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Thailand's Response to the HIV Epidemic: Yesterday, Today, and Tomorrow

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Thailand's comprehensive national response to the HIV/AIDS epidemic has been extensively documented since the beginning of epidemic. Substantial progress in the fight against HIV/AIDS has been made because awareness of the problem was raised. Top-level political commitment and multisectoral strategies mobilized funds and human resources to implement the control program at all levels. Behavioral change resulting in increased condom use in brothels on a national scale rose from virtually nil to more than 95%. This was accompanied by a 90% reduction of the sexually transmitted disease rate. In parallel, the rate of new HIV infections dropped by 80%. Despite these achievements, there remains an urgent need to continue efforts to ensure universal and unfailing condom use. Further, Thailand needs to establish pragmatic innovative approaches to reduce transmission, especially among injection drug users, women, and youth, as well as to develop effective strategies for implementation of antiretroviral treatment. Further strategies also need to consider the changing cultural, social, and economic characteristics of the Thai populations.

The kingdom of Thailand is located in the heart of Southeast Asia, roughly equidistant from India and China (Figure 1). It shares borders with Myanmar to the north, Laos to the northeast, Cambodia to the east, and Malaysia to the south. The country can be divided into four natural regions, the mountains and forests of the north, the lush fertile valley of the central plains, the semiarid highland of the northeast plateau, and the tropical islands and long coastline of the peninsular south, bounded on the west by the Indian Ocean and on the east by the South China Sea and the Gulf of Thailand. Thailand covers an area of 513,115 square kilometers, or 200,000 square miles.

The country comprises 76 provinces that are further divided into districts, subdistricts, and villages. Bangkok is the capital city and the center of political, commercial, industrial, and cultural activities. A majority of the 63.1 million citizens of Thailand are ethnic Thai, but there are strong communities whose ethnic origins lie in China, India, and elsewhere. Approximately 93% of Thais practice Buddhism, but

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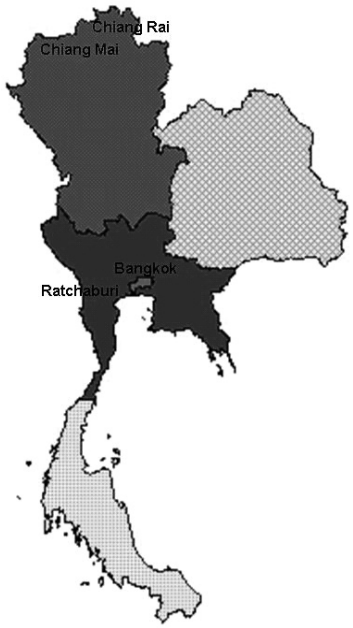

FIGURE 1. The four major geographical regions of Thailand, the northern, central, northeastern, and southern.

there is complete freedom to practice other religions. Other important religious groups include Muslims (5.3%) and Christians (1.4%). Thailand is a democratic country and a constitutional monarchy (Asian Labour Update, 2001). The Thai economic base has shifted from agriculture (mostly in rural areas) to industry (mostly in Bangkok and the vicinity). In mid-1997, Thailand was hit by the Asian financial crisis resulting from an overheated property market and weakening economic foundation. The Thai economy has now shown clear signs of recovery; the gross domestic product grew by 6.7% in 2003 ("Channel News Asia International," 2004).

Despite the daunting challenges of the HIV pandemic and the emerging financial and economic crisis, Thailand has made impressive strides in the fight against HIV/AIDS. Thailand was among the first to break the wall of silence in Asia. Over the past 2 decades, the HIV epidemic in Thailand has gone through many phases. Although some paralleled those of other countries, the course of the epidemic in Thailand has also demonstrated unique characteristics. Thailand's experience shows that a coordinated, nationwide response from key government and nongovernmental organizations (NGOs) targeting the highest risk groups can make an enormous impact in reducing the extent of the epidemic. The pace of the epidemic, however, continues. Based on a review of the data, we present a brief history of the HIV epidemic and Thailand's initial response, review the recent epidemiological trend, elucidate strategies for HIV prevention, explore the elements of success, describe the lessons learned from the evolving epidemic, and identify strategic priorities for the next phase of the response.

A BRIEF HISTORY OF THE THAI HIV EPIDEMIC

The first case of AIDS in Thailand was officially reported in 1984 in a homosexual man who had returned from overseas and was receiving treatment in Bangkok. Con-

