

Discovering Global Success:

*Future Directions for HIV Prevention In the Developing **World***

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on International HIV/AIDS Prevention Research Opportunities*

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Policy Monograph #1 – Revised April 2000

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Introduction

The National Institutes of Health's Fogarty International Center in collaboration with a number of other agencies sponsored the ***Fogarty Workshop on International HIV/AIDS Prevention Research Opportunities*** on April 18-20, 1998. The AIDS Research Institute at the University of California, San Francisco hosted the Workshop. The purpose of the workshop was to identify a package of effective HIV prevention interventions and develop a list of priority research goals that combine biomedical, behavioral and social interventions for HIV prevention in developing countries. The goal was to encourage research that would be feasible and relevant for developing countries with limited resources.

The main products of the workshop were the development of a package of essential HIV prevention strategies, a model for country-level HIV prevention planning and a listing of priorities for international HIV prevention research.

A total of 171 representatives from 37 countries heavily affected by the epidemic participated (appendix D). Skill-building workshops immersed participants in the process of strategic prevention planning. Workshop participants attended plenary presentations by prominent HIV prevention researchers. Participants were then divided into six groups and instructed to analyze a specific country profile and devise a prevention plan for that country. These groups met for four sessions, each focusing on one aspect of prevention research: epidemiological, biomedical, behavioral and a focus on injection drug use. Researchers from various prevention fields served as facilitators during the group planning sessions. The plans developed by the workshop participants are included in appendix C along with the corresponding country profiles.

In an effort to receive feedback from the global HIV/AIDS community the materials from the workshop are available on the web at <http://hivinsite.ucsf.edu/ari/fogarty>. Copies of the workshop materials also have been distributed to educational institutions, health authorities, foundations and non-governmental organizations in both developed and developing countries.

The Essential Prevention Package

The workshop produced what constitutes an essential package of HIV prevention strategies. County-level prevention planners will inevitably give various elements of the package higher priority depending on the specific characteristics of each country. The components below are not presented in order of priority. The inclusion of any element and its relevant priority would be established through a country-level planning process. The essential package of HIV prevention strategies includes the following:

- ◆ Positive policy environments
- ◆ Widespread public education about HIV
- ◆ Promotion of prevention skills
- ◆ Condom availability & social marketing
- ◆ Sex education
- ◆ Sentinel surveillance
- ◆ HIV counseling & testing
- ◆ Treatment for Sexually Transmitted Diseases (STDs)
- ◆ Treatment for HIV
- ◆ Treatment for drug and alcohol abuse
- ◆ Screening the blood supply

Positive policy environments

Different public policies within countries may either inhibit or promote HIV prevention interventions. The status of women and human rights protections for people infected with HIV are important to the policy environment within developing countries. So are policy decisions about the allocation of resources to address the epidemic. Other more specific policies, e.g. tariffs on condoms, criminalization of sterile needle possession, restrictions on content of school-based education on sexuality, etc. may also inhibit HIV prevention. Country-level HIV prevention plans may include recommendations to foster a more positive policy environment.

Widespread public education about HIV

Awareness of HIV and its possible modes of transmission is a necessary component of HIV prevention. Particularly with nascent epidemic patterns, public awareness of the potential threat of HIV as well as public information on how to avoid infection should be a component of a comprehensive HIV prevention plan. Research has shown that a perceived threat, if it is coupled with the promotion of practical prevention strategies, can be a powerful motivator for positive behavior change. In most countries, an important first step is making people realize that they are at risk.

Promotion of Prevention Skills

Increasing the awareness of threat will only be effective when that message is coupled with useful information. Campaigns can be undertaken at both the state and local levels, by governmental and non-governmental agencies, to promote HIV transmission knowledge and prevention strategies. Especially in the case of a concentrated epidemic pattern, agencies must use limited resources to target those individuals and groups at greatest risk for acquiring or

transmitting HIV. In some developing countries this may involve efforts to work with commercial sex workers and their clients to promote condom availability and proper use. Similarly, the target group may be members of the military, truckers or others with increased numbers of sexual partners. In other countries the epidemic may require working with injection drug users and their sexual partners to promote the availability of clean injection equipment and condom use with sexual partners. Men who have sex with men may also be a group at particular risk in some countries, in which case those countries must find ways to target interventions to reduce sexual risk taking.

Condom availability & social marketing

Condom availability is an essential part of preventing sexual transmission of HIV. Social marketing techniques can both increase the sale of condoms and promote the understanding of the need to use condoms properly. Free condom distribution may be a priority in many countries, particularly coupled with peer education targeted to commercial sex workers and other groups at increased risk. Careful efforts may be needed to work through religious group resistance to condom promotion and distribution.

Sex education

Explicit and comprehensive school-based sex education programs, which include components on life skills and modes of preventing HIV infection, can be an important part of a comprehensive country-level HIV prevention plan. Because HIV infections are occurring at very early ages in many developing countries, these school-based and youth outreach programs need to begin before young people are likely to be placed at risk of sexual transmission. Education level is often a predictor of risk for HIV infection in developing countries, particularly among girls and young women. Policies that promote education for girls and young women may themselves be a part of a comprehensive country-level HIV prevention plan. But sex education in particular will help dispel sexual myths for young people and raise awareness about the relative risks of sexual activity.

Sentinel surveillance

Knowing about the prevalence and incidence of HIV infection can be of assistance in monitoring the epidemic and planning an adequate response. Surveys of the prevalence of infection in groups that are believed to engage in high-risk behavior – commercial sex workers, injection drug users, men who have sex with men, STD patients and men in the military – can help identify the pattern of the epidemic. These studies are generally unlinked to a name or other identifying information. Such studies among groups thought to be at generally low risk, e.g. pregnant women at antenatal clinics, can help determine the extent to which the epidemic has moved to the general population. Because of limited resources, sampling techniques for surveys at sentinel sites would generally be the most practical approach in developing countries.

HIV counseling & testing

Knowledge regarding HIV status is an important component of preventing further transmission. The availability and promotion of HIV counseling and testing affords individuals greater opportunity to learn their status and to begin taking steps to prevent transmitting the virus. Such counseling should be as "risk free" as possible and can be targeted to individuals or couples, or offered in the context of whatever health care infrastructure exists in a given country.

Treatment of STDs

Because sexually transmitted diseases (STDs) increase the biological vulnerability to infection with HIV and the potential to transmit to others, the availability of programs to diagnose and treat such diseases is an important component of international HIV prevention programs. Counseling

in the context of STD treatment should focus on methods of HIV risk reduction and may be linked to programs for condom availability and instruction in proper condom usage.

Treatment of HIV

Steps must be taken to prevent the mother-to-child and sexual transmission through HIV treatment, even in countries with limited resources. HIV transmission from infected mothers to their newborn babies is of particular concern in developing countries. Such transmission may occur before, during or after birth through breast-feeding. Medical treatments to prevent the transmission from mother to child are available in most industrialized countries, but shorter courses of treatment may be affordable in some of even the least developed countries. A renewed effort must be made to provide low-cost pharmaceuticals to resource-poor countries. Simple treatments can reduce viral load and serve as prophylaxis against infectious diseases.

Treatment of drug and alcohol abuse

Drug and alcohol abuse are significant risk factors for HIV transmission. Such abuse can be more problematic in developing nations because these countries generally do not devote resources to treating the problem, at either a societal or individual level. Basic outreach, support and counseling services for those suffering from drug and alcohol abuse will help to lessen their incidence and prevent HIV transmission.

Screening the blood supply

While the screening of a country's blood supply for HIV may be taken for granted in industrialized countries, funds for such blood safety efforts frequently run out during parts of the year in many of the least developed countries. Therefore, adequate funding and planning for the necessary kits to screen the blood supply should be part of action plans for counties where the governments can not assure the ongoing screening to protect the available blood supply. Comprehensive blood donor and blood component screening should also screen for other possible blood-borne pathogens. Policies should promote voluntary blood donation, self-deferral for individuals who perceive themselves to be at risk, avoidance of indiscriminate blood transfusion and encourage auto-transfusion whenever possible.

HIV Prevention Planning Process

International participants in the workshop made clear one central tenet of HIV prevention planning: prevention plans must be country-driven, not donor-driven. Country-driven plans require valuing local expertise when designing interventions and setting priorities. Participatory planning encourages a range of perspectives, helps develop consensus and leads to resource mobilization. Because certain functions like screening the blood supply are generally government functions, representation from the government is important. However, non-governmental organizations are central to the success of HIV prevention in most countries and thus their representation is essential. In addition, the success of planning efforts requires that all affected communities within any country be represented in a meaningful way. Ideally, the planning process would involve representation of all the major stakeholders in the country.

The model-country planning process illustrated the extent to which priorities would be quite different depending on the stage of the epidemic – nascent, concentrated or generalized – and the extent to which the availability of resources shapes decision-making. Conducting a needs assessment begins with a review of what is known about the epidemiology of the epidemic and results in a series of questions that need further clarification. Once some consensus is reached about the problem, the planning involves setting priorities for meeting the identified needs. Groups will choose the interventions that in their view are most likely to accomplish their goals from the list of essential prevention strategies. Ultimately, decision-making is both evidence-based and value-based. The more investment in a quality planning process the more likely the success of the country-level HIV prevention program.

Country Level Planning Process	Country-Level Planning Tasks	Additional Resources
<ul style="list-style-type: none">◆ <i>Ensure non-governmental participation</i>◆ <i>Ensure governmental participation</i>◆ <i>Commit to the planning process</i>	<ul style="list-style-type: none">◆ <i>Develop an epidemiological profile</i>◆ <i>Assess and set priorities for targeting groups, if indicated</i>◆ <i>Select from among a basic package of HIV prevention interventions</i>◆ <i>Evaluate programs</i>	<ul style="list-style-type: none">◆ <i>Construct a budget within existing resources</i>◆ <i>Mobilize resources to respond to unmet needs</i>

Priorities for International HIV Prevention Research

Each of the model-country planning groups developed recommendations for priority HIV prevention research. The recommendations followed from identification of areas of research that were lacking as they attempted to set priorities for HIV prevention interventions in the context of the model-country. When taken together, these recommendations provide a description of needs clustered into five general categories.

Global Priorities

A set of urgent prevention research needs with global implications emerged repeatedly. These are major issues that go beyond our current research activities.

