and had a difficult life. Orphaned at seven, she was abused as a child and raped as a teenager. Escaping with her baby girl to Hyderabad, she hoped to find work and earn some money, but, as she had no other means of survival, she fell into the hands of a man who forced her into sex work. Abused by clients, harassed by pimps, arrested by police, and stigmatized by the community, Ashi had little hope.

Eventually, she became involved with the government’s HIV/AIDS program, which was focused on prevention and on encouraging peer educators to create community-based organizations to help reduce the vulnerability of female sex workers. She proudly showed us her government identification card, the balance of her savings on her mobile phone, and the pictures of her little girl at school. How did this transformation come about?

The Development Challenge: HIV/AIDS in India

The human immunodeficiency virus (HIV) was detected in India in 1986, when Dr. Jacob John and Dr. Suniti Solomon identified 10 HIV-positive samples out of a group of 102 female sex workers from Chennai. Soon, surveys from many urban centers among groups such as blood donors, sex workers, and injecting drug users revealed that the infection was established among these high-risk groups. HIV was subsequently found to be widespread in the country but, at that time, still limited to those with high-risk behavior or to recipients of infected blood. HIV had not yet spread to the general population. Across the country, the main mode of transmission was heterosexual sex, although injecting drug use was predominantly responsible for the epidemic in the northeast.

The risk of HIV/AIDS to development in India is significant because of the scale and development status of the population. India is the second-most-populous country in the world. With about 1.21 billion people, it has almost 17.5 percent of the world’s population.

The effects of the HIV/AIDS epidemic have been felt globally. On individuals, the consequences can be devastating: they can include loss of income, lower savings rates, and high morbidity and mortality.1

The Delivery Challenge: Providing Female Sex Workers with the Services to Curb HIV/AIDS

Faced with the emerging consequences of the HIV/AIDS epidemic, the government responded by developing and implementing the National AIDS Control Program (NACP) for the prevention and treatment of the disease. NACP ran in three phases during 1986–2012 and the fourth phase is under implementation (2012–2017). The program involved the implementation of a package of targeted interventions for specific high-risk groups, including female sex workers, males having sex with males, and injecting drug users. The government’s pressing delivery challenge was how to identify and reach female sex workers (and other high-risk groups) and provide them with the services that would prevent the spread of the HIV infection.

The government implemented these targeted interventions in a number of high-prevalence states. During the implementation period, HIV/AIDS declined among both the targeted population of female sex workers and the general population. The estimated annual number of new HIV infections in the adult population was reduced by 57 percent from 274,000 in 2000 to 116,000 in 2011. In the high-prevalence states, a reduction of 76 percent occurred during the same period. Between 2007 and 2011 alone new HIV infections were reduced from 22,063 to 16,603 in AP and from 11,126 to 9,024 in Karnataka. In addition, HIV/AIDS prevalence among female sex workers declined from 20 percent to 7 percent in Andhra Pradesh and from 15 percent to 5 percent in Karnataka between 2003 and 2011.

This case study traces the implementation of the targeted interventions for female sex workers in two states, Andhra Pradesh and Karnataka, and is guided by the following three questions:

• How were the targeted interventions adapted in response to the implementation challenges?
• How did systems intelligence improve the targeting of the interventions?
• How did the targeted interventions add value and incorporate the perspectives and needs of the female sex workers?

1 UNAIDS’ criteria are the following: a generalized, high-prevalence epidemic is above 5 percent in high-risk groups and above 1 percent in antenatal care attendees; a moderate, concentrated epidemic is above 5 percent in high-risk groups and below 1 percent in antenatal care attendees.
Contextual Conditions

The Policy Context

Addressing the prevention and treatment of HIV/AIDS among female sex workers in India took place in the wider context of the government’s national response to the epidemic. Table 1 provides an overview of the evolution of that response.

In 1986, in response to the detection of HIV/AIDS in India, the government set up an AIDS task force under the Indian Council of Medical Research. It also established a National AIDS Committee chaired by the secretary of the Department of Health and Family Welfare. Over the next four years, the program’s main activity was screening the “sexually promiscuous population” and blood donors and carrying out some educational programs. In 1989, a medium-term plan for AIDS control was developed with the support of the World Health Organization. It focused only on Delhi, Maharashtra, Manipur, Tamil Nadu, and West Bengal, which had surveillance data to indicate the presence of HIV infection among high-risk groups. “State AIDS cells” were set up in these states and began implementing awareness initiatives, although the rest of the country saw little activity. State health departments were expected to carry out surveillance and prevention activities under the coordination of the director general of health services.

In 1991, several international donors expressed willingness to support a National AIDS Control Program (NACP). Accordingly, the Strategic Plan for Prevention and Control of AIDS in India was developed for 1992–97, later described as the first phase of the NACP (or NACP I). This was India’s first effort to develop a national public health program for HIV/AIDS prevention and control. The aims of the program were to prevent HIV transmission, decrease the morbidity and mortality associated with HIV infection, and minimize the socioeconomic impact of HIV infection. NACP I sought to provide certain services: education campaigns, protection of the blood supply, condom promotion, a system to monitor the prevalence of HIV, treatment of sexually transmitted infections, and limited treatment for AIDS-related conditions. Two components were added later: targeted interventions and multisector collaboration.

The NACP is managed by the National AIDS Control Organization (NACO) in the Department for AIDS Control at the central level, the State AIDS-Control Societies at the state level, and the District AIDS Prevention and Control Units (DAPCU) at the district level. Figure 1 shows the institutional framework, including the management and technical structures of NACP III. Annex II provides details of the institutional bodies responsible for managing HIV/AIDS.

The government launched the NACP II in November 1999. NACP II shifted the focus from the more diffuse goal

<table>
<thead>
<tr>
<th>Year</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>The presence of HIV infection was first detected in India.</td>
</tr>
<tr>
<td>1986</td>
<td>The AIDS Task Force and the National AIDS Committee were established.</td>
</tr>
<tr>
<td>1987</td>
<td>The National AIDS Control Program was initiated.</td>
</tr>
<tr>
<td>1989</td>
<td>A medium-term plan for AIDS control was developed.</td>
</tr>
<tr>
<td>1991</td>
<td>Several international donors expressed their willingness to support the NACP.</td>
</tr>
<tr>
<td>1992–97</td>
<td>The first phase of the NACP was developed and implemented, and the NACO was established.</td>
</tr>
<tr>
<td>1998</td>
<td>A national monitoring system was introduced.</td>
</tr>
<tr>
<td>1999</td>
<td>NACP II was launched.</td>
</tr>
<tr>
<td>1999</td>
<td>The State Management Agency was set up in Andhra Pradesh by Hindustan Latex Limited.</td>
</tr>
<tr>
<td>2001</td>
<td>Behavior sentinel surveillance was first conducted.</td>
</tr>
<tr>
<td>2002</td>
<td>The Prevention of Parent-to-Child Transmission of HIV/AIDS program was started.</td>
</tr>
<tr>
<td>2004</td>
<td>The antiretroviral therapy program began.</td>
</tr>
<tr>
<td>2007</td>
<td>NACO developed and introduced standard operational guidelines.</td>
</tr>
<tr>
<td>2007–12</td>
<td>NACP III was implemented.</td>
</tr>
</tbody>
</table>

Note: NACO = National AIDS Control Organization; NACP = National AIDS Control Program.
Figure 1  Institutional Framework for the Delivery of the National AIDS Control Program in India

Note: TSU = Technical Support Unit; NGO = nongovernmental organization; SACS = State AIDS-Control Society; NBTC = National Blood Transfusion Council; IRCS = Indian Red Cross Society; SBTC = State Blood Transfusion Council; NHM = National Health Mission; NACP = National AIDS Control Program; NACO = National AIDS Control Organization.
of generating awareness on HIV prevention to targeted interventions. This change was informed by several pilot projects for education and condom promotion among female sex workers in several southern states, which indicated that targeted HIV prevention interventions may have helped stabilize the rates of HIV infection among sex workers.