cerned about a potential large-scale epidemic, public health officials conducted a small-scale serosurvey in high-risk populations that included male and female sex workers and injection drug users (IDUs). The results of the survey demonstrated a negligible prevalence of HIV infection, 1-2% in sex workers and 1% in drug users (Limsuwan, Kanapa, & Siristonapun, 1986; Phanuphak, Locharernkul, Panmuong, & Wilde, 1985). However, in 1988, the prevalence in drug users skyrocketed from 1% to 43% in a single year (Uneklabh, Phutiprawan, & Uneklabh, 1988). In parallel, the epidemic was building up, albeit invisibly, among female sex workers. Serosurveys began to capture low levels of HIV infection among commercial sex workers (CSWs) around the country. The second wave of epidemic spread exploded among CSWs in 1989, when the findings from the first round of HIV sentinel surveillance found that 44% of sex workers in Chiang Mai, a province in northern Thailand, were infected with HIV (Weniger et al., 1991). Equally disturbing, surveillance revealed that the virus had managed to gain a foothold in each of the 14 provinces included in the system. By the end of 1989 there was a sharp rise in the reported number of HIV-seropositive men attending STD clinics in all provinces included in the sentinel surveillance. Recognizing the possibility of a large-scale epidemic, the system was expanded to all provinces by the end of 1990. At almost the same time, the Survey of Partner Relations and Risk of HIV Infection, the first national survey on risk behaviors, was conducted. The finding indicated that 28% of Thai men between the ages of 15 and 49 admitted to either premarital or extramarital sex in the past year, with three quarters of those men having paid for sex during that time (Sittitrai, Phanuphak, Barry, & Brown, 1992). Thus, it became clear that heterosexual transmission would become the predominant mode of HIV acquisition. As predicted, the epidemic in CSWs launched the subsequent wave of the epidemic in male clients, as indicated by a prevalence rate of 4% among military conscripts in 1993 (National HIV Surveillance, Thailand, 1996). The subsequent wave of HIV transmission from male clients to their wives and children was evident when HIV prevalence among women attending public antenatal clinics rose from 0.8% in 1991 to 2.3% in 1995 (*National HIV Serosurveillance, Thailand, 1989-1996,* 1996).

THAILAND'S RESPONSE TO THE EPIDEMIC

Thailand's response to the epidemic was influenced by many factors, including administrative and legislative decisions shaped in response to available data. After the first AIDS case was recognized, AIDS was declared a severe communicable disease. Initially, physicians were required to report all patients with HIV infection, including asymptomatic cases, to the Division of Epidemiology, Ministry of Public Health. In 1989 the National HIV Serosurveillance Program was established to monitor progression and evaluate control measures. The system monitors HIV prevalence both in high-risk populations and in the general population. The monitoring approaches included the changing trends of behavior, HIV infection, STDs, and AIDS. The system had been tailored to the corresponding phases of the epidemic. By identifying high-risk groups and behavioral trends as a high priority, the program had provided a rational basis for resource allocation and evaluation of the control programs (Saengwonloey, Jiraphongsa, & Foy, 2003). However, mandatory reporting of HIV infection created stigmatization and breached human rights, and was eventually abolished later in 1991.

The first round of sentinel surveillance in 1989 raised HIV/AIDS awareness and transformed public perception. Faced with an unprecedented challenge that threat-

ened the very fabric of Thai society, the HIV/AIDS control program was moved from the Ministry of Public Health to the Office of the Prime Minister, and HIV/AIDS control became a national agenda by 1990 (World Bank, 2000). This reorganization signified political commitment, and the budget was increased sharply from less than U.S.$1 million in 1988 to $44 million in 1993 (Owens, 1991).

In 1990 the Thai Red Cross Society conducted the first behavioral survey at the national level. Recognizing the pervasive extent of risk behavior throughout Thai society, the Thai government launched a massive public information campaign on AIDS. HIV/AIDS warning messages were publicized through all types of media. They were aired regularly and repeatedly on television and radio as part of the national strategy in 1991 (Lyttleton, 1996).

School education on AIDS was initiated in 1990. At this time, the Thai HIV/AIDS research community was actively involved in conducting quantitative and qualitative studies of risk behavior and its determinants. These studies demonstrated that the idea of individual risk that had been dominant in the beginning of the epidemic was too narrow to address the underlying social, cultural, and economic forces driving the epidemic in Thailand (Celentano et al., 1993; Ford & Kittisuksathit, 1994; Havanon, Bennett, & Knodel, 1993). Thus, the concept of individual risk was broadened to include the influence of the social environment. In Thailand AIDS education is incorporated into the primary level schools as "life experience" and "character and development." Positive attitudes and solving personal and social problems are addressed. On the secondary school level, the focus is AIDS information and on teaching students how they can protect themselves from sexual diseases. AIDS education strategies evolved to include lifeskills empowerment in Thai youth rather than just behavior modification so that their culture, peer pressure, and norms would promote safer sex behavior (Finger, 1993).

In response to the growing prevalence of HIV among IDUs and CSWs in Chiang Mai, the government of Thailand launched a massive expansion of its HIV/AIDS prevention and control program in 1991. Although prostitution was and still is illegal in Thailand, the widespread presence of sex establishments has assumed the dimensions of a commercial sector (Boonchalaksi & Guest, 1998). The strategic approach was thus to encourage universal condom use to prevent HIV transmission rather than to suppress commercial sex. The majority of the sex industry in Thailand is brothel based, with most transmission occurring in easily located direct sex establishments. The success of a pilot project, the 100% Condom Program, first conducted in Ratchaburi Province in 1989, was expanded nationally in 1991-1992. The program was initiated to enforce universal condom use in all commercial sex establishments (Hanenberg, Rojanapithayakorn, Kunasol, & Sokal, 1994). The program enlisted the cooperation of sex establishment owners and sex workers to encourage all clients to use condoms when engaging in sex. Information, education, and communication programs were first initiated to promote consistent condom use. However, some clients refused to use condoms, and ultimately workers were pressured to engage in unprotected sex. In response, public health officials, police, and representatives of local governments met with the owners of commercial sex establishments. Owners were encouraged to withhold sex services from clients who refused to use condoms. Establishments were monitored, penalized, and shut down for failure to comply with the program. Compliance was monitored through an extensive network of STD clinics and the public health service's list of sex establishments, by tracing through male STD patients to establishments where they presumably were infected. Monitoring ap-

proaches also included sending volunteers to test compliance, observing STD infection rates among sex workers receiving routine examinations at local clinics, and monitoring the number of condoms provided per establishment. The government supplied almost 60 million free condoms a year to support this activity (Rojanapithayakorn & Hanenberg, 1996). This resulted in a marked increase in condom use observed in the establishments. Subsequently, a 90% reduction in the rate of STDs was reported (UNAIDS, 2000).