- ◆ How can we accelerate policy changes that promote prevention?
- ◆ How can young women in high incidence areas be protected from sexually transmitted HIV?
- ◆ What can be done to respond to gender inequity and lack of educational opportunities for women?
- ◆ How can youth be better protected from HIV infection?
- ◆ How can short course anti-retroviral therapy to prevent perinatal transmission be adapted to meet the realities of developing countries?
- ◆ How can the use of alcohol as a risk factor be incorporated into HIV prevention planning?
- ◆ How do we better understand and remove stigma and find solutions to HIV-related discrimination?

Effectiveness Research

The effectiveness of prevention interventions needs to be assessed in terms of specific outcomes in developing countries. These studies would focus on the behavioral or health outcomes of HIV prevention interventions. Effectiveness can be assessed by such outcomes as increased knowledge, changed attitudes or social norms, decreased risk-taking behavior and incidence of STDs or HIV-infection. The goal of these studies is to develop empirical data based on scientifically controlled studies to inform judgements about effectiveness.

- ◆ Does a specific STD treatment program reduce the risk of HIV infection in a given area of the country?
- ◆ Does any given public information campaign change the level of HIV knowledge in the general population?
- ◆ Does a specific condom availability and condom social marketing campaign reduce the incidence of STDs and HIV?

Cost-Effectiveness Research

Because developing countries have major limitations with resources, cost-effectiveness data are seen as essential to improved decision-making. Such research allows planners to assess the relative advantages of one intervention over another in the context of limited resources. The goal of cost-effectiveness studies is to determine the cost of each infection averted as the result of specific interventions. If data are gathered using standard measures, then comparisons can be made to help inform priority setting for interventions.

Operations Research

The basic prevention package of interventions sets out a number of options for specific interventions that could be adapted to situations in any given developing country. However, what is often needed is research on ways in which any intervention can be adjusted to the specifics of a given country. This concern addresses the important considerations of culture and attempts to build on what has previously worked in any given country. The specific goals of these research projects would be to take the conceptual framework of the interventions in the basic prevention package and test how these may be implemented in specific countries.

- ◆ Should STD treatment be made available in alternative health settings?
- ◆ Should counseling and testing be offered to couples as well as individuals?
- ◆ Should education and risk reduction communications come from government or non-governmental sources?
- ◆ Should youth education be school-based or community-based?

Sentinel Surveillance

The task of planning to implement specific HIV prevention interventions targeting specific groups or regions at increased risk is often difficult because of the lack of adequate surveillance data. Developing countries could benefit greatly from simplified basic technology for gathering sentinel surveillance data and making projections about both prevalence and incidence of HIV infection within geographic regions of the country.

Mobilizing Resources

Responding to the challenges of the HIV epidemic in the developing world will clearly require mobilizing more adequate resources.

UNAIDS figures establish the need for action – 33.6 million adults and children living with HIV by the end of 1999. Over 16 million people have already died of AIDS around the world. And, 95% of new infections are in the developing world, which has only 10% of the world resources. What is more, the situation appears to be getting worse – not better – with an estimated 5.6 million new infections during 1999. The gravity of the situation clearly demands a coordinated global response.

Based on earlier cost estimates developed by the Global AIDS Program at the World Health Organization, we estimate that implementing this basic prevention package would cost approximately \$2.6 billion. This funding would need to come from within countries and from an increased effort on the part of donor nations.

The U.S. investment in international prevention efforts through the U.S. Agency for International Development (USAID) is \$195 million in 2000. These funds are largely used for bilateral programs in Africa, Asia and Latin America. Some funds are used for multilateral programs through UNAIDS; the remainder are used to support core functions, including operations research on how to improve the effectiveness of the prevention efforts.

The National Institutes of Health (NIH) is spending more than \$60 million on international research in 2000, a figure expected to grow in future years. The NIH has established the HIV Vaccine Trials Network, as well as an HIV Prevention Trials Network, to rapidly test both biomedical and behavioral approaches to HIV prevention. Sites are located throughout the U.S. and in 8 developing countries. NIH is also actively involved in training international AIDS researchers through the leadership of the Fogarty International Center. In addition, more than 1,300 researchers from more than 90 countries have received training in the U.S.

Greater leadership is needed from both the United Nations and the G-8, the group of eight major industrialized countries - the U.S., the United Kingdom, France, Japan, Germany, Canada, Italy and Russia. Together these countries control more than half of the International Monetary Fund (IMF) and the World Bank. When united, the G-8 can exert considerable influence.

The success of any effort to raise the necessary funds to support the implementation of this essential HIV prevention package will depend on international mobilization. A first step is to raise the visibility of the international AIDS issue. Then, organizing at the grass-roots level is very important. Leaders within countries and leaders of donor nations need to hear from concerned individuals and from the scientific community about the importance of immediate and sustained action.

Appendix A:

Developing Model Countries for HIV Prevention Planning

In *Confronting AIDS: Public Priorities in a Global Epidemic, A World Bank Policy Research Report*, the typology for considering the level and distribution of HIV infection in developing countries is proposed. We have used this conceptual frame for developing hypothetical model countries to explore how planning would occur for these different model countries. The typology is based on the prevalence of HIV infection among groups thought to be at increased risk of HIV infection: commercial sex workers, homosexual men, injection drug users, STD patients, men in the military, and -- a frequently assessed group thought to be generally at low risk -- pregnant women attending antenatal clinics.

The typology outlines Three Stages of the HIV/AIDS epidemic

Nascent	Concentrated	Generalized
<i>HIV prevalence is less than 5 percent in all known subpopulations presumed to practice high-risk behavior for which information is available.</i>	<i>HIV prevalence has surpassed 5 percent in one or more subpopulations presumed to practice high risk behavior, but prevalence among women attending urban antenatal clinics is still less than 5 percent.</i>	<i>HIV has spread far beyond the original subpopulations with high-risk behavior, which are now heavily infected. Prevalence among women attending urban antenatal clinics is 5 percent or more.</i>

We developed model-country descriptions for each of these stages of the epidemic at low and moderate levels of national resources. Real countries were not used based on the advice of prior conference planners that such approaches limited the input of participants in the planning process.

The Model Countries

	Limited Resources	Modest Resources
Nascent Epidemic	Country C: An Asian Country	Country F: An Asian Country
Concentrated Epidemic	Country A: A Southeast Asian Country	Country E: A Latin American Country
Generalized Epidemic	Country B: A Sub-Saharan African Country	Country D: A Latin American Country

Appendix B:

Model Planning Group Questions

The overall objective of the model-country planning groups was to develop country plans with two sets of recommendations for the next five years:

- 1: A Priority list of behavioral and biomedical interventions that could be implemented within the economic reality of the country.
- 2: A priority list of recommendations for HIV prevention research.

Epidemiology and HIV Prevention Planning

The goal of this session was to prioritize target groups for HIV intervention programs. To achieve this goal, we recommended the working group consider the following questions:

- What would your interest estimates be of the actual incident and prevalence of HIV infection in the country?
- In which groups and geographic areas are incident cases occurring?
- What are the predominant behaviors associated with incident cases?
- How would you prioritize target groups for HIV intervention programs?

Biomedical Approaches to HIV Prevention

The goal of this session was to make recommendations for biomedical prevention research for the country. To achieve this goal, we recommended that the working group consider the following questions:

- What biomedical approaches to HIV prevention might be considered for the country (e.g. STD control, microbicides, HIV testing, antiretroviral therapy)?
- How would these biomedical approaches complement behavioral interventions?
- Are there special situations where certain biomedical approaches might be implemented (e.g., sub populations, networks, perinatal transmission)?
- What are the research priorities for biomedical intervention research?
- What are the research priorities for biomedical interventions in this country?

Behavioral Approaches to HIV Prevention

The goal of this session was to make recommendations for behavioral prevention research for the country. To achieve this goal, we recommend that the working group consider the following questions:

- What individual behavioral approaches to HIV prevention might be considered for the country (e.g., testing and counseling, condom promotion, and needle exchange/distribution)?
- What behavioral approaches beyond the individual level might be considered for the country (e.g., family, worksite, community, structural, policy)?
- How would these behavioral approaches complement biomedical interventions?
- What is needed to build in-country capacity for biomedical intervention research?
- What are the research priorities for the behavioral interventions in this country?

Injection Drug Use Approaches to HIV Prevention and Final Recommendations

There were two goals for this final session. The first goal was to make recommendations for prevention research that addresses the risk of HIV transmission by injection drug use. To achieve the first goal, we recommended that the working group consider the following questions:

- Does a significant injection drug use epidemic exist in the country?
- What epidemiological or behavioral research needs to be done to make decisions about the optimal prevention research strategy for prevention transmission associated with injection drug use?

The second goal of this session was to develop the two prioritized lists.

- A prioritized list of behavioral and biomedical interventions that could be implemented within the economic reality of the country.
- A prioritized list of recommendations for HIV prevention research.

To develop these lists, we recommended the following steps:

- Review the intervention and research recommendations for each of the preceding working group sessions.
- Revise these earlier recommendations as appropriate, given the new ideas that the working group may have generated.
- Develop a plan comprised of the working group's top recommendations. Take into account such considerations as:
 - Targeting specific groups
 - Combining biomedical and behavioral approaches
 - Multiple levels of intervention for both behavioral and biomedical interventions

- Cost-effectiveness and resource limitations of the country

Appendix C:

Model Country Profiles and HIV Prevention Plans

Profile of Country A

Country A is a small Southeast Asian country. The population is remarkably homogeneous; the predominant ethnic group constitutes 90% of the total population and most belong to the older and more traditional of the two schools of Buddhism. Country A is among the poorest in the world.

Demographic Parameters

The most recent estimates put the population at 25,000,000. The distribution by age and gender is as follows:

Age	Percent of Total	Male	Female
0-14	45% 11,250,000	50.74% 5,708,250	49.26% 5,541,750
15-49	45.4% 11,350,000	48.3% 5,482,050	51.7% 5,867,950
50 & over	9.6% 2,400,000	45.1% 1,082,400	54.9% 1,317,300
Total	25,000,000	49.1% 12,272,700	50.9% 12,727,300

Life expectancy at birth for the total population is 50 years -- for males 49 years, and for females 51.5 years. The population growth rate is 2.9% annually and is not affected by migration since the net migration rate is 0 per 1,000 population.