The Introduction of Targeted Interventions in India

In India, the package of targeted interventions was designed and gradually implemented to address both proximate and distal determinants of HIV risks, that is, both immediate personal factors and more contextual ones. Proximate determinants of risk include the presence of sexually transmitted infections, condom use, type and frequency of sexual activity, and type of partner. Distal determinants include stigma, violence, the legal environment, medical infrastructure, mobility and migration, and gender roles (Gates Foundation 2008).

The package of targeted interventions was designed to address the determinants of HIV risks by pursuing the four strategies described in box 1: outreach, condom promotion and distribution, clinical services (to address the three proximal risks), and counselling and testing (to partially address the distal risks).

These targeted interventions were designed to change the behavior of populations at risk of contracting the infection and spreading it to the general population. NACP II set up more than 1,000 targeted interventions, implemented by nongovernmental organizations (NGOs), for female sex workers, men having sex with men, injecting drug users, street children, prisoners, truck drivers, and migrant laborers.

The State AIDS-Control Societies of all 32 states and union territories were registered under the Charitable Societies Act for greater flexibility and more effective program management. NACP II also had as its stated objectives the provision of decentralized services and the strengthening of the system’s long-term capacity to respond to HIV.

During NACP III, the program focus shifted from simply raising awareness to behavioral change with greater involvement of networks of people living with HIV, community groups, and civil society organizations. NACP III developed guidelines for each of the program components with scope for innovation and adaptation of guidelines to local contexts.

NACP III scaled up the targeted interventions for HIV prevention among the high-risk groups and expanded the surveillance system, generating district-level data. Informed by this evidence, the program identified the nature of the heterogeneous epidemic and then prioritized the states and districts most affected by HIV as well as specific populations from the high-risk groups. It also emphasized institutional strengthening and rigorous monitoring and evaluation systems. NACP III implemented hundreds of targeted interventions for HIV/AIDS prevention among high-risk groups, including female sex workers, men having sex with men, and injecting drug users.

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Box 1 Targeted Interventions

Support for targeted interventions is derived from “standard core group theory,” which is based on sexual networks in African and Western societies (Moses et al. 2006). Successful AIDS control efforts suggest that the best way to reduce HIV transmission is to target interventions at groups most vulnerable to HIV. This approach is preferred for groups that are more difficult to identify and approach, such as clients of female sex workers. In India, focused interventions started before 1995 in cities like Chennai, Mumbai, and Kolkata—the epicenters of the HIV epidemic (Basu et al. 2004; Steinbrook 2008; Dandona et al. 2005). Since then, the concept of focused interventions has been gradually adopted, culminating in 1999 in the interventions, targeted particularly to female sex workers, being implemented in India’s southern states. Typically, the package of targeted interventions is designed to pursue the following four strategies: an outreach strategy to identify, educate, mobilize, and bring female sex workers and other high-risk groups into the program fold and create awareness of sexual health; a condom promotion and distribution strategy to encourage correct use of condoms to reduce vulnerability; a strategy to link female sex workers and other high-risk groups with clinical services and encourage referral of those with symptoms of sexually transmitted infections to testing clinics; and a strategy to mobilize female sex workers and other high-risk groups to organize themselves into community-based organizations and self-help groups to provide social support services.
The evolution and scaling up of the targeted interventions, especially in the southern states, were implemented by more than 1,200 nongovernmental or community-based organizations for female sex workers, other high-risk groups, and the so-called bridge populations, mainly truck drivers and migrants. The number of targeted interventions implemented increased significantly over the duration of the NACP phases. For example, in Andhra Pradesh interventions increased from 18 to 132 between 2007 and 2012 (figure 2).

**Female Sex Workers in Andhra Pradesh and Karnataka**

Andhra Pradesh and Karnataka, along with Tamil Nadu, Maharashtra, Goa, Manipur, and Nagaland, were high-prevalence states and given priority during NACP I and II. In 2007, with the scaling up of HIV/AIDS interventions in India under NACP III, most other states came under the program. As a result, there were two categories of states: those with a combination of donor- and government-supported HIV/AIDS interventions at an advanced stage and those that started their interventions during NACP III.

Andhra Pradesh and Karnataka were selected as the focus of this case study in consultation with NACO, because they represent the epicenter of the HIV/AIDS epidemic in India. In addition, they were early adopters of the targeted interventions and hence have a mature program that offers major opportunities to learn lessons on service delivery.

At the beginning of the program, the prevalence of HIV among female sex workers was not known; the program identified only 10–20 percent of them. The first surveillance study showed HIV prevalence of 10 percent among these sex workers across India. The prevalence in Andhra Pradesh and Karnataka was 20 percent and 15 percent, respectively. At this time, the target population of female sex workers had many problems. They were not organized in groups, violence against them by police and family members was very high, and they faced extreme stigma and discrimination.

**Tracing the Implementation Process**

This section provides an overview of the implementation of each strategy in the package of targeted interventions, which are summarized in table 2.

**Outreach**

The objectives of the outreach strategy were to bring female sex workers and other high-risk groups into the program, create awareness of sexual health, promote condom use to reduce vulnerability, and encourage referral of those female sex workers with suspected symptoms of sexually transmitted infections to clinics in their area as well as increasing the uptake of services. NACO knew that outreach was essential to identifying female sex workers and addressing their needs, but how was the outreach strategy to be implemented?

**Outreach Workers**

At first, the State AIDS-Control Societies contracted NGOs to recruit outreach workers to reach out to female sex workers. It soon became clear that it was difficult for these workers to identify all the locations where the sex workers were and that there was no safe space for the outreach workers to interact with them. In response to this service delivery challenge, in 2004 some NGOs, funded by the Bill and Melinda Gates Foundation, started creating space in their project offices, which served as drop-in centers for female sex workers where they could receive counseling on safe sexual health practices. The centers were safe spaces for the sex workers and helped the outreach workers identify and interact with more of these women.

**Peer Educators**

Faced with the challenge that outreach workers were not fully aware of sex work practices, in 2001 some NGOs started to recruit female sex workers themselves.
as peer educators. They believed that this approach would improve outreach, increase uptake of services, and encourage the sex workers to visit the drop-in centers regularly. Recruiting sex workers as voluntary peer educators to communicate directly with their peers helped increase outreach coverage. Seeing the success of this approach, NACO and the State AIDS-Control Societies developed a structured peer education module in 2002 to standardize training and improve outreach and community mobilization. As demand increased for program activities and peer educators took on increased responsibility and time commitments, NGOs met difficulties in recruiting a sufficient number of volunteer peer educators, who faced the opportunity cost of lost income. In 2003, the NGOs, funded by donors such as the Department for International Development (DFID) in the United Kingdom and the Gates Foundation, decided to address this problem by establishing a compensation system. In addition to increasing the motivation of peer educators, it ensured better accountability and control of intervention activities.

The NGOs initially recruited experienced peer educators, who tended to be older. It was then noted that most of the female sex workers they were engaging were from the older age groups and that few young sex workers were being approached. NACO decided to introduce age-wise selection of peer educators to increase outreach to younger women. This step increased the sharing of information among same-age peers and improved the understanding of the available services relating to both sexual and nonsexual issues, such as stigma, harassment, and violence.