Recognizing the profound impact of HIV on public health and economic and social development, the government expanded the responsibility for HIV prevention to other sectors and NGOs. The Multisectoral AIDS Prevention Strategy (MAPS) of Thailand, since 1991, has played a vital role in strengthening social inclusion by engaging NGOs, civil society, and other sectors in policy formulation and priority-setting (Elkins, Kuyyakanond, Maticka-Tyndale, & Haswell-Elkins, 1996). This role in priority setting and consensus building at a societal level catalyzed the process of political mobilization and may have been the most crucial contribution of the national-level multisectoral organizations.

Given that HIV/AIDS prevention requires a modification of the prevailing sexual conventions, which often raises sensitive social and cultural issues, several academic and social advocacy groups have focused on behavioral intervention. A field trial in the Royal Thai Army in 1993-1995 demonstrated that intensive interventions in structured institutions successfully reduced the risk of heterosexual of HIV transmission (Celentano et al., 2000). In 1995 Thailand's serosurveillance system was supplemented by behavioral surveillance to provide fuller assessment of the transmission dynamic. Sentinel sites were set up in 20 of 76 provinces. The target population included military conscripts, male and female factory workers aged 15-29 years, secondary schools, and pregnant women attending antenatal clinics. Initially, surveys were conducted annually, including 350 persons per sentinel population per province, using nonprobability sampling and a self-administered questionnaire (AIDS Epidemiology Section, 1999; Tonghong, Saenwonloey, & Juntasiriyarkorn, 1999). A method to further refine the system is now under way to ensure better validity and reliability of the data. One technique is to use two-stage cluster sampling to obtain a representative sample. A second technique is to use a tape recorder and earphones to administer the questions (Lertpiriyasuwat, Plipat, & Jenkins, 2003), which helps respondents be more truthful in their responses.

Data from different surveillance sources were used to supplement each other in tracking the spread of HIV and also to evaluate program effectiveness. For example, the incidence of STDs at all government clinics was used to measure the decline of STDs. Reported condom use among sex workers was used to monitor the progress of the 100% Condom Program. The prevalence of HIV among blood donors was used to monitor the effectiveness of self-referral at the blood bank, and the prevalence of HIV among pregnant women and conscripts was used to monitor the overall impact of control programs targeted to the general population.

In the late 1990s the epidemic had gravitated toward adolescents and young adults. There was a growing demand for high-quality data to guide public policy and formulate preventive measures among Thai youth. Efforts to improve data validity using audio-computer-assisted self-interviewing and noninvasive specimen collection methods were evaluated. These studies demonstrated a relatively low level of condom use among adolescents and young adults with all partner types (8.0% with recent steady partners, 28.5% with casual partners, and 30.7% with commercial sex part-

ners), and only 24.3% reported condom use during their first sexual encounter (Jenkins et al., 2002; van Griensven et al., 2001).

At the early stage of the epidemic, when antiretrovirals (ARVs) were expensive and had limited availability, treatment and prevention of opportunistic infections was the only available option for the majority of symptomatic HIV patients. However, in 1992, the ARV supply program in Thailand was initiated primarily for low-income groups (Kunanusont, Phoolcharoen, & Bodaramik, 1999). Although the budget had increased, coverage had decreased, due to the growing number of AIDS cases as the epidemic progressed. The rapid advances in HIV treatment, as well as the advent of highly active antiretroviral therapy (HAART), resulted in higher drug costs, which were not affordable for most people. Many HIV-infected patients received ARV through donations either directly to patients, through NGOs, or through partly subsidized government funds. The first ARV trial in Thailand started in 1992, when zidovudine (AZT), became available in two major medical centers in Bangkok (Phanuphak et al., 2000). In 1996 Thailand's first full-scale HIV clinical trials center, the HIV Netherlands Australia Thailand Research Collaboration, was established at the Thai Red Cross Society. The main purpose of the tripartite collaboration was to conduct clinical intervention studies that would yield answers to locally and regionally relevant research questions (Phanuphak, Cooper, & Lange, 1998). The collaboration was subsequently expanded to include participation in multinational trials and thus strengthened the public health infrastructure, as well as generating substantial awareness and interest in training for good clinical practices in several medical centers.

Recognizing the devastating impact of HIV/AIDS on the lives of children, in 1996 the Thai Red Cross Society took a major step to prevent vertical transmission by launching a donation campaign providing free AZT to HIV-infected pregnant women. The program is under the patronage of Her Royal Highness Princess Soamsawali. So far, it has successfully reduced the vertical transmission rate to only 3.3% (Thisyakorn et al., 2000). Recently, the program was honored by UNAIDS as one of the best programs for reducing mother-to-child HIV transmission (Rongkavilit, Thisyalorn, & Phanuphak, 2000).