Women in Country A marry at earlier ages than in western countries but not as early as women in African countries. By age 15, 11% are married; by age 20, 35% are married; by age 25, 80% are married; by age 30, 90% are married; and by age 50, 95% are married. The difference in age at marriage between men and women is 2 years. The mean age at marriage for women is 22.

Fertility rates in Country A are high. The average number of children born per woman is 5.8 and estimates do not expect that level to change in the near future. The current birth rate is 45 per 1,000 population.

Morbidity and mortality rates in Country A are among the highest in the world. The crude death rate currently stands at 16 per 1,000 population while the infant mortality rate is 111 per 1,000 live births. Major causes of death per 100,000 are not available, but major health problems include tuberculosis, malaria, schistosomiasis, and pneumonia.

Throughout Country A's history, an acute shortage of medical personnel has been a major obstacle to the implementation of an effective public health program. Even before a civil war, Country A had few doctors, hospitals, or medical facilities; this fragile system was strained and eroded by the civil war two decades earlier. During the last 20 years, the scarcity of funds, unsettled conditions in the country, a lack of sanitation, and a shortage of medicine have contributed to reports of malaria and hepatitis A epidemics. The capital city has the country's best health care facilities and trained medical personnel; most rural areas are served only by a local infirmary.

HIV/AIDS Behavioral and Epidemiologic Parameters

HIV and AIDS Epidemiology

HIV was first identified in Country A in blood donations in 1991 and the first AIDS case was diagnosed in 1993. Data on HIV prevalence and AIDS cases are of questionable reliability. Most of the available data are based on urban serosurveys while the majority of the population lives in rural areas. Surveys made in 1995 and 1996 led to an estimate of 150,000-250,000 HIV infected in late 1996, with a point estimate of just under 200,000. If this value is accepted, then the conclusion is that about 2% of the adult population was infected by the end of 1996.

AIDS cases appear to be underreported in Country A. By mid-1997, a total of 1,350 AIDS cases had been reported, but 700 had been reported in 1996 alone and 420 in the first 6 months of 1997. In one urban hospital, about 100 AIDS patients were seen each month late in 1997. This leads to the conclusion that the actual number of AIDS cases is much higher than the officially reported figures. The HIV subtype prevalent in Country A is HIV-1, type E--compatible with the Thai subtype. This suggests that the epidemic in Country A is based on regional spread rather than importation from outside the continent.

Little information is available on the prevalence of sexually transmitted diseases (STD) in Country A. A recent STD prevalence survey conducted in 4 urban areas found that gonorrhea, Chlamydia, syphilis, and genital ulcers were common in commercial sex workers (CSWs) and their patrons. Several strains of gonorrhea were resistant to multiple antibiotics.

The HIV epidemic in Country A appears to be due primarily to heterosexual transmission. In Country A there is a burgeoning commercial sex industry that is driven by an enormous disparity of income in a climate of extreme economic hardship, uninhibited by few social or institutional prohibitions. Since 1991, there has been a visible increase in commercial sex in urban areas; thousands of under-age girls are initiated into commercial sex each year. Perhaps 0.5% to 1.0% of the total population of women are CSWs. However, another 5 percent of women engage in sex for money or gifts. A 1995 serosurvey for HIV infection in selected provinces found a prevalence of 38% in CSWs, and a survey the following year held in twice the number of provinces found that HIV prevalence was 41%, though in some provinces the prevalence was close to 50%. Recent data indicate that urban CSWs have an average of about 25 clients per week with the number of sex acts only slightly higher.

Studies indicate that CSWs are widely patronized by men who span a wide variety of socioeconomic strata. Men in the military and police are at high risk for HIV/AIDS in Country A; an STD/HIV survey of such groups found that 82% of these men reported sex with a CSW in the last year. Substantial proportions also reported visiting CSWs in the past 3 months and the past one month – 67% and 50%, respectively. Commercial sex patronage was also found to be common among married men, 51% of whom reported visiting a CSW in the past month. This indicates that there is a high probability that married men who become infected with HIV can readily infect their wives or other sexual partners.

Recent studies of men in the general population also found high rates of commercial sex patronage. In one study, it was found that 31% of men aged 13-40 had at one time patronized CSWs, while another found that 27% of adult males in a large urban city had commercial sex in the past year. A comparison of urban and rural residents indicated that urban males are more sexually active than their rural counterparts: 34% of urban males vs. 24% of rural males reported

ever having sex with a CSW. Further, 46% of urban males reported more than 1 sexual partner in the past year compared with 36% of rural males.

Women attending antenatal clinics in Country A have been the subjects of recent serologic surveys for HIV. The results have differed for the last 3 years, possibly due to different sample sizes and different areas included in the surveys. Estimates, however, place the HIV prevalence rate in antenatal women at about 2 to 3%.

Behavioral risk studies apparently have not identified any substantial subgroup of injecting drug users (IDU). It may well be too expensive a habit for Country A inhabitants. At any rate it appears that such a group has not and will not be a source of HIV transmission in the immediate future.

Men who have sex with men (MSM)--like IDUs -- is not mentioned in the various studies of HIV/AIDS made in Country A. It cannot be concluded that such a group is nonexistent, but it does appear from surveys and studies conducted, that the major mode of HIV transmission is heterosexual.

HIV Prevention

Use of condoms has been increasing recently in Country A. Data for 1997 indicate that CSWs reported condom use for 80% of sexual acts -- an increase of about 8% over the previous year. However, they used condoms only 42% of the time with non-patrons. Increased condom use was reported also by men who patronize CSWs -- 55% of military/police and motorcycle taxi drivers reported always using condoms with CSWs in the past year, while 70% of male students surveyed reported always using condoms with CSWs. A survey of the general population of urban men found that 66% reported using condoms every time with CSWs.

Condom use with non-commercial sex partners, however, was much lower. Among military/police and taxi drivers, 70% and 63% reported never using condoms with girlfriends. 37% of married men reported in a 1996 survey that they always used condoms with CSWs, 6% said they used condoms with girlfriends, and 1.5% with their wives. 29% reported never having used a condom.

A blood bank system exists only in the capital city. Units of blood are screened for HIV, but transfusion services are limited. Data from the blood bank system are sparse but it is known that serologic screening of blood donors identified the first HIV infections in 1991. Prevalence rates among male donors in the capital city reached almost 10% in 1995. Since then, increased efforts for developing a volunteer donor system has reduced the rate to about 3-4%, which may be the general infection rate among sexually active males in the capital city. Most blood collected for transfusion in the largest urban areas are screened for HIV, but only a small percent of blood transfusions given in rural areas are screened.

In Country A, traditional social mores oppose young people engaging in premarital sex. Research indicates that among the young urban population, few seem to have partners such as sweethearts, lovers, or boyfriends/girlfriends. However, there appears to be an evolution in sexual norms, particularly among young women towards greater sexual activity premaritally. Other than opposition to premarital sex, there are few social or institutional prohibitions against sexual practices. Male circumcision is not generally practiced in Country A. CSWs are primarily brothel based, but are found also in bars and, a newer phenomenon, as waitresses hired by beer companies to promote their products.

Other Parameters

Country A is among the poorest nations in the world and its economy is one of the least developed in southeast Asia. The economy is dominated by agriculture with most rural families engaged in rice cultivation on small land holdings. Poverty is widespread; nearly 4 out of 10

inhabitants live below the poverty line of about \$US 11 per person per month. Per capita income is about \$US 287 annually. Malnutrition is widely prevalent with per capita caloric intake only 91% of the FAO recommended minimum requirement.

Close to 80% of the population live in rural areas where access to health services and education are difficult. The country's economy was severely shaken during political instability only last year, so that prospects now appear dim that the economy will soon contribute to alleviating poverty and easing disease and mortality. Furthermore, since revenues constitute less than 2/3's of the country's expenditures, the country is dependent on the continued contributions of international donors.

As noted above, financial resources are very limited in Country A and so are its medical services. There are no hospitals in rural areas where most of the population resides: services are available from infirmaries. There are approximately 25,000 hospital beds all of which are located in a few urban areas. A recent census indicates that there is approximately 1 physician for every 8,000 inhabitants.

HIV/AIDS has not so far had an appreciable effect on death rates because HIV infection was first detected early in this decade and the first cases of AIDS were not diagnosed until the middle 1990's. A new disease epidemic constitutes a formidable if not overwhelming challenge of an already weak and overburdened health infrastructure.

Surveys show that the population places substantial reliance for disease treatment on the informal sector, primarily pharmacies though CSWs frequently get treated in brothels. Traditional healers are visited especially in rural areas. Finally drug sellers and hospitals are also visited for treatment.

The National AIDS Program (NAP) has established offices in each province. These offices provide training, education, and outreach to CSWs, schools, the military, and the police. However, services are severely restricted by a lack of human, financial, and technical resources: they must rely on non-governmental organizations within their areas for transportation, materials, and most resources. Overall funding for HIV programs was estimated to be about one million (US\$) in 1993, 1.5 million in 1994, 4 million in 1995, \$7 million in 1996, and a projected 13 million in 1997. However, the last amount is currently in question since several international donors have reconsidered their assistance in the wake of recent political turmoil. Country A has contributed very little support to the NAP program, other than national staffing.

Prior to national independence (after WWII), the colonial power that controlled Country A had established a satellite bio-medical research institute that was staffed primarily by non-native scientists and technicians. At the present time, a new bio-medical research building has been donated by the former colonial power, and again this research institute is staffed primarily by non-natives. Many physicians in Country A have had some graduate clinical training overseas, but there are very few laboratory or basic research scientists/technicians in Country A.

Health services offered by the government are meager. Because the bulk of the population reside in rural areas, such services that might be available at rural infirmaries are difficult to reach as well as to obtain. As noted earlier, Country A's morbidity and mortality rates are among the highest in the world. With the added burden of HIV/AIDS, the very weak health system that currently exists is likely to be overwhelmed without massive support from international donors.

Illiteracy is high in Country A: for the population over age 15, only 35% can read and write--that includes 48% of men and 22% of women. To compound the difficulty of mounting a prevention/control program, the communication system is sadly deficient. Telephones are virtually nonexistent for the general public. There is 1 daily newspaper, 1 radio station and 1

television station. There is 1 radio receiver for each 6 persons; and 1 television set for each 140 persons.