### Mapping of Female Sex Workers

In 2003, NACO decided to complete the first official mapping of high-risk groups (see box 2 and figure 3). This exercise helped provide reliable estimates of the size of these groups at the intervention sites and set targets for outreach and coverage at the district level rather than at the state level. To further refine NACO’s coverage strategy, peer educators and the female sex worker community were supported in carrying out a participatory assessment at the intervention sites. The aim was to understand the size and distribution of the target population and set realistic goals for outreach activities.

### Table 2: Summary of the Evolution of Each Strategy in the Package of Targeted Interventions

<table>
<thead>
<tr>
<th>Year</th>
<th>Outreach</th>
<th>Condom Promotion and Distribution</th>
<th>Clinical Services</th>
<th>Community Mobilization and Social Support Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-1999</td>
<td>Outreach workers as implementers</td>
<td>Direct condom distribution</td>
<td>Separate STI and RTI clinics</td>
<td>Needs assessment; participatory site assessment</td>
</tr>
<tr>
<td>1999</td>
<td>Peer educators as implementers</td>
<td>Private service providers for STI referral; static STI clinics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Peer education module</td>
<td>Preferred provider model</td>
<td>Designated STI and RTI clinics</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>Compensation for peer educators; theme-specific materials; composite interventions in Andhra Pradesh</td>
<td>Condom distribution outlets; female condoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>Female sex worker mapping</td>
<td>Social marketing</td>
<td>Routine medical checkups</td>
<td>CBO federation and capacity building</td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td>Female sex worker cooperatives</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td>Asha campaign</td>
<td></td>
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<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>Peer educators report on own work</td>
<td></td>
<td>Be Bold campaign</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>Microplanning</td>
<td>Condom gap analysis</td>
<td>Color-coded STI kits</td>
<td>Mee Neestam campaign</td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
<td>Shubham campaign</td>
</tr>
</tbody>
</table>

**Note:** STI = sexually transmitted infection; RTI = reproductive tract infection; CBO = community-based organization; TI = targeted intervention.

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2 Hotspots were defined as areas with a concentration of female sex workers and entertainment venues where commercial sex is either solicited or sold.
Box 2 Usefulness of Mapping and Participatory Site Assessment for Scaling Up

In Andhra Pradesh, the NGOs decided to do a mapping process to see whether they were reaching all high-risk groups. The mapping covered all 210 statutory towns, which led to the identification of about 40 new sites, accounting for 30 percent of the groups that had never been reached by interventions. The discovery of these hidden pockets was an eye-opener for the state program teams and NGOs. They designed 34 additional interventions in the state to reach these sites (six were not considered suitable for interventions). Following the mapping, the participatory site assessment informed the program of risk and vulnerability among the female sex workers and revealed information about their mobility and networks with other groups in the districts and beyond.

For example, Integrated Rural Development Services, an NGO in Hyderabad, changed the time of its outreach services at selected sites, making it later (7–9 p.m.), as it found that that was when the sex workers would be most available while soliciting clients at hotspots.\(^3\)

\(^3\) Coverage is calculated based on the actual number of female sex workers reached compared to the number of female sex workers identified by the mapping.
Communications for Behavioral Change
In 2002, some NGOs, funded by the Gates Foundation, wanted to improve interpersonal communication between peer educators and the female sex workers. They introduced theme-specific materials, including flip charts and story lines highlighting some of the vulnerabilities of female sex workers and showing safe sexual health practices. When the NGOs realized that many of these women were illiterate, they made the materials mainly pictorial. These materials improved communication and helped motivate more of them to come forward with symptoms of infection and seek treatment services. Seeing the positive effects of these materials, NACO introduced a special provision and budget for NGOs across all states to develop materials for local needs.

Composite Interventions
A major shift in outreach strategy was seen in Andhra Pradesh in 2002, when composite interventions were introduced. This meant that interventions covering more than one high-risk group (female sex workers and men having sex with men, for example) were introduced in rural and peri-urban areas, when numbers were adequate to initiate targeted interventions for only one high-risk group. Composite interventions were launched by the Gates Foundation and subsequently adopted by NACO for implementation across the country. This helped increase the effectiveness of the targeted interventions by reducing duplication of the effort of NGOs working with different high-risk groups in the same area. It also resulted in better accountability and efficiency of the implementing NGOs.

Microplanning
Microplanning is the system peers use for recording and analyzing risk during outreach (see box 3). The peers employ a low-literate management tool to collect data, which they use to directly plan outreach based on the individual needs of the population they are serving. A system of sexual network analysis was introduced by some of the NGOs to better understand risk. They then adopted it to improve coverage of outreach services to female sex workers.

On this basis, peer educators were assigned a geographic area and target group. Each peer educator is given responsibility for covering and monitoring up to 60 female sex workers in a defined area and for gathering detailed information from commercial sex hotspots. This is followed by systematic outreach to the female sex workers in those hotspots. Each peer educator works for about four hours per day and maintains documents related to the services provided. Mapping and microplanning significantly increased the outreach coverage in both states by 2012 (see NACO 2012a) (figures 4 and 5).

Peer Educators’ Self-Reporting
During NACP I and II, it was customary for outreach workers to report back on the work of peer educators. However, program managers at the State AIDS-Control Societies suggested a change to empower peer educators. From 2007 on, peer educators reported on their own work and compiled figures for their project managers for inclusion in regular progress reports. This helped build the capacity of the peer educators. The detailed day-to-day monitoring system identified many HIV-positive sexually active female sex workers. Seeing the figures, the NGOs and CBOs realized the need to provide additional services. From 2008 on, in conjunction with the sex workers, they began developing new services, including referrals and links to antiretroviral services, continued promotion of safe sex

Box 3 Advantages of Microplanning for High-Risk Groups
Peer educators find microplanning helpful in risk-based planning. Based on indicators, including the age of a sex worker, number of commercial clients, condom use, harassment incidents, symptoms of sexually transmitted diseases, previous visits to a clinic, and due date to a clinic, the sex workers are placed in high-, medium-, and low-risk categories. This information is then used to prepare an outreach plan for the week. This process helps maximize the productivity of outreach activities, channeling them to where they are most needed.

Before introducing microplanning, if you asked a peer educator, “What is the risk profile of high-risk groups at the hotspot where you work?” the question would panic and embarrass her. Today, using the microplanning method she takes just seven minutes to come up with the answer. “Three years back, it would have taken me at least four hours to find the records and another day to do the math,” she says with a smile.
Reducing the Risk of HIV/AIDS among Female Sex Workers in India

Figure 4 Trend of Coverage of Outreach Services in Andhra Pradesh, and Karnataka 2007–14


Andhra Pradesh
a. The dip in coverage around 2008 was due to a transition between NACP I and II, which led to some new NGO contracting.
b. The mapping and microplanning for high-risk groups took place around December 2007.
c. The realignment of the targeted interventions took place around January 2010.

Karnataka
a. The dip in coverage around 2008 was due to a transition between NACP I and II, which led to some new NGO contracting.
b. The mapping and microplanning for high-risk groups took place around June 2009.
c. The NGO evaluation and recontracting took place around August 2009.
d. The NGO transition took place around June 2012.

“Now I know how many female sex workers I am reaching and the quantity of services made available. A sense of responsibility and an opportunity for reviewing my own work were possible through this.”

—Peer educator at Integrated Rural Development Services, Hyderabad

behavior, and provision of other social supports such as entitlements.