Since then, further progress has been made in reducing vertical transmission. In the mid-1990s, a randomized controlled trial was carried out to evaluate the effectiveness of providing short-course AZT prophylaxis to prevent mother-to-child HIV transmission in Bangkok. This study demonstrated that AZT reduced vertical transmission of HIV by 50% (Shaffer et al., 1999). Following this study, a number of pilot programs were initiated (Thaineua et al., 1998). The successful pilot projects ultimately led to nationwide expansion. In 2000 Thailand became the first resource-limited country to implement a national program for preventing mother-to-child HIV transmission. A search for novel strategies is now underway to address the needs of mothers who receive little or no prenatal care or are not offered HIV testing prenatally.

The Thai Government Pharmaceutical Organization (GPO) successfully launched the first generic antiretroviral therapy, AZT, into the market in 1997, followed by didanosine (ddI) and stavudine (d4T) in 2000. By 2001, generic stavudine and nevirapine were available through the GPO. Although Thailand established universal health insurance coverage in October 2001, HAART was not included in its benefit package. However, the public outcry to include HAART universally in the benefit package, regardless of a patient's economic status, was overwhelming. In re-

sponse, the Public Health Minister, on the eve of World AIDS Day 2001, announced that the government had agreed to include ARVs in its health plan and HAART would be included in the benefit package in the future ("HIV Drugs Included," 2001). The plan aims to provide free ARVs, as well as to standardize the associated medical services and qualifications of physicians.

For full coverage and equitable access to ARVs to be realized, substantial effort has been made to improve financial feasibility. Beginning in April 2002, the generic form of ARVs—d4T, 3TC, and nevirapine—a three-in-one combination called GPO-VIR, was successfully introduced (Cohen, 2003). This generic version of ARVs provides not only a more affordable regimen but also a convenient dosing schedule—only one pill two times a day, at a cost of about U.S.$30 per month. By the time Thailand hosts the 15th International AIDS Conference in July 2004, the government plans to make GPO-VIR available to 50,000 of Thailand's total of 600,000 HIV-infected patients (Cohen, 2003).

In 1993 the National Plan for HIV/AIDS Vaccine Development was established to catalyze a number of HIV/AIDS vaccine initiatives. The activities of the national plan included consensus building, technical cooperation, capacity building of Thai scientists, establishing national research networks, and promoting international collaboration and technology transfer to evaluate HIV/AIDS vaccines. By the end of 2003, 10 HIV preventive vaccine trials were being conducted in Thailand (AIDS Division, Bureau of AIDS, TB and STIs, 2003).

Recently, a number of concerns have been raised regarding the conduct of HIV vaccine trials in developing countries such as Thailand. One of them is the need to ensure that methods of recruitment and motivation are conducted in an ethical manner. These methods need to ensure truly informed and voluntary consent. Second, it is essential to acknowledge the potential behavioral and social side effects of participating in the trial. These include, on the one hand, the possibility of increased risk behavior in response to a perception of protection and, on the other hand, the potential for social discrimination (Jenkins et al., 1998; Thapinta et al., 1999). In response, the Public Relations Network was developed in 2003 as a part of the National Plan for HIV/AIDS Vaccine Development to address the issues related to the general population's acceptance, awareness, and understanding of HIV vaccine trials. Existing research demonstrated that the majority of volunteers reported both altruistic and mixed motives, and that recruitment is a dynamic process with variation in volunteers' commitment over time (Thapinta et al., 1999; Thapinta et al., 2002). No problems with discrimination in employment, health care, or insurance were documented (Jenkins et al., 1998). These findings provide further evidence for the feasibility of conducting prophylactic HIV vaccine trials with low-risk volunteers in Thailand.

ELEMENTS OF SUCCESS

The most compelling evidence of Thailand's effective response to HIV/AIDS is the widespread reduction in unsafe sexual behavior. Associated with this was the extremely impressive reduction of STD incidence and HIV seroprevalence among military conscripts (Epidemiology Division Ministry of Public Health, 2004). After the "100% Condom Program" was enacted in 1989, condom use in brothels reached over 90% (Figure 2) (UNAIDS, 2000), and according to the most recent estimate, the rate of new infections has dropped by 80% since 1991 (Thai Working Group, 2001).

The success of the 100% Condom Program in reducing risky sexual behavior was illustrated by the dramatic decline in the reported number of newly infected male STD