Plan for Country A

Session Co-Chairs: Chirasak Khamboonruang, Thailand; Ken Mayer, Brown University
Recorder: Krysia Lindan, UCSF

General Description

This is a country in Southeast Asia with a population of 25 million people. The HIV infected population is estimated to be below 200,000, about 2% of the population. However, the HIV infection rate among commercial sex workers appears to be above 35%. At present the epidemic appears to be concentrated among CSWs and their patrons. Infection rates are high among married men, as are rates of STDs. No data are available on MSM or IDUs. Infection at antenatal clinics is 2-3%. Blood screening is undertaken only in the Capitol City. This is one of the poorest countries in the world.

Groups to be Targeted

In order to impact the HIV epidemic in Country A, specific groups must be targeted and provided services necessary for their group's specific risks. All groups should have access to condoms and other services. Youth must be provided with lifestyle skills. The high-frequency transmitters -- the CSWs, their clients, the military and police -- should be targeted as well because of their high rate of using CSWs. Women must be given skills and empowerment in order to decrease the infection rate among them. Contextual changes, such as increasing the legal age of marriage, could also decrease the infection rate among women.

Suggested Interventions

The blood supply must be made safe through increased screening, testing and pooling. Improved surveillance is another priority to better understand the epidemic in this country. With regard to specific interventions, efforts should be made to target CSWs, their clients, and people infected with STDs, as well as high-risk groups such as the military and police. Surveillance must cover urban and rural areas, giving particular focus on those districts with high STD rates. Access to HIV testing and counseling is also needed. In order for this intervention to take place, staff must first be trained and the country's public health infrastructure must be improved. The policy environment must also be changed in order to reduce the stigma of testing and counseling and increase the confidence of those seeking it. All of these interventions should be integrated with existing services, if feasible (such as family planning clinics, TB clinics, etc.).

Policy Environment Priorities

In order to affect the HIV epidemic in this country, the stakeholders must be brought together to improve public awareness of the problem through information and education campaigns, analyze existing policies, and assess the health care system infrastructure.

Research Priorities

1. Research is needed on the feasibility of increased capacity and quality STD and HIV treatment.
2. More information is needed on health care-seeking behavior, health beliefs, access to care, and the impact of information and education campaigns.
3. Studies are needed on the legal and structural impediments to prevention.
4. Research is also needed on behavioral determinants of risk, including the role of gender, power, social mobility, sex tourism, and migration in and out of country.

Final Comments

A sustained resource stream must be established in order to implement successfully the necessary HIV prevention interventions in Country A. But donor countries have to be responsive to local expertise in order for the prevention campaign to work. Treatment for HIV positive people must be included as part of the overall HIV/AIDS effort in this country. HIV/STD surveillance needs to be improved. Most needed are accurate measures of HIV incidence and prevalence as well as prevalence of antimicrobial resistance. And finally, the local infrastructure in Country A needs to be improved in order to make any headway in the HIV epidemic: capacity building and training must be improved.

Profile of Country B

Country B is located in sub-Saharan Africa. Its economy is based primarily on agriculture, but manufacturing is a fast growing sector and mineral deposits, if developed, may improve the economic picture. At present, the gross national product (GNP) is among the lowest in the world while the HIV/AIDS epidemic is considered among the most severe in the region and in the world.

Demographic Parameters

Projections place the current population at 19,000,000. The distribution by age and gender is as follows:

Age	Percent of Total	Male	Female
0-14	48.7% 9,253,000	50.6% 4,682,018	49.4% 4,570,982
15-49	42.5% 8,075,000	48.4% 3,908,300	51.6% 4,166,700
50 & over	8.8% 1,672,000	44.6% 745,712	55.4% 926,288
Total	19,000,000	49.1% 9,336,030	50.9% 9,663,370

Life expectancy at birth is low for men and women; in 1996 it was about 49 but was expected to reach 57.4 by 2010 in the absence of AIDS. As a result of the AIDS epidemic, life expectancy is expected to decrease by 13 years to 44.1 by the year 2010. The annual population increase is about 3%.

Marriages in Country B take place at earlier ages than in western countries; females are married starting at age 12 and by age 15, 18% are married. By age 20, 82% are married; by age 25, 93% are married; and by age 30, 95% are married. The median age at marriage for women is 17. At marriage, women are 5 years younger than men.

Fertility rates are high in Country B; women have an average of 6 children during their childbearing years. The birth rate is also high at 42 per 1,000.

Morbidity and mortality are high in Country B. The death rate is high at 24/1,000 annually and the infant mortality rate is 141 per 1,000 live births. Infectious and parasitic diseases are major causes of death per 100,000. For all infectious and parasitic diseases the death rates are high and include malaria (270/100,000); diarrheal diseases (150/100,000); measles (130/100,000); and diseases of the respiratory system (265/100,000). In addition, malnutrition is responsible for the deaths of 267/100,000 people.

HIV/AIDS Behavioral and Epidemiologic Parameters

HIV and AIDS Epidemiology

The HIV/AIDS epidemic in Country B is among the most severe in southeast Africa and in the world. There are no indications that the incidence of new infections has been significantly slowed, especially among adolescents and young adults. As with other countries in the region, HIV began to spread silently during the early 1980s; by 1986, over 3% of antenatal women in the largest city were infected with HIV, and by 1996 close to 35% were infected. The interval from HIV infection to the development of severe immunodeficiency (AIDS) and death is long (average 8-10 years). As a result, the annual toll of AIDS and other HIV-related conditions such as TB cases (related to their HIV infection), maternal AIDS orphans, and pediatric AIDS, have become increasingly visible during the early 1990s. The full impact of AIDS deaths and other HIV-related conditions, under the best case scenario, is not expected to peak until about the middle or latter part of the next decade.

Reasonable working estimates of the prevalence, general distribution, and trends of HIV infection for Country B have been developed by the National AIDS Control Program (NACP) based on an analysis of all available HIV serosurvey data (primarily sentinel surveillance data from antenatal women). HIV seroprevalence rates among antenatal women throughout the country along with the population size in different areas and regions were used to estimate the HIV seroprevalence rate in all 15-49 year olds. As of the end of 1996, the rate was calculated to be over 13% -- or about one million young and middle-aged adults.

Sexually transmitted diseases (STDs) are widely prevalent in Country B; they are the fourth most common reason for outpatient visits. In 1993, close to 800,000 STD cases were reported, and close to 1,000,000 cases are estimated to have occurred in 1997. In several studies, high rates of STDs were found. At one hospital 4.4% of unselected patients had an STD. Among women attending antenatal clinics, 42% were found to be infected with gonorrhea, trichomoniasis, syphilis, chancroid, or chlamydia at any one time. At an urban hospital 22% of general medical patients were found to have an unidentified STD.

In 1996, sentinel surveillance data showed an average of 52% of STD patients were infected with HIV. The range varied from 37% to 70% with a median of 50.5%. These data also showed that syphilis was common among patients with a mean of 13.4% infected and a range of 5% to 23%. Genital ulcers and genital discharge were the most common signs.

In Country B, commercial sex is visibly present in all urban and peri-urban centers, mostly concentrated in bars, dance halls, and hotels. No quantitative studies have been carried out so that the general number of female sex workers is not known and the percent of males who regularly frequent CSWs is also not known. One recent study showed that the percent of condom usage for commercial sex exposures was less than 10 percent. This was a slight increase from less than 5 percent a few years ago. There are anecdotal reports that there has been a general decrease in commercial sex patronage over the past several years, but no surveys have been carried out to monitor this situation.

Behavioral risk studies apparently have not identified any substantial subgroup of injecting drug users (IDUs). In addition, men who have sex with men (MSM), like IDUs, are not mentioned in the various studies of HIV/AIDS made in Country B. It cannot be concluded that such a group is nonexistent, but it does appear from surveys and studies conducted, that the major mode of HIV transmission is heterosexual.

HIV Prevention

In Country B, traditional social mores oppose young people engaging in premarital sex. However recent surveys indicate that among adolescents and the young adult population, many seem to have sexual relations with partners such as sweethearts, lovers, or boyfriends/girlfriends. Other than opposition to premarital sex, there are few social or institutional prohibitions against sexual practices in Country B.

All of the behavioral studies carried out in Country B show that AIDS awareness is essentially universal among sexually active adults. However, it was also very clear that the high level of AIDS awareness has not yet significantly reduced sexual risk behaviors, i.e., unprotected sexual intercourse with multiple partners. Overall condom use remains low. In the most recent (1992) Demographic and Health Survey only 6% of men and 3% of women reported condom use for the most recent sexual encounter. Less than 2% of married couples reported condom use -- essentially unchanged since the 1992 Demographic and Health Survey. Condom use with a non-regular partner was substantially higher, 41% of men and 24% of women.

STD clinical services are limited and inadequate in Country B; there are insufficient staff, drugs, supplies, and reagents. These inadequacies are also found in antenatal clinics. In addition, record keeping procedures are poor so that clinic management and patient care suffer.

There is currently no centrally organized blood transfusion system in Country B. Each hospital is responsible for organizing its own blood donor recruitment, blood collection, and laboratory testing. At the largest municipal hospital, it is estimated that about 40% of the donors are volunteers, the rest are paid donors. Although nearly all units of blood collected for transfusion are screened for HIV, the supply of test kits is intermittent and inadequate to meet national needs. This, together with the high rates of HIV infection in blood donors result in a high percentage of unmet transfusion needs. For example, in the largest municipal hospital in 1996, only about 40 percent of the 10,000 requests for blood transfusion were met.

Other Parameters

As noted earlier, Country B has one of the lowest GNPs in the world. The economy is based largely on agriculture, commercial and administrative services, and light industries. Agriculture accounts for about 1/4 of the gross domestic product (GDP) but employs 4/5 of the workforce. HIV is expected to slow GDP by 1.5% annually and thus increase poverty.

Average household income is about US\$ 2,400 annually for a family of size 4.3. The basic necessities of food, clothing, shelter, and transportation utilize almost all of this income. Daily per capita caloric intake is 1,825 with about 97% of calories from vegetable products. Caloric intake is about 79% of the FAO recommended minimum requirement.