Condom Promotion and Distribution

The aim of condom promotion and distribution is to reduce the transmission of HIV by increasing the number of protected sexual acts.

Direct Condom Distribution

Once demand for condoms had been created by educating at-risk populations, the next challenge was ensuring that they were easily available and promoted in ways that addressed barriers to use. Such barriers—access to and availability of condoms and knowledge level—were reported by peer educators who interacted regularly with these high-risk groups. NACO and the State AIDS-Control Societies provided the condoms to peer educators and outreach workers who distributed them to high-risk groups, using pictorial materials that promoted the correct use of the condoms.

Condom Distribution Outlets

As well as direct distribution, condom outlets (staffed and unstaffed) were set up to increase condom availability for clients of sex workers. In Andhra Pradesh, the government
contracted a private social marketing agency to work with NGOs to map the most prominent locations for these outlets. In 2002, condom vending machines were also installed in busy locations such as bus stands, railway stations, and major public gathering places.

**Female Condoms**
Guided by a feasibility study, NACO introduced female condoms in selected states, including Andhra Pradesh and Karnataka in 2002. This type of condom was viewed as a complementary option rather than a replacement for the male condom. The female condom helped empower the female sex workers and reduce their vulnerability. The pilot initiative in these two states guided NACO in developing suitable information, education, and communication for female condoms and laid the foundation for scaling up to other states.

"Initially I was hesitant to use the female condom, but now I am in complete control. When clients are reluctant to use a condom, I manage and put on a female condom. There is no alternative for clients except accepting sex with a condom."

—Female sex worker, Integrated Rural Development Society, Hyderabad

**Condoms and Social Marketing**
Social marketing was introduced globally in the 1970s and had been used in India in the 1980s in the family planning program. NACO introduced the social marketing of condoms in 2003 to address the myths and misconceptions associated with free condoms (the freely distributed Nirodh brand) and a continuing reluctance to use them. To make them more attractive to clients, NGOs procured multiple brands and flavored condoms and made them available through social marketing depots (paan shops, small shops, and the like) and through outreach workers and peer educators.

To incentivize NGOs to engage with social marketing, NACO provided them with a revolving fund (Rs 20,000) for the social marketing of condoms. The profit from social marketing was proportionately distributed among the peer educators. Apart from NGO-led social marketing, state-level social marketing campaigns were carried out by the State AIDS-Control Societies with the support of social marketing agencies.

**Condom Gap Analysis**
Reports from peer educators showed that there were stockouts at various sites while there was excess in others.
In 2009, NACO introduced gap analysis for condoms to address this problem and specifically to assess the condom requirement at any given site (see box 4). It was not sufficient to have data that was averaged or aggregated at the state level. Based on condom gap analysis, female sex workers were classified as high, medium, and low volume (by clients per day), and condom distribution was planned accordingly. Gap analysis thus helped optimize the use of resources and plan for effective condom distribution against estimated demand, which rose from about 40 percent in 2009 to 96 percent in 2011 in Andhra Pradesh and to a lesser extent in Karnataka (figure 6).

**Box 4 Condom Gap Analysis: How It Helped Scaling Up in Guntur District in Andhra Pradesh**

What was the average number of condoms required for the female sex workers at the railway station, Gandhi Park, and bus stand hotspots in Guntur between April and July 2010?

This kind of question would usually have taken a few hours to answer, but the peer educator from Guntur district was able to address it immediately. She used the following formula to calculate condom requirements for a sex worker at a given site: $D = (S \times I \times N) – C$, where

- $D$ is the condom requirement
- $S$ is the number of female sex workers operating in the area
- $I$ is the number of sex acts per day
- $N$ is the number of days that a sex worker is “active” in a given month
- $C$ is the number of condoms brought by clients from other sources

Peer educators carry out a quarterly condom gap analysis in the intervention areas, which helps them plan the services they have to deliver and rationalize the supply chain management issues at intervention sites. Gap analysis has also helped ensure optimum use of NGO, district, and state resources. Now there is a realistic estimate for condom requirements in the intervention areas.

**Figure 6 Attendance of Female Sex Workers at Clinics for Sexually Transmitted Infections in Andhra Pradesh and Karnataka, 2007–14**

In early 2012, there was a drop in condom distribution (as the program was transitioning to its fourth phase) but began to recover by the end of the year. In turn, the increase in condom distribution ensured availability of adequate numbers and their consistent use.

**Clinical Services**

This strategy is aimed at linking up two types of clinical services: the screening, diagnosis, and treatment of sexually transmitted and reproductive tract infections; and the provision of voluntary counseling and testing for HIV/AIDS.

**Clinics for Sexually Transmitted and Reproductive Tract Infections**

After 1999, NGOs adopted education and treatment for sexually transmitted and reproductive tract infections in intervention areas with female sex workers, which was a logical move in response to emerging demand. Outreach workers educated these women on signs and symptoms of sexually transmitted infections and then encouraged them to seek treatment.

**Referrals**

Initially, government-supported clinics for sexually transmitted diseases were available only in urban areas, and the test results took 48 hours to process. To address this deficiency, in 2000 NGOs identified private service providers in the intervention areas and brought them on board for referrals. Funded by the Gates Foundation and DFID, the NGOs paid a nominal fee to the private service providers, and the cost of medicine was picked up directly by the NACP. Women with symptoms of sexually transmitted disease were sent to these doctors through an established system of referrals. Under the systematic referral system, high-risk groups were sent for screening and treatment to medical doctors who were training in the management of sexually transmitted disease. To ensure quality, all service providers were supplied with syndromic management guidelines (standard WHO guidelines) for treatment of sexually transmitted diseases and training.

**Static Clinics**

To provide treatment services to sex workers for sexually transmitted diseases, in 2005 the NGOs and CBOs began establishing static clinics that were co-located with the drop-in centers in project offices. The aim was to create a safe space for the women and also to increase service uptake in remote areas. The clinics were operated by the NGOs and CBOs with the help of a part-time doctor and an auxiliary nurse midwife. These clinics provided a better environment for the women. In contrast to other services, here they were not faced with discrimination by health workers; they were able to explain their risk behaviors openly to the auxiliary nurse midwife; and they could rest or wait at the drop-in center while obtaining more information on sexually transmitted diseases from counselors or peer educators. The static clinics also improved reporting on sexually transmitted diseases as the auxiliary nurse midwife assisted the doctor in documentation.

**Preferred Provider Model**

Female sex workers in remote areas, however, were still finding it difficult to access services, as they tended to be located far from the designated clinics. Therefore, in 2006 NACO and the State AIDS-Control Societies introduced the preferred provider model for treatment of sexually transmitted diseases. The women could select their preferred provider (medical doctor) for services, which improved access to those services. Preferred service providers were given training, including orientation and sensitization to the needs of these women and training on standard treatment protocols established by NACO.

**Designated Clinics**

In 2007, NACO introduced designated clinics for sexually transmitted and reproductive tract infections at the government-run health facilities to mainstream these services for high-risk groups in the public health system. The service providers in these clinics were periodically sensitized about the project and the needs of female sex workers. They provided a dedicated service time for these women to ensure better access to services. A project counselor was made available in the designated clinics to ensure that services were provided without stigma or discrimination.

“Linking up female sex workers with government facilities for treatment of sexually transmitted infections has been a step toward sustaining service uptake. This also helped in less stigmatization of these women and created demand for seeking services from government health facilities.”