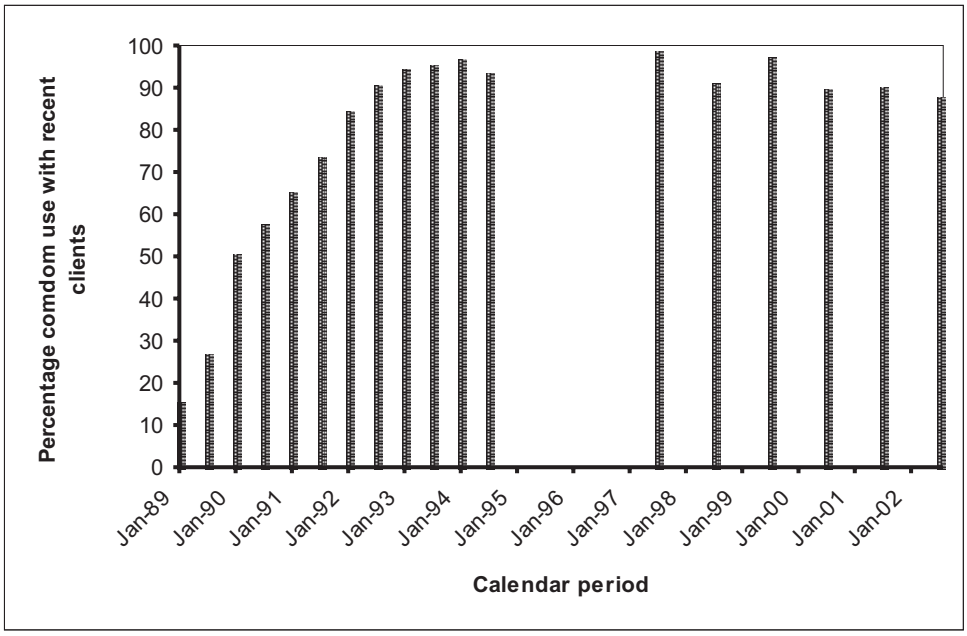

FIGURE 2. Increase in condom use with recent clients, as reported by sex workers at direct sex establshments in the sentinle serosurveillance.
***Note*. From Ministry of Public Health, Thailand.**

patients visiting public clinics and over a 90% reduction of STD infection rates in both male and female patients (Figure 3). Despite the fact that the number of newly infected STD cases began to decline in 1986 before the 100% Condom Program was enacted, a substantial acceleration in the decline began in 1989. The early decline is believed to correspond with the introduction of more effective drugs for STD treatment (Mugrditchian, Benjarattanaporn, Chitwarakorn, & Rojanapithayakorn, 1993). Correspondingly, a drugstore survey in 24 provinces reported a more than 80% decline in the sale of antibiotics used for STD treatment over a 5-year period and a continued increase in the sale of condoms. These changes implied that condoms were being used and the reported drop in STDs was real (Chamratrithirong et al., 1999).

HIV prevalence among military conscripts dropped from 4% in 1993 to 0.5% in 2003 (Figure 4) (Epidemiology Division, Ministry of Public Health, Thailand, 2004).

There are, however, certain aspects in military life that may encourage higher risk behaviors in comparison to the general population. These include single status, living outside the family structure, peer pressure, and the availability of commercial sexual outlets (London, VanLandingham, & Grandjean, 1997).

The declining rate in this group was confirmed by the prospective cohort study of 1991 to 1995 (Celentano et al., 1998). The decline in annual incidence is strongly associated with increased condom use, reduction in visits to sex workers, and reduction in the incidence of STDs. A similar trend was also evident among pregnant women attending antenatal clinics at government hospitals (Figure 5). The HIV prevalence in this group rose from 0.8% in 1991 to 2.29% in 1995 but then declined to 1.18% in 2003 (Epidemiology Division, Ministry of Public Health, Thailand, 2004).

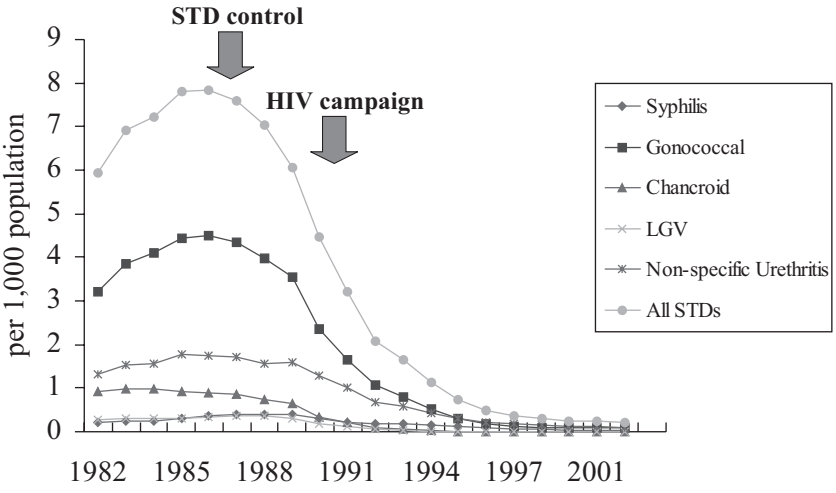

FIGURE 3. Incidence of sexually transmitted diseases per 1000 population, as reported by government health services, Thailand 1982-2002.
***Note*. Venereal Diseases Division, Department of Communicable Diseases Control, Ministry of Health.**

RECENT EPIDEMIOLOGICAL TRENDS AND STRATEGIES FOR HIV PREVENTION

NUMBER OF PEOPLE AFFLICTED WITH HIV/AIDS

It had been projected that by the end of 2004 there would be approximately 1,070,000 adults and children infected with HIV in Thailand since the start of the epidemic in 1985, that 501,000 of them would subsequently die of AIDS, and that there would be 572,000 people currently living with HIV/AIDS, including 24,000 children (0-15 years of age) and 548,000 adults (39% females), and that 19,400 new infections would occur in 2004 (Thai Working Group, 2001).