About 11% of the population live in urban areas and 89% in rural areas. Medical personnel and facilities are in short supply; there is only 1 physician for every 48,000 people and 1 hospital bed for every 625 persons, but these are located primarily in urban centers. The shortage of medical personnel is particularly acute in rural areas and public health facilities are generally inadequate.

The population is almost entirely black Africans with small minorities of Europeans and Asians. Country B is about 60% Christian with the remainder Muslim or traditional animist.

Total government expenditures in a recent year were more than twice revenues; about 30% of expenditures went to pay government employees and debt service. Expenditures on health made up 12% of national expenditures in 1996/7; a 1% increase is expected by the year 2000. Resources allocated to health are inadequate and a fact that is unquestionably true given the HIV/AIDS epidemic. Furthermore, even when allocated, funds may not be released. In addition, there is a lack of coordination in programs and, thus, inefficient use of such resources as are

available. In 1996, the HIV/AIDS budget was US\$ 20 million but only 3% was contributed by the government of Country B. Furthermore, no increases in government health expenditures are expected in the next few years. In part, the official government/political view does not recognize the severity of the situation.

Of total expenditures on HIV/AIDS, only 27% was spent on prevention and only 2% was directed to high-risk group. Hospital costs for AIDS patients take the bulk of allocated funds. Health institutions have occupancy rates of greater than 100%, and the majority of beds are occupied by HIV infected persons.

Prior to national independence (around 1965), the colonial power that controlled Country B had established a satellite bio-medical research institute that was staffed primarily by non-native scientists and technicians. This institute is now non-existent. At the present time, bio-medical research is being carried out primarily by expatriate staff and by a technical team from Japan working on drug resistant TB strains. Many physicians in Country B have had some graduate clinical training overseas, but there are very few laboratory or basic research scientists/technicians in Country B, and almost no suitable physical facility for any sophisticated epidemiological or clinical research studies.

Health facilities include two central hospitals, district hospitals, rural clinics, a mental hospital, and a leprosarium. Health services available are generally inadequate for the general population and for special groups such as antenatal women, STD patients, and HIV/AIDS patients. Shortages are acute for medical and related staff, drugs, supplies, and reagents for laboratory tests. Again, about 90% of the population live in rural areas where these shortages are most acute so that services are difficult to obtain.

The educational system consists of 8-year primary schools in which about half of school-aged children are enrolled; 4-year secondary schools; technical and teacher training institutes; and a university. About 55% of the population over age 25 have had no formal education; about 40% have had primary education; and about 5% have had secondary or higher training. The literacy rate for those aged 15 and older is about 56%. About 72% of males are literate and about 42% of females. Country B has 7 daily newspapers with a circulation of 2.2 per 1,000 population. There is 1 radio receiver per 9 persons and 1 telephone for every 326 persons. No information is available on television receivers. The government keeps strict control of the communications media.

Plan for Country B

Session Co-Chairs: Elizabeth Ngugi, Kenya; Susan Allen, University of Alabama
Recorder: Nancy Padian, UCSF

General Description

Country B is in sub-Saharan Africa and has a population of 19 million people (89% rural, 11% urban). The HIV epidemic is among the most severe in the world. The pattern of the epidemic is generalized and 13% of adults are estimated to be infected. The epidemiological profile suggests 290,000 adult infections per year, with an incidence of new infections of 2-5%. The prevalence of STD infections is also high at 18% of the population. The country also has 75,000 neonatal infections per year, 20% of incident infections.

Suggested Interventions

In order to generate a prevention plan for Country B, the planning group decided to assume they had \$20 million to allocate for all care and prevention interventions. This forced the group to set priorities within a limited budget. The planning group struggled with tensions between funding of primary care for those already HIV-infected and prevention of new infections. Ultimately a

decision was made to prioritize testing and counseling interventions, primarily in antenatal clinics. Relatively less funding was allocated to the care of people with HIV, although some of these health care needs would be addressed in STD clinics to treat existing STD's among HIV-infected individuals, and availability of drug regimens to HIV-infected pregnant women. The following breakdown was recommended:

Interventions	Millions of dollars (totaling 20)
Testing and counseling in antenatal clinics	5.7
STD syndromic in antenatal clinics	2.3
STD in STD clinic	3.8
Training for implementation	3.8
Behavioral interventions	3.0
Care of HIV+ people	2.9
OR / monitoring and evaluation	.95
Blood Supply	1.0

Final Comments

This configuration of funding reflects new priorities. Prevention is given higher priority than primary health care for people infected with HIV, given the reality of limited funding and a desire to stage effective prevention efforts among those not already HIV-infected. Approximately 5% of resources were devoted to operational research in the areas of monitoring and evaluation; such efforts are routinely overlooked when funding is scarce, but without such research, there is not way to determine the effectiveness of current efforts. The plan is country driven rather than donor driven. And, commodities are given priority over technical assistance.

Profile of Country C

Country C is an Asian nation. The population is composed of many different ethnic groups that speak a multitude of different languages though the predominant religions are Muslim and Roman Catholic. The economy is based largely on agriculture, but manufacturing is a fast growing sector. The gross national product (GNP) is growing more rapidly than the population and currently the GNP per capita is US\$ 910.

Demographic Parameters

The most recent estimates place the current population at 155,000,000. The distribution by age and gender is as follows:

Age	Percent of Total	Male	Female
0-14	32.6% 50,530,000	51.0% 25,770,300	49.0% 24,759,700
15-49	53.5% 82,925,000	50.1% 41,545,425	49.9% 42,379,575
50 & over	13.9% 21,545,000	47.4% 10,212,330	52.6% 1,332,670
Total	155,000,000	50.02% 77,528,055	49.98% 77,471,945

Life expectancy at birth is 66 years -- 64 years for men and 68 years for women. The population is increasing at an annual rate of 2.2%.

Marriage patterns -- Country C is among those countries that have established minimum legal ages for marriage; for women that age is 15 and for men 18. However, these minimum ages

apparently are not absolute because 6% of women in Country C are married by age 15. By age 20, 50% are married; by age 25, 80% are married; by age 30, 95% are married; and by age 50, 99% are married. The median age at marriage for women is 19.8. The difference in age at marriage between men and women is 3 years.

The total fertility rate in Country C for women during their childbearing years is 3.1. That rate is expected to decline slightly in future years. The current birth rate is 23.4 per 1,000 population.

The crude death rate per 1,000 population is lower than the world average and currently stands at 6.9. Major causes of death per 100,000 include pneumonia, 54.7; tuberculosis, 25.0; other parasitic and infectious diseases, 21.7; diseases of the heart, 49.3; and accidents, 17.2. The infant mortality rate is 46 per 1,000 live births.

HIV/AIDS Behavioral and Epidemiologic Parameters

HIV and AIDS Epidemiology

Since documentation of the explosive HIV epidemics among injecting drug users (IDUs) and female commercial sex workers (CSW) and their clients in Thailand during the late 1980s, there has been great public health concern that similar HIV spread might occur in Country C. However, the numbers of reported AIDS cases and the numbers and prevalence rates of HIV infection detected to date in Country C have been relatively low (Table 1).

HIV/AIDS Registry, 1984-July 1997 , Table 1

Reported modes of Transmission	Cumulative totals 1984-July 1997	
	HIV+	AIDS
Heterosexual contact	951	489
Homosexual contact	192	249
Bisexual contact	54	84
Blood/blood products	6	27
Injecting drug use	9	6
Needle prick injuries	3	3
Perinatal	21	15
No exposure reported	594	63
TOTAL	1,830(66%)	936 (34%)

In Country C, the risk "groups" surveyed in an HIV sentinel surveillance system (HSS) have included CSWs (male and female), men who have sex with men (MSM), and injection drug users (IDU). There have been several rounds of HSS so far, involving from six to eight cities. The first rounds of surveillance were started in 1993 in the capital city and in the city with the second largest amount of foreign tourism. Subsequently, the number of sites was increased in a phased manner so that currently the eight largest cities of Country C are now included in HSS. HIV sentinel surveillance of female CSWs has identified HIV infections in only two of the sentinel surveillance sites (the capitol city and the largest tourist/vacation city). The prevalence rate found in these latter two sites during the last couple of years has ranged between 1 to 2 percent. For males visiting STD clinics, HIV infection rates have exceeded 1 percent in only the capitol city.

About a year ago, a remote fishing village, where large numbers of foreign fishermen routinely visit, experienced an HIV outbreak. About 20 percent of the local female CSWs have been found to be HIV-positive, but follow-up studies among the general heterosexual population (antenatal women, blood donors) have, to date, not identified other HIV infections.

Studies of the genetic sub-types of HIV-1 from Country C suggest "multiple independent exposures". According to a study of close to 100 HIV-1 isolates, 72% were sub-type Band E. The rest were sub-types A, C, D.

The syphilis rate among female CSWs ranges from a few percent up to 17% in one city. The STD national surveillance system reports no widespread syphilis outside of this group. However, a large percentage of gonorrhea isolates have been resistant to widely available antibiotics.

HIV Prevention

Since its inception in 1996, limited behavioral surveillance has noted low condom usage among CSWs in the selected surveillance sites. Among registered female CSWs, the percentage of those claiming that they "always" use condoms is 35%; among the smaller samples of male CSWs and among MSM, the reported condom usage rate has continued to be less than 1 percent; among unregistered freelance female CSWs, it is about 15%. Furthermore, about 25% of unregistered female CSWs in one city reported injecting drug use, and 66% of IDUs in this urban area admit to sharing needles. HIV infection rates in female CSWs in this city has been consistently less than 1 percent and in the last sentinel surveillance round in this city, one HIV-positive IDU was found among the sample of about 150 IDUs who were included in this surveillance round.

Behavioral surveys in Country C have shown that sex partner exchange rates among female CSWs are considerably lower -- about 7 to 14 partners per week compared to studies in a neighboring country with a well established HIV epidemic where these exchange rates were as high as 33 partners per week. Large sample studies show that three times as many 20-24-year-old men in the neighboring country had commercial sex in the past year than did Country C men of the same age -- 37% versus less than 10% for males in Country C.

A blood bank system exists only in the capital city. Units of blood are screened for HIV, but transfusion services are limited. Of about 20,000 blood donors screened in 1997 in the capital city, four blood samples were found to be HIV-positive and two of these donors probably acquired their HIV infection outside of the country. Only a small percent of blood transfusions given in rural areas are screened for HIV.