—Project manager, Society for Peoples Action for Development, Bangalore
Routine Medical Checkups
In 2008, NACO initiated routine medical checkups to improve prevention services and reduce risks. This facilitated regular screening of female sex workers for sexually transmitted infections once every six months and promoted safe sexual behavior.

Color-Coded Kits
To standardize treatment protocols, the State AIDS-Control Societies, with support from the Gates Foundation, introduced 16 color-coded kits for treating female sex workers for sexually transmitted infections. Later, NACO adopted, refined, and scaled up what became known as the nine color-coded kits for standard treatment protocol and quality control. This initiative was implemented across the country.

“Periodical testing for sexually transmitted infections reduced my apprehension related to infection. This is useful for many female sex workers who practice in vulnerable situations and help us in keeping up sexual health. Undergoing testing has become routine practice now.”
—Peer educator, Soukhya Samrudhi Samsthe, Kolar

Mapping of Services for Sexually Transmitted Infections
In 2010, the State AIDS-Control Societies began mapping the services provided by the NGOs and CBOs to address sexually transmitted infections to help female sex workers access nearby clinics. The mapping was carried out by the peer educators, who communicated locations of these services to the women. These sex workers normally accessed services close to where they worked. Between 2007 and 2012, clinic attendance among registered female sex workers increased from 20 percent to 82 percent in Andhra Pradesh and from 20 percent (in 2008) to 88 percent in Karnataka (figures 8 and 9). While the overall trend was very positive, there were a few drops in attendance due to factors such as the transition from preferred providers to static clinics and then to government hospitals in Andhra Pradesh and supply chain shortages and contract transitions of NGOs in Karnataka.

HIV Counseling and Testing
HIV counseling and testing are offered in several different settings:
- **Stand-alone clinics.** Until 2009, HIV/AIDS testing was provided in stand-alone clinics. The staff and supplies were provided by the program, which used the state health infrastructure for service delivery. Nurses in the public system were trained in HIV testing.
- **Integrated counseling and testing centers.** The State AIDS-Control Societies subsequently scaled up testing facilities by integrating voluntary counseling and testing and prevention of parent-to-child transmission in single centers to optimize resources. In this integrated clinic model, existing staff in primary health care facilities were trained in HIV counseling and testing and the NACP provided the supplies.
- **Public-private partnership model.** Next, a public-private partnership model was introduced. This arrangement meant that the NACP provided training to private health facility staff and supplied them with testing kits and a standard protocol. Part of the training took place through the Asha campaign (see below), which was involved in sensitizing health workers to the needs of high-risk groups. The private facility could then charge a nominal amount for testing, which was agreed with the program and could vary from state to state.
- **Mobile clinics.** As more female sex workers were identified, particularly in remote areas, an exclusive mobile integrated counseling and testing facility was introduced to increase HIV testing among high-risk groups in rural and hard-to-reach areas (figure 7).

Between 2009 and 2012, the number of these integrated facilities increased by about 2.6 times in Andhra Pradesh, which raised attendance of female sex workers from about 15 percent to 70 percent in Karnataka, the attendance increased from 20 percent to 70 percent (figure 7). In both states, there were two sharp drops in attendance in early 2010 and 2012 due to a shortage of test kits and a transition in NGO contracts during the changeover from NACP II to NACP III.

Addressing Distal Factors through Community Mobilization and Social Support Services
Whereas the preceding three strategies addressed the proximate determinants of HIV/AIDS among female sex workers, this fourth strategy of community mobilization and social support services is aimed at influencing the distal determinants of the epidemic. This strategy includes activities such as needs assessments among the sex workers, encouraging the formation of CBOs and building their capacity, conducting campaigns to reduce
stigma and discrimination, and expanding access to social entitlements.

Needs Assessment
In 1999, NGOs, on behalf of the State AIDS-Control Societies, began carrying out needs assessments with female sex workers in the hotspots. Sample data were collected to identify the sexual and nonsexual health needs of these women. The assessments, which built rapport and created a baseline for interventions, helped increase an understanding of the community of sex workers, its situation, its access to services, and its sexual and nonsexual health needs. For example, this community identified harassment, stigmatization, and marginalization as higher priorities than concerns over health and HIV infection. This information helped improve the organization of the sex workers and resulted in exploring alternative sources of livelihood to reduce their vulnerability.

Participatory Site Assessment
Andhra Pradesh and Karnataka were among the first states to introduce participatory site-assessment tools, which were administered by members of high-risk communities. Social network analysis helped identify networks of female sex workers, which was an initial step toward community mobilization.

CBO Formation
Community mobilization gained momentum after the introduction of peer education in 2001, and peer educators became agents of mobilization. Regular involvement of peer educators also facilitated community-led interventions and generated interest among some in forming CBOs in their own districts. High-risk groups, program leaders, and community members realized that CBOs were essential to empowering female sex workers and responding to their needs. These organizations, which were formed by and are directly managed by these
sex workers, generated greater community participation and program ownership.

**CBO Federation and Capacity Building**

As the number of peer educators grew, they started acting collectively and forming additional CBOs. Recognizing the role of CBOs in sustaining services, NGOs began scaling up local CBOs in 2003 and then district CBOs, which were later federated at the state level. This resulted in further organization and trust building in communities and the beginning of a social movement for the rights of sex workers and their social entitlements. In addition, the State AIDS-Control Societies promoted capacity building of CBOs through mentoring by NGOs. This helped strengthen CBOs’ institutional, technical, and administrative capacities.

“Police harassment has fallen and now there are no false cases against us. We understand the importance of coming together to manage our problems, accessing social security schemes. We should say, the CBO has changed our life, vision and helped in understanding our own selves.”

——Peer educator, Chaitanya Mahila Mandal, Hyderabad

**Female Sex Workers’ Cooperatives**

Program staff noted that female sex workers considered alternative livelihood options to increase income sources and reduce risk, as they were able to negotiate for safe sex and did not indulge in sex under distress. In 2004, to encourage alternative livelihoods, the NGOs and CBOs initiated credit groups for regular savings and
leveraged matching grants from government programs. The cooperatives formed by groups of sex workers and CBOs improved access to social entitlements and created a safety net for these women.

Campaigns to Reduce Stigma and Discrimination
NACO and the State AIDS-Control Societies conducted a series of campaigns to improve the context for provision of services to female sex workers:

- In 2005, NACO launched the Asha campaign that focused on reducing stigma and discrimination against female sex workers by service providers at government-run health facilities. This effort led to the increased use of testing facilities (see figures 11 and 12).
- In 2007, NACO organized the Be Bold campaign to improve detection of HIV/AIDS cases. The focus of the campaign was on removing apprehensions related to HIV testing and accessing testing without fear of stigma if found positive. This increased the identification and testing of more high-risk groups and helped mainstream HIV activities into nonhealth departments.
- In 2008, NACO initiated the Mee Neestam campaign to sensitize government health care providers to the needs of female sex workers. The objective was to create a more accepting environment so that the women would increase their use of government health facilities because of better service and quality.
- The Shubham campaign in 2009 helped motivate the sex workers to seek testing for HIV and to get antiretroviral therapy if needed.

Expansion of CBO-led Targeted Interventions
As CBOs gained experience in implementing targeted interventions under the guidance of NGOs, NACO issued instructions in 2008 to transfer 50 percent of NGO-led interventions to CBOs by 2012. The intention was to increase community ownership and responsibility for project services. This target was deliberately ambitious, intended to push the boundaries. However, CBOs tended to have little capacity, and it has taken time for a small number of them to evolve far enough to manage complex programs. While only about one-third of the target has been achieved, this outcome illustrates the potential role of CBOs.