HIV PREVALENCE RATES IN DIFFERENT POPULATIONS

In 2003 the prevalence of HIV among adults was estimated at 1.2% (Thai Working Group, 2001). Based on the results of the HIV serosurveillance in mid-2003, the prevalence of HIV among pregnant women was 1.18%, and in conscripts aged 18-25 years it was 0.5%. However, the prevalence of HIV in some specific populations is higher; for example, 10.87% in direct female CSWs and 45% in drug users who attended treatment clinics (Epidemiology Division, Ministry of Public Health, Thailand, 2004). A cross-sectional study conducted among 1,121 Thai men aged 18 years or older who resided in Bangkok and who reported anal or oral sex with a man during the past 6 months revealed an HIV prevalence of 17% (F. van Griensven, personal communication, January 8, 2004).

Strategic priorities in the early phases of the epidemic focused mainly on female sex workers and their male clients. Little was known about sexual risk behaviors

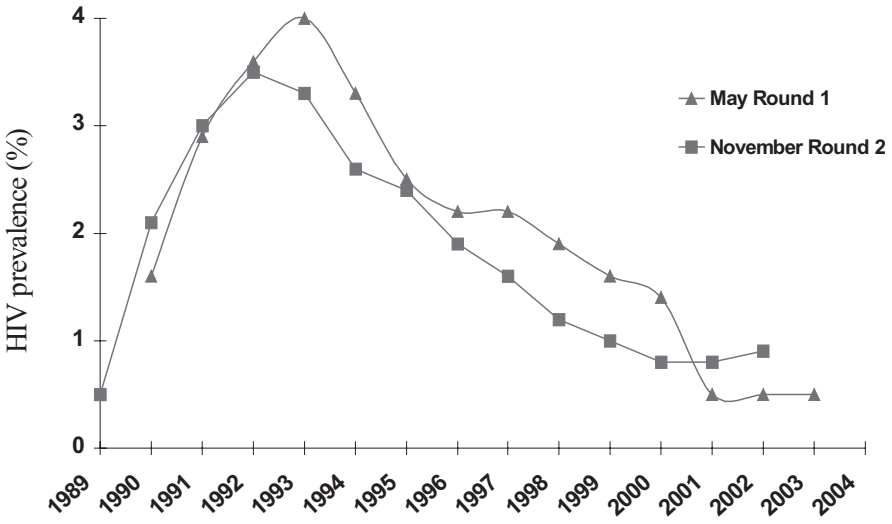

FIGURE 4. HIV prevalence among male conscripts at the age of 21 years, Thailand, 1989-2003.
***Note*. Royal Thai Army, 2004.**

among young Thai women who are not sex workers. Recent evidence suggests there has been a resurgence in unsafe behaviors among the younger generation. Available data on sexual risk behavior among young Thai women indicate an increase in the levels of premarital sexual experience, the majority of which is unprotected (Bond, Valente, & Kendall, 1999; Mills et al., 1997; Podhisita & Pattaravanich, 1995). Subsequent analyses have also demonstrated a substantial increase in HIV transmission among the population of women aged 20-24 years (van Griensven, Godfried, Surasiengsunk, & Panza, 1998). Contributing factors include an increase in premarital sex, having partners whose sexual networks include female sex workers, peer pressure, gender inequality, and social attitudes surrounding sexual activity that limit communications regarding sexual practices (Bond et al., 1999; Cash, Sanguansermsri, Busayawong, & Chuamanochan, 1997; Ford & Kittisuksathit, 1994; Havanon, 1996; Havanon, Bennett, & Knodel, 1993; Knodel, VanLandingham, Saengtienchai, & Pramualratana, 1996; Mills et al., 1997; Podhisita & Pattaravanich, 1995; Weiss, Whelan, & Gupta, 1996; Xenos, Pitaktepsombati, & Sittitrai, 1993; Xu et al., 2000). Furthermore, recent investigations have identified factors that might place young Thai women at risk for HIV/STD and unintended pregnancy. These include unprotected sexual activity, sexual coercion, drug and alcohol consumption, and low levels of contraceptive use (Allen et al., 2003). Also, low levels and inconsistency of condom use were common in both sexually active young men and women (Jenkins et al., 1999; van Griensven et al., 2001), because the majority of the subjects did not perceive themselves to be at an elevated risk for acquisition and transmission of HIV/STDs. The fact that high-risk groups such as sex workers and their clients have been disproportionately represented in the Thai HIV epidemic might have inadvertently distorted these Thai youths' self-perception of their vulnerability to HIV/STD acquisition (Allen et

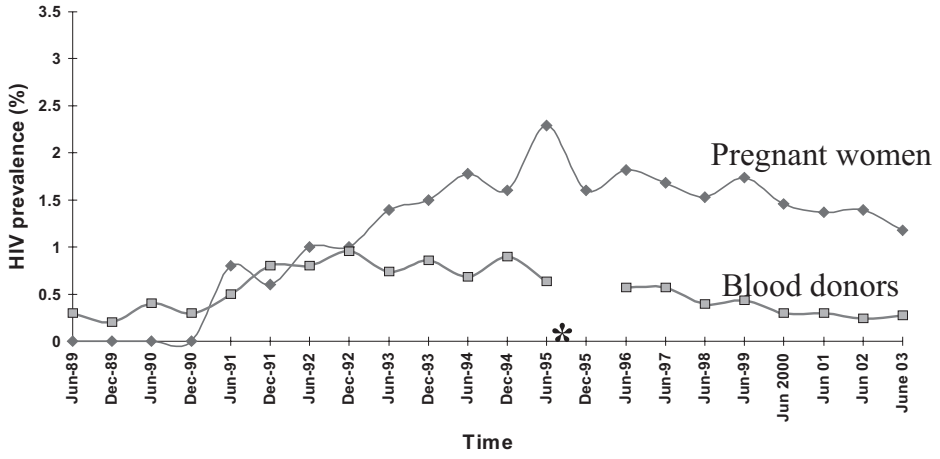

FIGURE 5. Trend of HIV prevalence among pregnant women and blood donors, Thailand, 1989-2003. *Switch from biannual (June and December) to annual in June since 1995. From Sentinel Serosurveillance, Division of Epidemiology, Ministry of Public Health (2004).