Other Parameters

Though Country C has a substantial external debt, its annual budgets essentially balance expenditures with revenues. Debt repayment, however, makes up about 26.3% of annual expenditures, while other expenditures include general public services 42.1%, development projects 13%, and general public administration 10.1%. Agriculture accounts for about 23% of the gross domestic product (GDP) but employs about half of the workforce.

The average household has 4.7 persons and an annual income of US\$ 2,975. The daily per capita caloric intake of 2,572 -- primarily from vegetable products -- is better than 100% of the FAO recommended minimum daily requirement. Still there are pockets of malnutrition, particularly among children.

The urban/rural split is approximately 44% urban and 56% rural. The population as noted earlier, is composed of diverse ethnic groups who speak many different languages.

Data on expenditures for health are not specifically available, but are included in the budget allocation for general public services. The crude death rate, which is lower than the world average and life expectancy at birth, suggest that some health services are available. The government has made efforts in socialized medicine through the establishment of comprehensive district medical centers. The most complete district centers combine existing clinics with maternal and child-health centers and provide services for family planning, school

health, nutrition, communicable-disease control, health statistics, environmental health, health education, dental health, and public-health nursing. These centers also supervise the community and village health centers, which are the primary health providers in rural areas. In an effort to improve access to health care for people whose health is most at risk, however, an integrated health-service-post concept has emerged. These posts are more widely available than the village health centers and offer a variety of services to women and children in particular, ranging from immunizations and nutrition counseling to family planning. There is 1 physician for every 4,783 persons and 1 hospital bed for every 1,302 persons.

An indigenous midwife, often with limited training, assists at most of the births in Country C; extensive training programs have been set up to bring the indigenous midwife toward the standards of qualified midwives. Medical training is offered at some state schools and a number of private schools.

The concept of family planning runs counter to traditional views, and there was much resistance to such programs when they were introduced. A massive attempt has been made to provide information on family planning to women of childbearing age, with clinics that are run by the Ministry of Health. This program has achieved considerable success and has come to be considered a model in Asia.

Due to the great concern that it was only a matter of time before extensive HIV epidemics, similar to those in southern and southeast Asian countries among IDUs and sex workers, would occur in Country C, several external donors, including the World Bank and USAID, have donated or pledged an annual average total of about US\$ 25 million over the next five years for the development of a comprehensive HIV/AIDS prevention/control program. Country C's commitment and input to the HIV/AIDS program is primarily their national staffing of the program.

Country C has significant problems from religious leaders regarding the promotion and distribution of condoms for HIV prevention. One group is against the use of condoms for birth control but will condone its use for disease prevention; the other will support promoting condoms for birth control, but strongly oppose their use for disease control.

Country C has never developed any significant national bio-medical research infrastructure. Some limited basic science research capabilities are present, but not at the level needed for any sophisticated HIV/AIDS research. Country C has large numbers of physicians, scientists, and technicians who have graduate training both within Country C and overseas, but the current status of national laboratories is fairly basic.

In Country C, the educational system provides 6 years of free compulsory primary education for which enrollment is almost universal. Following primary schooling, three years of junior and three years of secondary are offered but are not compulsory. Higher education is offered in numerous public and private universities, institutes, and teacher training colleges. Of the population aged 15 and over, 89% of males are literate and 79% of females are literate. Approximately 5% of the population have a college education. There are approximately 60 daily newspapers in Country C with a circulation of 33 per 1,000. There is 1 radio receiver for every 8 persons; 1 television receiver for every 15 persons; and 1 telephone for every 93 persons. Radio and television are controlled by the government.

Plan for Country C

Session Co-Chairs: Cynthia Dominquez, Philippines; Anke Ehrhardt, Columbia University
Recorder: Maria Ekstrand, UCSF

General Description

Country C is an Asian country with a population of 155 million. The country is poor and has limited resources. While there is considerable concern about the potential for a significant HIV epidemic, the current surveillance data suggest a nascent epidemic with the number of AIDS cases and the prevalence of HIV infection still relatively low.

Strengths

Country C has a comprehensive, decentralized health care delivery system that includes prevention and promotes health. The country also has a base of untapped human resources with professional technical and biomedical background. There is a high literacy rate, and a good community media infrastructure. The country boasts a model family planning program. In addition to freelance female sex workers, the country also has registered female sex workers. And finally, the country has an external donor source of \$25 million per year for 5 years.

Constraints

Religious group resistance to condom promotion and distribution is a significant barrier to HIV prevention. Many different languages are spoken, making communication strategies difficult. While \$25 million per year for 5 years is strength, it is also a weakness in that it has not provided an incentive for active involvement of the country's leadership in responding to the HIV challenge. In addition, the social mores of Country C dictate that youth are not supposed to be sexually active yet, in reality, they are.

Prevention and Intervention Directions

Capacity building must be based on country strength and in consideration of country constraints. Resource mobilization must address human, structural and financial resources. Research and training is needed. A system of monitoring and the evaluation of employed strategies must be developed, and it should include regular consultations with stakeholders.

Strategies for HIV Prevention

Information, education and communication campaigns should be launched. The general public, peer, media, community, institutions and stakeholders should drive these campaigns. Counseling and testing must be made available. Access to information about barrier methods, counseling and testing as well as treatment, must be available.

Policy Strategies

Country C should create a Technical Advisory Committee to HIV/AIDS and STD program managers. The characteristics of a TAC should include the following: behavioral, socioeconomic, and biomedical representations; interagency (government) involvement; private sector and non-governmental organizations; media; community-based organizations: people living with HIV and AIDS. The functions of advisory committee should be to: a) establish baseline and sentinel surveillance data on potential risk groups; b) conduct regular consultative meetings of stakeholders to evaluate strategies and get input; c) establish/monitor system of accountability with respect to level of involvement of stakeholders; d) update program managers on cost-effectiveness strategies applicable to country; and e) help get funding support for research and training. In addition, strategies are needed for mobilization of stakeholders, local government units, health centers, and traditional healers.

Sexual Transmission

The following interventions must be made available: free condom distribution and peer education for sex workers; condom social marketing, and workplace-based AIDS education. Outreach programs for condom and AIDS education for MSM should be developed, and mass media campaign for AIDS awareness and AIDS education prevention instituted. Access and quality of STD services must be improved, including an approach that targets youth, women and men in different settings. STD services and HIV counseling in maternal and child health and family

planning clinics should be integrated. Voluntary counseling and testing centers available to the general public should be established. AIDS education in primary schools focusing on life skills should be implemented.

Vertical Transmission

If HIV status is known, women should receive information on vertical transmission, an AZT short-course, and breast milk avoidance. At this point universal screening of pregnant women is not a priority but the country should have voluntary counseling and testing facilities available to young people. Family planning clinics should use counseling and education for HIV prevention. Ways to target adolescent women for HIV prevention early (1% sex workers at this point) should be addressed. Country C should also develop risk classification, which can be presented via media, in order to identify women who should be encouraged to seek voluntary counseling and testing.

Intravenous Transmission

Prevention interventions must focus on outreach, using both the general public and peer education, as information campaigns for IDUs and their sexual partners. Clinic-based condom distribution and HIV/STD counseling, testing and screening for IDUs and partners must be established. Needle exchange and sterilization is needed, as well as drug treatment and demand reduction.

Safety of Blood Supply

Comprehensive blood donor/blood component screening in both rural and urban areas must be implemented. Country C should encourage voluntary blood donation as well as donor self-deferral based on self-perception of risk. Country C must encourage general avoidance of indiscriminate blood transfusions and auto-transfusion whenever applicable.

Research Directions

1. Ethnographic studies of sentinel groups are needed, including data on social networks, mobility patterns, and outbreaks.
2. The Model Family Planning System already in place needs to be studied to assess whether its mechanisms could be used for HIV/STD prevention.
3. Periodic evaluation studies are needed for the sentinel surveillance system.
4. Intervention evaluations and cost-effectiveness studies are needed.
5. Study of effective policy research in other fields is recommended to see whether applicable to HIV.
6. Social marketing strategies need to be developed and evaluated.

Profile of Country D

Country D is a Latin American country. Country D's several different ethnic groups have intermixed progressively over the last several hundred years so that most of the population speak a single language. The population is predominantly Roman Catholic.

Demographic Parameters

Recent estimates put the population at 21,000,000. The distribution by age and gender is as follows:

Age	Percent of Total	Male	Female
0-14	31.7% 5,677,000	50.4% 2,941,208	49.6% 2,735,792
15-49	53.1% 13,011,000	49.9% 6,462,489	50.1% 6,549,511
50 & over	15.2% 2,312,000	48.1% 922,072	51.9% 1,389,928
Total	21,000,000	49.78%	50.22%

Life expectancy at birth is 66 years -- 56.6 years for men and 67.3 years for women. The annual population increase is approximately 1.8%.

The minimum legal ages for marriage in Country D are 14 for women and 16 for men. By age 15, 10% of women are married; by age 20, 40% are married; by age 25, 75% are married; by age 30, 90% are married; and by age 50, 93% are married. The median age at marriage is 21.5 years, and women are 2.5 years younger than men.

The average number of births for women during their childbearing years is 2.4. This figure is not expected to change much in the near future. The current crude birth rate is 21.2 per 1,000 population.

The crude death rate is 9/1,000 population very close to the world average of 9.3. The infant mortality rate is 57.2/1,000 live births. The major causes of death are diseases of the circulatory system (206/100,000); malignant neoplasms (75/100,000); diseases of the respiratory system (64/100,000); accidents (62/100,000); infectious and parasitic diseases (37/100,000); birth trauma and other conditions originating in the perinatal period (34/100,000); endocrine, metabolic, and nutritional disorders (31/100,000); and homicide (29/100,000).

Although Country D is a homogeneous country relative to its overall cultural institutions, the social gap between its small privileged upper class and the masses at the bottom of the earnings scale is vast. Sandwiched in between them is a modest-sized middle class.

HIV/AIDS Behavioral and Epidemiologic Parameters

HIV and AIDS Epidemiology

The first AIDS case in Country D dates back to 1980, though this was a retrospective diagnosis; the earliest cases were due to transmission among men having sex with men (MSM). Since then, infections have occurred through all routes of transmission -- sexual, injecting drug use (IDU) and from mother to child. At present, sexual transmission (both between men and women and among MSM) accounts for the majority of reported cases with a current predominance of heterosexual spread.