Expansion of Social Entitlements
As CBO-led interventions matured, the female sex workers increasingly began to express the need for social security and entitlements. As part of mainstreaming HIV interventions in government programs, the states adopted a broad initiative to work with other government line departments, such as the Department of Social Welfare, Department of Education, Department of Road Transportation, and Department of Rural Development, to prioritize social entitlements for high-risk groups. This effort helped address the nonsexual health needs of these groups and improved their enrollment in social welfare schemes.

Toward the end of NACP III (2012), the focus turned to strengthening CBOs both structurally and functionally. The CBOs created different committees to address field requirements such as crisis or paralegal support and to achieve effective community engagement. Of the 126 CBOs registered in Andhra Pradesh 17 of them independently run targeted interventions with very limited support from NGOs. The other CBOs are at different stages of maturity but play an active role in extending program support.

Enabling Targeted Interventions
Program management and systems intelligence have played a key role in the implementation and evolution of the targeted interventions.

Program Management
NACO supported the development of a management infrastructure for enabling the rollout of targeted interventions. Figure 14 shows the evolution of some of the program management structures that facilitated their delivery.

Some examples of the evolution of program management include a computerized management information system that was initially introduced for antiretroviral therapy and integrated counseling and testing center components, and by the end of 2006 every component of the program had standard formats for reporting through this system. In 2007, NACO also developed and introduced standard operational guidelines for implementing targeted interventions among high-risk groups across the country as part of NACP III. These guidelines were intended to facilitate

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4 These services included antenatal care, injecting drug users, female sex workers, sexually transmitted infections, and tuberculosis.
saturated coverage of high-risk groups and increasing the focus and effectiveness of targeted interventions. The State Management Agency was renamed the Technical Resource Unit, then the Project Support Unit, and finally the Technical Support Unit in 2007, with more responsibilities, ownership, and close monitoring of the program in Andhra Pradesh.

Program implementation was further decentralized to the districts through the creation of District AIDS Prevention and Control Units in 2009 with the aim of integrating NACP interventions with the National Rural Health Mission framework for optimizing resources and providing services to the end clients or patients, as well as for ensuring the long-term sustainability of interventions. The District AIDS Prevention and Control Units were formed and placed within the district health societies responsible for implementation of the National Rural Health Mission. NACO set up the State Training and Resource Centers in 2011 to build the capacity of partner organizations implementing targeted interventions. They work toward institutionalization of training and capacity building of intervention programs.

External Technical Assistance
During NACP I, the State AIDS-Control Societies had their own system of monitoring through a team of joint directors, an arrangement with limited effectiveness. During NACP II, it was felt that external technical assistance to these societies would help build their capacity in implementing interventions and improving program delivery. In 1999, the State Management Agency was set up in Andhra Pradesh by Hindustan Latex Limited and supported by DFID to facilitate technical and managerial assistance and subsequent scaling up of interventions. In 2001, the Karnataka Health Promotion Trust, with the support of the Swedish International Development Cooperation Agency, was associated with joint appraisal and capacity building of NGOs in implementing targeted interventions. The external technical support helped improve program monitoring and implementation.

Systems Intelligence
NACO established several information systems to inform program implementation and create feedback loops that led to several adaptations and contributed to successful service delivery.

HIV Sentinel Surveillance
In 1998, a national monitoring or surveillance system was introduced in 176 sites covering a range of services. In 2003, the HIV sentinel surveillance (a type of surveillance study carried out exclusively focusing on HIV) was implemented with the support of two national institutes and six regional public health organizations. Results from this surveillance indicated that the infection was spreading through sexual transmission in both the general population and the high-risk groups. The surveillance sites for seven high-risk groups increased to 700 in 2003, and by the end of 2006 they were scaled up across the country, with 1,130 sites covering all groups.

Behavior Sentinel Surveillance
Behavior sentinel surveillance was first conducted in 2001 and collected information about risky behaviors in the general population and in high-risk groups. The second behavior sentinel surveillance round was conducted nationally in 2006 in the general population (15–49-year-olds) and among high-risk groups, including men having sex with men, brothel-based and non-brothel-based female sex workers and their clients, injecting drug users, and male migrants.

Integrated Biological and Behavioral Assessment
In 2005 the Avahan project, funded by the Gates Foundation, conducted the first round of the Integrated Behavioral and Biological Assessment Sentinel Surveillance Survey with the primary objective of measuring the major outcomes and impacts of HIV interventions, making data available for estimating the size of targeted populations, and modeling the impact of the interventions. While data from the assessment were used to monitor interventions funded by the Avahan project, data were collected from selected districts, regardless of the funding agency, and proved a useful source of information for implementers.

Monitoring System
The national monitoring system included monthly reports on the progress of selected indicators, monthly reviews, and monitoring visits by project officers or NGO advisers. The routine monthly data were one of the strongest features of the program, allowing regular

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5 The prevalence rate may also increase as a result of scaling up of antiretroviral treatment, which prolongs the life of people living with HIV.
reviews as well as close feedback loops that enabled constant course correction and rapid adaptation.

Evidence of Program Impact

The impact of the program, across all components, is measured by two indicators: (1) the prevalence rate\(^6\) (which includes old and new infections); and (2) the incidence rate (which represents the new infections). The contribution of targeted interventions is at the outcome level and is measured by indicators of behavioral change, which include the use of a condom with the last client. Prevalence and incidence of HIV infections declined both among the general population and among the population of female sex workers during the time the NACP was implemented.

HIV Prevalence

Between 2007 and 2011, HIV prevalence among the adult population declined from 0.33 percent to 0.27 percent nationally, from 0.97 percent to 0.75 percent in Andhra Pradesh, and from 0.67 percent to 0.52 percent in Karnataka (figure 9). After 2010, the epidemic generally stabilized in these two states (World Bank 2013). During the same period, the estimated number of people living with HIV, both adults and children, showed an 8 percent decline.

Prevalence of HIV among female sex workers declined nationally and in the two states. In Karnataka, prevalence declined from 15 percent to 5 percent and in Andhra Pradesh from 20 percent to 7 percent during the time that targeted interventions were being implemented (figure 10).

Evidence Related to Targeted Interventions

Several observational studies suggest that intensive implementation of targeted interventions results in a more rapid decline in HIV prevalence compared with areas where no TIs were implemented (Nagelkerke et al. 2002). Another study by Kumar et al. in 2011 found that a statistically significant steep decline occurred in HIV prevalence among young pregnant women in the districts (including Andhra Pradesh and Karnataka) with a high intensity of targeted interventions. The results suggest that the interventions played an important role in bringing about the decline (figure 11).

Behavioral Change

Targeted interventions were aimed at changing behavior among female sex workers (and other high-risk groups) to prevent HIV transmission and lead to a reduction in both prevalence and incidence. The 2009 Integrated Behavioral and Biological Assessment (IBBA 2009) showed an improvement on three out of four key behavioral measures during the period 2001–09 in Andhra Pradesh and Karnataka (table 3).

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\(^6\) The year 2008 showed an increase in prevalence among antenatal care clinic attendees and female sex workers. In Karnataka, new sex worker sites were introduced. The site-wise comparison of the HIV prevalence indicated that one of the sites reported a threefold increase in HIV prevalence, and this was considered an outlier. In Andhra Pradesh, the exclusion of one site that also ran the care and support program for high-risk groups made the finding consistent with corresponding years’ data (the year before and after).
HIV Incidence

India had an estimated 116,000 new HIV infections among adults in 2011. This number has been almost stabilized since 2008. The two states’ share in the total HIV burden has been steadily declining since 2007 (table 4).