al., 2003). Consistent findings were found in recent investigations on the changing trend of HIV risk behaviors among young Thai men since the implementation of the 100% Condom Program. Although sexual encounters with girlfriends were increasing and becoming more frequent than with CSWs, the level of consistent condom use with CSWs was progressively declining from 60% in 1994-1995 (Jenkins et al., 1999) to 40% in 1999 (van Griensven et al., 2001).

Taken together, these circumstances suggest that adolescents and young adults in Thailand, particularly young Thai women, constitute a growing vulnerable segment of the population that could become a driving force for the future spread of the epidemic. As a nation, Thais are cognizant that their future lies in protecting adolescents and youth from the perils of this epidemic. Although important successes have been achieved, there are still gaps in the existing campaign. There is a need to expand HIV prevention efforts to our young generations.

FUTURE CHALLENGES

The HIV/AIDS epidemic in Thailand continues to evolve. The incidence of new infections has declined, due largely to an effective national intervention campaign, the 100% Condom Program. In spite of these achievements, closer analysis reveals a troubling upward trend of HIV risk behaviors in certain subpopulations, particularly young women (van Griensven et al., 1998), homosexual men (Beyrer et al., 1995; Beyrer et al., 1998), and IDUs in some regions (Epidemiology Division, Ministry of Public Health, Thailand, 2004). Wide-scale implementation of multidimensional strategies to cope with the evolving epidemiological trend of the disease in a resource-limited setting poses a formidable challenge, as well as a unique opportunity.

MAINTAIN AND REINFORCE THE SAFE SEX CULTURE ACROSS BROADER RANGES OF PARTNERS

Of paramount importance in the fight against the HIV epidemic is maintaining a strong commitment to sustaining unfailing, consistent, and universal condom use. When Thailand was hit by the Asian financial crisis in August 1997, public expenditure on the national AIDS program declined by 28%. Between 1996 and 1999, the number of free condoms distributed by the government declined by about half (World Bank, 2000). Indicators since the mid-1990s, however, suggest a potential resurgence of HIV infections if condom use declines. Over time, lower priced brothels have been forced to close down due to both a reduction in their number of clients and official pressure. Although the prevalence of organized (brothel-based) commercial sex has been reduced, commercial sex has not been eliminated. Instead it has moved to environments that are more difficult for the government to reach and effectively implement prevention efforts. The lack of government oversight may result in less consistent condom use (Lyttleton, 2000). This segment of commercial sex, including "indirect" sex workers in massage parlors, bars, and restaurants (Komatsu et al., 1996), "undocumented" sex workers trafficked from neighboring countries (Beyrer, 2001; Gupta, 1999), and male sex workers (F. van Griensven, personal communication, Jan 8, 2004), are difficult to target, and are thus at high risk for acquiring and transmitting HIV. Adding to this problem is that people in general underestimate the risk that can accrue from non-commercial casual sex (Lyttleton, 2000).

A number of behavioral studies demonstrate the increasing level of premarital sexual experiences among young and unmarried Thais. These findings suggest that there are changes occurring in the course and direction of HIV epidemic in Thailand (Bond et al., 1999; Lyttleton, 2000; Xu et al., 2000, van Griensven et al., 2001; Jenkins et al., 2002).

DEVELOP PRAGMATIC APPROACHES TO REDUCE TRANSMISSION BY IDUs

Renewed strategic approaches and a broader government commitment to countering the threat posed to society by illicit drugs should be introduced. Of particular concern is that an increasing proportion of young Thai men report injection drug use, increasing from 1% in 1991 to 4.2% in 1997. This is disturbing, because IDUs constitute a rapidly growing segment of new infections and carry the highest infection rate at 40% to 50% (Epidemiology Division, Ministry of Public Health, Thailand, 2004). Thus, they are again becoming a reservoir for transmitting HIV to other segments of the population. Scientific studies have demonstrated the effectiveness of harm minimization programs (Loxley, 2000). Nevertheless, the pragmatic approach that effectively curbed heterosexual transmission via commercial sex, which is also illegal in Thailand, has not yet been adopted. Acknowledging effective strategies and rapid translation of scientific findings into public health policy and practice is a vital step in slowing the growth of the epidemic.

PROMOTING ENABLING ENVIRONMENTS AND EMPOWERING SOLUTIONS

Recognizing that the status of women in Thai societies may make it difficult for them to take measures to protect themselves from HIV infection, we need to ensure that the specific needs of women are taken into consideration. Factors that are conducive to higher risk of HIV infection in women stem from susceptibility to infection, less control over risk behaviors, and roles as primary caregivers. Gender inequality, soci-

etal attitudes surrounding sexual activity and drug use, and the stigma attached to HIV and AIDS continue to seriously impede HIV prevention efforts and impair the efficient use of resources. Efforts to overcome social barriers and remove remaining political barriers will be increasingly important. Interventions need to be targeted to adolescents and young adults, particularly women, as well as marginalized populations such as IDUs, sexually active homosexual men, and indirect sex workers who are increasingly affected by the epidemic. Efforts should be made to involve these segments of the population in program planning and delivery to promote health-enhancing and harm-minimizing behaviors. Additionally, we need to ensure that the gaps in prevention, health promotion, and treatment initiatives are minimized.