A mosaic of transmission routes accounts for the more than 150,000 HIV infections currently estimated in Country D. Transmission through MSM and IDU has dominated so far, but there is a growing epidemic fueled by heterosexual transmission. In urban areas, HIV prevalence in pregnant women ranges from 1 to 5 percent. Prevalence among female commercial sex workers (CSW) is around 5 percent and in IDUs ranges from 33 to 60%. Overall, the epidemic is moving into younger, more impoverished and more rural populations.

Historically, the first phase of Country D's epidemic involved sexual transmission of HIV, primarily among MSM, while the second phase began with the onset of transmission through injecting drug use. The current phase is marked by five distinct trends:

1. Increasing heterosexual spread. The first case attributed to heterosexual transmission was reported in 1984. Starting in 1990, AIDS cases attributed to heterosexual HIV transmission began a crossover with those resulting from homosexual and bisexual contacts. By 1996, heterosexual transmission accounted for 56 percent of all AIDS cases attributed to sexual transmission.
2. Younger age groups. Since the start of the epidemic the hardest-hit group has been those aged 20 to 49 years old, of significance because this group is very active economically. An analysis of reported AIDS cases by transmission category shows that the median age for both cases related to injection drug use and heterosexual contacts has been dropping recently. Men with AIDS who had become infected with HIV through sex with other men have tended to be over age 30, and those infected through drug injecting under 30.
3. Greater sexual parity. The first AIDS case in a woman was diagnosed and reported in 1983. The AIDS case male-to-female ratio of 16:1 in 1986 has now reached 3:1. In some parts of the country the ratio has dropped to 2:1.
4. Lower educational level. As a socioeconomic indicator, Country D uses data on schooling. While at the beginning of the epidemic most of those affected had at least a secondary school education. By 1996-97, more than 60 percent of all reported cases were in people who only had primary school education. Taking schooling and the male-to-female ratio together, during the period 1993 to 1997, there were 1.8 cases in men for every case in women among illiterate AIDS patients. The educational level of men and women with AIDS who were infected heterosexually or through drug injecting is lower than that of MSM.
5. Greater rural spread. The final AIDS epidemic feature is a tendency towards greater spread in rural areas. While the epidemic in 1987 was limited to 50 municipalities, today there are 662 municipalities with a reported AIDS case. Transfusion-related transmission is still occurring in rural areas.

Altogether, some 124,000 persons aged 15 to 49 are currently estimated to be living with HIV/AIDS in Country D. A total of 38,112 AIDS cases has been reported to the Ministry of Health since the epidemic began. The period from December 1996 to February 1997 saw a surge in reported AIDS to 5,000 new cases compared with 2,404 cases from 13 provinces in the following trimester. This significant increase may be due to both the efforts of surveillance teams to reduce underreporting and to the introduction of new antiretroviral therapy. At present, different subtypes (B, F, C, and D) have been detected in Country D.

It is increasingly clear that a substantial proportion of men in Country D have sex with other men. This behavior, frequently accompanied by serial or concurrent heterosexual activity, does not necessarily imply a homosexual identity, nor adherence to specific gender stereotypes. Consequently, without disregarding the complex connections between identity, desire, behavior and gender stereotype, the terminology of "men who have sex with men" represents not only the option of a behavioral, rather than a cultural definition of a group, but also the choice of a

representation that does not assume homogeneity (on the contrary, it includes diverse groups with regard to identities, social classes, social roles and sexual experience with women). From the cumulative reported AIDS case data through 1997, 43% are identified as homosexual men, and trends in reported AIDS among MSM seem to be experiencing a relative stabilization.

The 'heterosexualization' of the HIV/AIDS epidemic that seems to be occurring in Country D can be attributed to the heterosexual and perinatal connections of MSM who are index cases. As the women involved in most of these cases were reported as monogamous, this 'heterosexualization' does not imply the establishment of an extensive 'heterosexual pattern' of HIV transmission, as typically seen in sub-Saharan Africa. In Country D, the HIV epidemic remains concentrated in MSM and injecting drug users, with increasing bridging to the population at large. Two cohort studies among MSM in province X indicate that the annual incidence of HIV infection is between 1-2%.

The HIV epidemic among IDUs in Country D roughly follows the main routes of cocaine trans-shipment. In Country D, crack and injected cocaine is used mainly in province X, and smokable coca paste in province Y. An additional factor is the emergence of heroin in the southern part of Country D, although its influx is limited to harbor areas. There it is acquired at high cost and is not sold by local dealers. To a lesser extent, heroin also is being used in the largest city of Country D. Psychopharmacological drugs frequently injected are also commonly used in Country D. The use of injecting cocaine appears to be decreasing in Country D. However, there is concern about the unsafe sexual behavior that can be provoked in the context of increasing crack cocaine use. While recent analysis shows a slowdown of HIV spread among IDUs in province X, other recent data demonstrate a worrisome confluence of crack use and AIDS cases.

Of great concern is the linkage between injecting drug users and heterosexual transmission of HIV in Country D since the mid-1980s. A large number of AIDS cases are occurring among non-injecting female sex partners of male IDUs. An additional linkage between IDU and heterosexual transmission of HIV lies in the association of injecting drug use in females and their involvement in unprotected sex and in commercial sex. The most recent data from Country D suggest an increasing trend of safer injecting practices among IDUs, but no such behavioral change seems to be occurring in their sexual practices.

There is a lack of epidemiological data to substantiate any assertions that extensive spread of HIV from these populations to other sexually active adults is underway. Sexual networks and behaviors (e.g., who has sex with whom, how often and how safely) have not been studied sufficiently to predict or reject the possibility of potential extensive spread of HIV to and in the population at large. Nevertheless, the increasing number of HIV-infected females in Country D has now also resulted in an increasing number of children born to these women.

Sexually transmitted diseases (STDs) are prevalent in Country D's urban areas and are becoming increasingly more prevalent in rural areas. A recent survey determined that 8.5% of workers in several selected industries had reported symptoms of STDs in the previous 6 months. Among men and women who underwent examinations for employment, 2.1% were found to have primary/secondary or early latent syphilis, while just under 6% had gonococcal infection. These men and women were not examined for other STDs.

Among CSWs, prevalence studies showed a range of syphilis infection that varied from 3.6% to 9%: the highest values were found in the most heavily populated urban areas. However, among MSM, 30.7% were found to be infected. In a group of IDUs, 17% had positive laboratory tests for syphilis, and 6% of their sexual contacts were also infected.

Gonorrhea was more frequently found in CSWs than was syphilis: samples from different areas found gonococcal infection ranged from 5.2% to 11.1%. MSM showed a prevalence of 38.3%, while prevalence among IDUs was found to be 23% and among their sexual contacts, 9.4%. In

STD clinical attendees, gonococcal infection was found to be 10.2% and chlamydial infection was found in 18%. Chlamydial infection in CSWs ranged from 15.3% to 19%.

Among other STDs, Chancroid was also common in CSWs: infection rates ranged from 25% to 31%. Trichomoniasis was found in 65% to 75% of CSWs, and herpes simplex type 2 infection was found in more than 91% of CSWs examined.

HIV Prevention

Country D is aware that HIV/AIDS is a serious problem and that government intervention is necessary, but to date few direct intervention programs have been initiated. There have been widespread media programs to increase public awareness of the disease and its modes of transmission. Blood screening programs for HIV and other transmissible infections have been in place for some time and this has reduced transfusion-associated HIV infections.

Other Parameters

Country D has a developing market economy based principally on manufacturing, financial services, agriculture, and trade. The gross national product (GNP) is growing more rapidly than the population and, at US\$ 3,370 per capita, it is higher than the average of other Latin American countries. Agriculture accounts for about 10% of the gross domestic product and employs about 20% of the labor force.

Country D has revenues which exceed its expenditures. However, the government's expenditures to develop industries combined with past budgetary deficits required heavy borrowing. Thus, recent data show that 65.6% of expenditures were for development which included 40.5% for amortization of domestic debt; 33.9% for current expenditures; and a 0.5% reserve for contingencies. Serious inflation has been a problem for some years.

The average family size in Country D is 3.9; the average annual income per family is US\$ 1,074. The daily per capita caloric intake is 2,824 comprised of 83% vegetable products and 17% animal products -- the equivalent of 118% of the FAO recommended minimum requirement. The population is predominantly urban -- 78.2% live in urban areas -- while 21.8% live in rural areas. Country D has several large cities whose populations range up to 3 million.

Specific expenditures for health are not available but in general health conditions in Country D vary according to level of income and remoteness of residence. Thus, health conditions are poorest in rural areas which often suffer from a shortage of doctors and trained nurses. There is 1 physician per 681 persons and 1 hospital bed per 298 persons. A health program was designed to adapt available health care resources to the needs of the public, but its effectiveness is limited because the private sector operates the great majority of hospitals. The majority of workers are covered by various benefits, such as health, unemployment insurance, retirement and severance pay, forced savings, and holiday pay. These are paid by the employer to the National Social Security Institute on the workers' behalf and can add significantly to labor costs.

Many of Country D's health problems stem from endemic diseases such as malaria, yellow fever, dengue, amebic dysentery, tuberculosis, and schistosomiasis. Although most endemic tropical diseases have been eradicated in the major cities, their reintroduction by migrants from infected areas has become a serious problem in large cities. This has been exacerbated by poor sanitary and housing conditions, particularly among Country D's shantytown dwellers who are concentrated in and around the larger cities. Programs at all administrative levels, supplemented by privately supported clinics, have been established for the purpose of improving health conditions in these low income areas, particularly in prenatal and infant health care.

Most of the hospitals in Country D are public institutions, only about one-fifth being private. In terms of services available, the greater proportion of the country's doctors and hospitals are concentrated in the urban areas. There is also a wide gap between the quality and promptness

of services provided by the private sector for those in the upper-income groups and that available through public institutions. However, Country D's physicians generally devote a part of their practice to public service. Numerous state and national agencies operate a variety of health care services, although often with limited programs. The one with the broadest mandate is the National Institute for Medical Assistance and Social Welfare, which operates hospitals, clinics, and laboratories in both rural and urban areas.