Between 2007 and 2011, Andhra Pradesh and Karnataka showed a decline of 25 percent and 19 percent, respectively (figure 12). These trends suggest that the NACP strategies and interventions were effective in reducing new HIV infections in the two states.

Lessons Learned

This case study captures some lessons that may assist other implementers facing similar challenges. The initial research questions that guided the study are given below, along with the answers.

How were the Targeted Interventions Adapted in Response to the Implementation Challenges?
During implementation, NACO faced several challenges that led to different iterations and adaptations in the targeted interventions. For example, the outreach strategy was subject to several refinements, including the hiring of peer educators, the creation of the drop-in centers, the age stratification of peer educators, the introduction of pictorial materials, and the creation of composite interventions. Similarly, the condom promotion and distribution strategy evolved from direct distribution, to establishing distribution outlets and social marketing, to carrying out condom

Table 3 Indicators of Behavioral Change among High-Risk Groups in Andhra Pradesh and Karnataka, 2001, 2006, and 2009

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Andhra Pradesh</th>
<th>Karnataka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom use with last paying client</td>
<td>78.9</td>
<td>93.6</td>
</tr>
<tr>
<td>Percentage of respondents reporting consistent condom use with all nonregular sex partners</td>
<td>88.8</td>
<td>98.5</td>
</tr>
<tr>
<td>Perception of risk of HIV infection</td>
<td>1.1</td>
<td>47.4</td>
</tr>
<tr>
<td>Ever had HIV test</td>
<td>6.9</td>
<td>39.6</td>
</tr>
</tbody>
</table>

Source: IBBS 2009.

Note: Indicators of behavioral change reflect self-reported data.

Table 4 New HIV Infections among Adults in Andhra Pradesh, Karnataka, and India, 2007–11

<table>
<thead>
<tr>
<th>State</th>
<th>2007</th>
<th></th>
<th>2008</th>
<th></th>
<th>2009</th>
<th></th>
<th>2010</th>
<th></th>
<th>2011</th>
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<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>22,063</td>
<td>17.8</td>
<td>19,588</td>
<td>16.8</td>
<td>18,548</td>
<td>16.1</td>
<td>17,465</td>
<td>15.2</td>
<td>16,603</td>
<td>14.3</td>
</tr>
<tr>
<td>Karnataka</td>
<td>11,126</td>
<td>9.0</td>
<td>10,299</td>
<td>8.8</td>
<td>9,695</td>
<td>8.4</td>
<td>9,285</td>
<td>8.1</td>
<td>9,024</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Source: NIMS and NACO 2013.

Note: Numbers and percentages are estimates. – = not available.
gap analysis to improve availability. The different clinical service delivery models that were introduced provide another vivid example of continuous adaptation of both the treatment of sexually transmitted infections and the HIV/AIDS counseling and testing services. Several models were implemented, adapted, and ultimately differentiated according to the needs of the clients.

How did Systems Intelligence (Use of Data From Different Sources such as Surveillance, Surveys, and Assessments) Improve the Targeting of the Interventions?

The targeted interventions relied on and benefited from a broad variety of data sources that were triangulated to provide information and inform implementation. The program used three major sources of data:

- **Periodic surveys and assessments.** These included the behavioral surveys, integrated behavioral and biological surveys, mapping and size estimation of high-risk groups, AIDS mortality studies, and the needs assessments of the female sex workers. The data generated from these sources indicated progress on impact and outcome. Much of the data profiled state and national prevalence, estimated levels of new infections, and assessed behavioral changes among high-risk groups, the bridge populations, and the general population. Equally important, the microplanning for specific intervention sites was greatly facilitated by the mapping of high-risk groups that took place in 2003 and 2009. The data from those efforts enabled the peer educators to assign sites according to an eight-point formula that categorized locations according to vulnerability and on this basis to develop plans for outreach and service uptake.

- **Annual sentinel surveillance.** Data from sentinel surveillance were collected annually from antenatal care facilities and clinics for sexually transmitted infections as well as from other medical care providers. The sentinel surveillance system expanded from 176 sites in 1998 to 1,130 sites in 2006 and conducted 12 rounds of data until 2012 (covering 1,359 sites). Sentinel surveillance provides information essential for understanding the trends and dynamics of the HIV epidemic among the general population and different high-risk groups as well as comorbidity (for example, sexually transmitted infections and tuberculosis). It helped refine strategies and prioritize focus for prevention, care, and treatment interventions.

- **Routine data.** The program has institutionalized a routine reporting system to monitor the performance implemented under the different components. For targeted interventions, the program collected data from NGOs and CBOs together with State AIDS-Control Societies and technical support units that have to report monthly on different activities. The monthly review of local data and the quarterly review of state and national data created a very tight feedback loop that enabled rapid course correction and informed the many adaptations and refinements during implementation.

The different sources of data were regularly triangulated to ensure their validity before decision making and strategy refinement. A key lesson, however, is for managers to recognize that “the search for perfect data never ends” and that they must make “decisions based on the best available data rather than wait for the next sample or a more refined analysis” (Rau 2011).

How did the Targeted Interventions Gradually Add Value and Incorporate the Perspective and Needs of the “Client” (that is, the Female Sex Workers)?

The targeted interventions started with needs assessments that led to a better understanding of the community of female sex workers, revealing, for instance, their preference for dealing with threats of violence and
Reducing the Risk of HIV/AIDS among Female Sex Workers in India

However, the feedback provided by the needs assessments became just one small component of the nurturing of a broader appreciation and support for these women. A major advance occurred with the training and orientation of the peer educators, who then became an indispensable channel for reaching out and communicating with the sex workers. The regular involvement of the peer educators facilitated community-led interventions, eliciting interest in forming CBOs and generating greater community participation. The NGOs later helped strengthen the technical and administrative capacities of the CBOs, which then, through targeted interventions, helped improve the enabling environment and reduce stigma and discrimination. Such strengthening and expansion then contributed to a social movement recognizing the rights of sex workers and their social entitlements and not only created an appreciation for the perspective of the female sex workers but also added value to the services provided by the program and empowered the beneficiaries.

How the Case Study Informs the Science of Delivery

Relentless Focus on Citizen Outcomes

This case is ultimately about improving outcomes for female sex workers and documents how this was achieved. It presents data from separate studies, surveys, and reports, all tracing client impact and outcomes over time. These include data on HIV prevalence and new infections as well as on self-reported HIV-related behavioral changes, such as reported condom use with the last paying client. It is clear that targeted interventions were adapted based on feedback loops that provided information on citizen outcomes and on direct input from the women. These feedback processes were crucial in ensuring the program’s responsiveness to the needs of the target group, the female sex workers.

Multisector, Interdisciplinary, Multistakeholder Approaches and Partnerships

The breadth of the targeted interventions, covering both proximate and distal conditions, called for multisector and interdisciplinary approaches. These included improving clinical services of both government (National Rural Health Mission) and private sector, expanding social entitlements through the social welfare agencies, and mounting campaigns to reduce discrimination against sex workers from police. Important working relationships include collaboration between NACO and development partners (the Gates Foundation, DIFID, UNAIDS, USAID, and the World Bank), between technical support and research institutions (such as Hindustan Latex Limited and the Karnataka Health Promotion Trust), and between an extensive array of NGOs and CBOs. High-level collaboration enabled policy decisions to be made; for example, high-risk groups could access social welfare schemes through interministerial dialogue that resulted in provisions made for the groups.