RESEARCH ON COST-EFFECTIVE WIDE-SCALE IMPLEMENTATION OF ANTIRETROVIRAL TREATMENT

As the epidemic progresses, there is a growing need for strategic research, which plays a vital role in informing policy development and planning of health care delivery. As the number of symptomatic HIV-infected patients increases, the issues of management and care become a pressing priority. Concerns have been raised about how to optimize limited resources and balance the need between prevention and treatment. It has been estimated that each year up until the end of 2006, over 50,000 Thais will die from AIDS-related causes. Over 90% of these deaths will occur in people aged 20-44 years, the most productive sector of the workforce (CDC News Update, 2003).

At the beginning of 2003, Thailand received U.S.$209 million from the Global Fund to fight AIDS, tuberculosis, and malaria (APEC Emerging Infections Network, 2003). This funding is to be used to provide ARVs for AIDS patients, among other HIV/AIDS initiatives, over the next 5 years. However, it will provide treatment for not more than 20% of the total number of AIDS patients. There is also a need to develop cheaper test surrogates for clinical management of patients, and to make them available to all provincial hospitals, as well as to regional and university hospitals. Administering these therapies is complex, and patient compliance is a major challenge. If compliance and careful follow-up of patients are not achieved, we will witness a substantial increase in multidrug-resistant HIV mutants, whose further spread will exacerbate the epidemic.

Lower priced drugs will create a new demand for treatment, which in turn will overwhelm the existing health care structure. Barriers to treatment include lack of information among people living with HIV/AIDS (PLWHA) about available treatment, reluctance to be tested, provider attitudes that discourage AIDS patients from seeking treatment, low availability of drugs in some health facilities, and the absence of a well-defined package of health care benefits in the different public insurance schemes for PLWHA (World Bank, 2000). These realities underlie the urgency of integrating HIV/AIDS treatment and care into the existing public health infrastructure, as well as assessing the technical and economic feasibility of combination ARV, using cost effectiveness as a guiding principle.

LESSONS LEARNED

Not only have socioeconomic and cultural forces shaped the direction and course of the Thai HIV epidemic, they have also influenced the national control policy and intervention. The dynamics of Thailand's HIV epidemic and the national response suggest several valuable strategic lessons. First, the nationwide epidemiological surveillance system that covers several high-risk populations is an indispensable tool

for generating public awareness of the epidemic and for mobilizing political commitment and action. Supplemented by behavioral surveillance, the system provides a clear picture of where the new infections are occurring and, therefore, where HIV prevention programs and services are most needed.

Second, Thailand has provided an exemplary model of learning from large-scale pilot projects than can rapidly expand to the national scale. For example, the feasibility and effectiveness of the pilot project of the 100% Condom Program in Ratchaburi province led to a successful national expansion. Similar strategies have been applied in piloting and expanding programs to prevent mother-to-child transmission of HIV (Kanshana et al., 2000; Thaineua et al., 1998). Additionally, counseling models and testing services developed by the Thai Red Cross Society were later adopted by the Ministry of Public Health.

Third, a nationwide program that focuses on the highest risk context, the heterosexual component, has created a profound impact on the course of the epidemic. A willingness and ability to collaborate with sex workers and their clients, using a pragmatic approach rather than a repressive strategy, was a key to the success of HIV prevention efforts.

Fourth, a strong public health infrastructure that includes an extensive nationwide network of STD clinics plays a crucial role in the success of the 100% Condom Program in providing information, free condoms, and treatment; in monitoring compliance among sex workers and clients; and in assessing the impact of the program. Ensuring compliance of the program in countries without a network of STD services and where the sex trade is not establishment-based will be more difficult (UNAIDS, 2000).

Attracted by the possibilities of working effectively in an atmosphere of political commitment and a well-established public health infrastructure, international foundations and multilateral bodies have entered into partnerships in Thailand to scale up prevention efforts. Therefore a well-established public health infrastructure is an indispensable element in building multinational networks, in galvanizing intense international collaboration, and in generating a large volume of scientific knowledge that has made the Thai national response one of the most effective.

Finally, the HIV epidemic is beyond the scope of the health sector alone, with an impact not only on individuals and families but also on the wider social structure, economy, and human security. Thus, control requires multidimensional strategies that embrace every field of social action. Within the country, government efforts were complemented by all sectors of Thai society, including NGOs, business leaders, local leaders, mass media, PLWHA, and religious institutions. NGO involvement plays a central role in ensuring nondiscrimination and respect for human rights, as well as in developing prevention and care initiatives that fully involve the target groups in program planning and delivery. This further emphasizes the important role civil society plays in combating the epidemic.

Thailand's apparent success, however, can potentially fuel complacency about the importance of and continued need for prevention. Maintaining visionary responses and an unfailing commitment to innovative strategies and progressive approaches in the fight against HIV/AIDS are therefore essential if the downward trend of HIV infections is to be sustained in Thailand.

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