Use of Evidence to Inform Experimentation, to Learn, to Adapt, and to Measure Results

As mentioned earlier, the program used different sources of data and data triangulation—including monthly indicators of progress, reviews, and visits by project officers and advisers—to identify any emerging bottlenecks in service delivery, to measure progress, and to build the evidence for refinements. Collection of routine data, in particular, became one of the strongest features of the program, providing information that supported continual course corrections and rapid adaptation.

Change Management, Leadership, and Learning from Practitioners

The program involved an increasing number of federal, state, and local agencies and institutions. There were differences among states’ health service delivery systems, reflecting differences in cultural bonds, physical terrain, and social acceptability of high-risk groups. By comparison, the program management methods provided an “adaptive leadership” model by allowing

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Categorization of districts is per the HIV prevalence rate in the district. Category A is more than 1 percent ANC prevalence in district in any of the sites in the past three years; Category B is less than 1 percent ANC prevalence in all the sites during past three years with more than 5 percent prevalence in any high-risk group sites; Category C is less than 1 percent ANC prevalence in all sites during past three years with less than 5 percent prevalence in all high-risk group sites with known hotspots; Category D is less than 1 percent ANC prevalence in all sites during past three years with less than 5 percent prevalence in all high-risk group sites with known hotspots or no or poor HIV data.
space for local innovations and adaptations. Some of these successful initiatives were eventually adopted, and standardized operational procedures were established for scaling up national implementation.

**Being Adaptive, Flexible, and Iterative When Implementing Solutions**

Over time, program efforts spawned adaptive and even innovative practices in the face of emerging contextual or programmatic challenges. One example involved the shift from recruiting outreach workers to peer educators and the evolution of adaptations to make the educators’ work more effective, such as starting a compensation system and collecting mapping data to provide reliable estimates of high-risk groups at the intervention sites. Introducing the social marketing of condoms and the provision of different clinical service models are other examples. Multiple adaptations and refinements also marked the course of the implementation of targeted interventions, including modifications of the outreach strategy, expansions of clinical services, and organizational rearrangements:

- Modifications to the outreach strategy over time covered the targeted populations with increasing effectiveness. These modifications included the shift to peer educators, the rise of composite interventions, and the use of mapping data to support microplanning and targeting; adaptations to the condom promotion and distribution strategy from direct distribution to outlets to social marketing; and the introduction of female condoms as an alternative complementary option.

- Expansions of clinical services for testing for sexually transmitted infections and HIV included transitioning from stand-alone clinics to government facilities and later expansions to the private sector and the introduction of mobile facilities to serve rural and hard-to-reach areas.

- Organizational rearrangements included the decentralization of program implementation to the districts through the creation of the District AIDS Prevention and Control Units that also aimed to ensure the long-term sustainability of the interventions.

###ANNEX A Interviewees

**NACO**
- Dr. Neural Hangar, Director of Targeted Interventions, Department of AIDS Control/National AIDS Control Organization
- Ms. Arad Hana Johari, Additional Secretary, Department of AIDS Control/National AIDS Control Organization
- Neural Hangar, Director of Targeted Interventions, Department of AIDS Control/National AIDS Control Organization

**Karnataka**
- Manor Kumar Tripathi, India Forest Service, Project Director, Karnataka State AIDS Prevention Society
- Dr. Manish, Team Leader, Technical Support Unit, Karnataka State AIDS Prevention Society; Vijay Huger, Joint Director, TI, Karnataka State AIDS Prevention Society
- Joseph, Team Leader, Targeted Interventions, Technical Support Unit. Ajay Paul, Project Officer, Technical Support Unit
- Vee na, Community-Based Organization Leader; Soukhy Samrudhi Samsthe, Kolar
- Venkata Ratna Prabha, Outreach Worker
- Neela, Peer Educator
- Lakshmidevamma, Peer Educator
- Rudresh, Project Manager
- Vijay Kumar, Project Director, Society for Peoples Action for Development
- Punarva, Project Manager, Society for Peoples Action for Development
- Community-Based Organization leaders, outreach workers, and peer educators, Chandana Mahila Sangha, Bangalore

**Andhra Pradesh**
- Pardha Sarathi, IAS, Project Director, Andhra Pradesh State AIDS Control Society
- T. Kailash Ditya, Joint Director, TI, Andhra Pradesh State AIDS Control Society
- Sukumar David, Project Director, Integrated Rural Development Services
- Jyothis, Community-Based Organization Leader, Mahila Abhirudhi Sangam
- Outreach workers and peer educators, Integrated Rural Development Services
- Dr. Prabhakar, Director, Alliance
- Jaykumar, Team Leader, Technical Support Unit
- Venkat, Team Leader, TI, Technical Support Unit
- Vinay Kumar, Project Officer, Technical Support Unit
- Sai krishna, Hindustan Latex Family Planning Promotion Trust
- Srinivasa Rao, Center for Advocacy and Research
- Anthony Reddy, CARE
- Jagadish, State Training Resource Centre
- Jayamma, Chaitanya Mahila Mandal
- G. Krishna, Surakasha
- Sridhar, Development Action for Rural Development
- FSW project team, outreach workers, peer educators, Christian Association for People’s Medical Development Society, Chilakaluripeta

*Note: TI = targeted intervention.*
ANNEX B  Institutional Bodies Responsible for Managing HIV/AIDS

<table>
<thead>
<tr>
<th>Institution</th>
<th>Description</th>
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<tbody>
<tr>
<td>DAPCUs</td>
<td>DAPCUs are the district administrative structures under the State AIDS-Control Societies, established in 2009 in high-burden districts (that is, in category A and B districts) in India. The main objective of the DAPCUs is to coordinate NACP activities in districts and work toward multisector mainstreaming with other departments in the district.</td>
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<tr>
<td>NACO</td>
<td>NACO, the National AIDS Control Organization, leads the NACP, the National AIDS Control Program in India. NACO is responsible for preparing, implementing, and monitoring the National Strategic Plan for HIV/AIDS and is accountable to the National Council on AIDS (chaired by the prime minister) and to the National AIDS Control Board (chaired by the minister for health and family welfare). The &quot;three ones&quot; principles govern the national AIDS response in India: one national coordinating body—NACO; one national program and strategic plan; and one common monitoring and evaluation framework, to which all partners adhere. These principles ensure harmonization among development partners and have contributed to the effectiveness of the national response to HIV/AIDS. The technical oversight and guidance to the national program are provided through different mechanisms: the technical resource groups, the national Technical Support Unit, and the National Steering Committee (consisting of all development partners, civil society organizations, and the private sector).</td>
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<tr>
<td>National guidelines</td>
<td>Every state in the country has different challenges in its health service delivery system, cultural bonding, physical terrain, and issues related to the social acceptability of high-risk groups. NACP III’s operational guidelines provide standardized operational procedures for implementing comprehensive HIV prevention services with defined standards.</td>
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<tr>
<td>SACS</td>
<td>During NACP II, national program implementation was decentralized to SACS, which are semi-autonomous societies implementing the states’ annual action plans, guided and financed by the Department of AIDS Control and NACO.</td>
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<td>State technical support units</td>
<td>These units were established to oversee the nongovernmental organizations’ and community-based organizations’ quality and monitoring, hand-holding, mentoring, and support in implementing targeted interventions. They provide technical support and supportive supervision in the field to the lowest level of implementation units, the nongovernmental organizations and community-based organizations.</td>
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Note: DAPCUs = District AIDS Prevention and Control Units; NACO = National AIDS Control Organization; NACP = National AIDS Control Programme; SACS = State AIDS-Control Societies.

Bibliography