Primary and secondary education is free in Country D and compulsory between ages 7 and 14. Data indicate that nearly all children of school age can read and write but that about 1/5th of adults are still illiterate. The government plays a major role in higher education; it operates a majority of the country's universities. Of the total population aged 15 and over, 83.3% are literate. There is no male/female difference in literacy rates. About 6% of the population have complete secondary or higher education. There are over 200 daily newspapers; 1 radio receiver for every 3 persons; and 1 television set for every 5 persons. Telephones are also widely available with 1 telephone for every 13 persons.

Plan for Country D

Session Co-Chairs: Mauro Schechter, Brazil; David Celentano, Johns Hopkins University
Recorder: Ron Stall, UCSF

General Description

Country D is a Latin American country with a population of 21 million. The country has a moderate level of resources. While the HIV epidemic began with men who have sex with men and injections drug users, it is now moving from a concentrated pattern to a generalized pattern with 56% of cases of sexual transmission being observed in heterosexuals. The trend of the epidemic has been toward younger age groups and sexual parity. The epidemic is spreading most rapidly in rural areas among individuals with lower education levels.

Interventions and Groups to be Targeted

In Country D, prophylaxis and treatment of HIV-related opportunistic infections is needed. For prevention and control of STD training on syndromic approach is needed, as well as the purchase antibodies, reagents and condoms.

Pregnant women should be provided with screening for HIV as well as voluntary counseling and testing. HIV-infected pregnant women should be offered a short course of AZT and provided formula to prevent vertical transmission.

Condom promotion, peer outreach, HIV counseling and testing should all be implemented for target groups - injection drug users, men who have sex with men and commercial sex workers - and should focus on both rural and urban populations. Involving various non-governmental organizations could increase access to these interventions.

Injection drug users could profit from harm reduction training for sustainable prevention. Interventions should be action-oriented and include the use of sterile injection equipment, access to acute care and drug treatment, and advocacy, training and networking.

Country D must develop age and gender appropriate HIV prevention, including curricula for pre-adolescents, adolescents, and young women.

Policy Advocacy

At this point in time, Country D should not be spending money on antiretroviral therapy except for perinatal HIV prevention. Country D should advocate for human rights for MSMIDUs, CSWs, and people living with HIV. They should lobby for repeal of laws and statutes involving

discrimination and gender imbalance; engage and educate decision makers in national mobilization to prevent HIV; get the involvement of affected communities in policy and planning; and reform prisons to reduce prison sexual and injection risks.

HIV Prevention Research

1. Research is needed to develop a sentinel surveillance system for blood donors, antenatal clinics, commercial sex workers, and Tuberculosis patients as well as at STD clinics.
2. A system of behavioral surveillance also needs to be developed.
3. Operations research on how best to adapt intervention to local needs is needed.
4. Research is also needed to better characterize risk behaviors and motivations for prevention in different risk groups.

Profile of Country E

Country E is located in Latin America. The population is relatively homogeneous: about 90% are mixed European and mestizo and the remainder primarily Indian. More than 3/4s of the population are Roman Catholic, another 13% are Protestant, and the remainder profess no religious affiliation.

Demographic Parameters

Recent estimates put the population at 28,800,000. The distribution by age and gender is as follows:

Age	Percent of Total	Male	Female
0-14	29.4% 8,467,200	50.9% 4,309,805	49.1% 4,157,395
15-49	52.6 15,148,800	50.1% 7,589,549	49.9% 7,559,251
50 & over	18.0% 5,184,000	44.8% 2,322,432	55.2% 2,861,568
Total	100% 28,800,000;	49.4% 14,221,786	50.6% 14,578,214

Life expectancy at birth in Country E is 71.5 years for men and 77.4 years for women. The population increase of about 1.5% annually is one of the lowest in Latin America.

Marriage patterns -- In Country E, the minimum legal ages for marriage are 12 for women and 14 for men. However, marriages are usually postponed beyond those ages in Country E. The median age at marriage for women is not available, but the mean age is 23.6. By age 15, 3% of women are married; by age 20, 9% are married; by age 25, 65% are married; by age 30, 85% are married; and by age 50, 90% are married. The difference in age at marriage between men and women is 2 years.

In Country E, the average number of children born to women during their childbearing years is 2.6 and that rate is not expected to change in the near future. The current birth rate is 21.0 per 1,000 population, lower than the world average of 25.0/1,000.

Country E has a low crude death rate at 5.3/1,000 population (world average 9.3/1,000) and one of the lowest infant mortality rates in Latin America at 13.1/1,000 live births. Major causes of

death per 100,000 population are: diseases of the circulatory system 157.4; malignant neoplasms (cancer) 111.5; accidents 66.1; and diseases of the respiratory system 64.9. There is an increasing movement of rural residents to urban areas. That migration, combined with an acute housing shortage, often leads migrants to squeeze into squatter villages located on the fringes of cities. These squatter villages provide unhealthy living conditions.

HIV/AIDS Behavioral and Epidemiologic Parameters

HIV and AIDS Epidemiology

The HIV/AIDS epidemic in Country E began as a predominant sexual pattern in men who have sex with men (MSM), which began to change in the late 1980s when the number of cases in injection drug users (IDU) began to peak and in many instances surpassed the other categories of exposure. As of September 1997, close to 30% of the cases are related to drug use. Heterosexual transmission began later than MSM transmission but has increased since then, with sexual partners of IDU contributing to this group.

Although it is concentrated primarily in major urban areas, there are signs that the epidemic is affecting cities with smaller populations and those located in rural areas. Rural AIDS cases are starting to be reported and are related to migration.

In Country E, the infection is predominantly sexual in all regions of the country. The most affected groups are young adults. There is a steady increase in the low socio-economic sectors of the population with a higher proportion of MSMs and also an increase in the heterosexual population.

Country E has implemented zidovudine protocol for pregnant women with HIV positive serology. Country E reports that delay has been less than 1 year for 89% of the notified cases. Sexual transmission continues to be predominant, most cases being contributed by MSMs. Infection among IDUs and their sexual partners shows a slow but progressive growth.

The male:female ratio has decreased significantly from 15:1 during the period 1985-1990 to 9:1 during 1991-1996, reflecting a faster epidemic growth in the female compared to males in recent years. Only one small serosurvey of antenatal women has been carried out in Country E. In 1994, two HIV infected women were detected in a sample of 2,112 in the capital city. No serologic survey data are available for female commercial sex workers (CSWs), MSMs, IDUs, or male sexually transmitted disease (STD) patients in Country E.

The cumulative number of reported AIDS cases in Country E, as of the end of 1997, was about 4,000. The rate of annual increase appears to be slowing in the last few years. HIV seroprevalence was estimated by UNAIDS/WHO to be about 25,000-30,000 in 1997.

In Country E, during the last half dozen years, various STD prevalence studies have been made in urban centers. The groups included in these studies are primarily CSWs, though a few are of individuals seeking a health certificate for employment.

Syphilis infection was found in 1.8% of men and 1.5% of women seeking a health certificate, but among CSWs the range of infection was 2.1% to 8.7%. Higher prevalence rates were found in unregistered CSWs as compared with registered CSWs. However, the greatest prevalence was found among MSM -- 29%.

Gonorrhea prevalence ranged from 3.8% to 8.5% in CSWs while chlamydia prevalence was found to be 7% in STD clinic attendees but had a range of 11.2% to 14.5% in CSWs. Among other STDs, Trichomonas was found to range from 2.8% in males to 14.1% in females seeking health certificates, but the prevalence in CSWs varied from 55.2 - 61.4%. Chancroid among CSWs ranged from 22.4% to 29.4%, and herpes simplex type 2 was found in 82% of CSWs.

HIV Prevention

While Country E is aware of the necessity to mount an HIV prevention campaign, little has been done to date. Efforts have been devoted to increasing awareness of the magnitude and impact of the epidemic among policy makers to develop and sustain support for comprehensive prevention interventions. In addition, some attempt has been made through the utilization of advertisements in the media to inform the general public about HIV/AIDS, but few direct intervention programs have been instituted.

Other Parameters

Country E has a partially developed free market economy that is based mainly on mining, manufacturing, and services. Gross national product (GNP) has been growing faster than the population for some years. It is above the average for Latin American countries and currently stands at US\$ 3,170 per capita. Free market policies adopted in the last 25 years revived Country E's faltering economy, although the country has been hampered by periodic recessions, rising unemployment, and a burdensome foreign debt. Recent budgets have managed to keep expenditures below revenues and have included the following: social security and welfare 33.6%; economic affairs and services 14.6%; education 13.4%; health 11.5%, and housing 5.6%.

Social welfare and labor legislation evolved earlier in Country E than it did in other Latin American countries, and they have reached a high level of development. Legislation was passed in the early part of the 20th century that regulated labor contracts, workers' health, and accident insurance. Health care also developed remarkably during the first half of the 20th century by means of state health plans managed by the National Health Service, a subsidiary of the Ministry of Public Health. An increasing number of facilities, equipment, and qualified personnel have reduced morbidity and infant mortality, eradicated tuberculosis, and brought infectious diseases under control. A movement to modify the state-administered public health system by introducing a profit-oriented private health system began in 1980. It offered the option of private health care to those who could afford it.

The social security system has been steadily expanded by successive governments. The program provides benefits for old age, maternity, disability, and sickness. The government has increased per capita spending on health and reorganized the National Health Service to provide local, decentralized health units. Specific information on health services available to the population are not available, but the expected length of life at birth, the low death rate, and the low infant mortality rate suggest that the population of Country E is served by comprehensive health services. Other data support this view; there is 1 physician for every 875 persons and 1 hospital bed for every 326 persons.

The population is overwhelmingly concentrated in urban areas -- 85.8% reside in cities -- and only 14.2% live in rural areas. The average household size is 4.1 and the average annual household income is US\$ 2,840. Daily per capita caloric intake is 2,582 comprised of 81% vegetable products and 19% animal products. This amounts to 105% of the FAO recommended minimum requirement.

The population of Country E is one of the best educated in South America. Primary education is free and compulsory for children aged 6 to 13. The country has numerous universities, some of which are renowned throughout Latin America. The percent of the population 25 and over with no formal schooling is only 5.7%; with primary education 44.2%; with secondary education 42.2%; with higher than secondary education 7.9%. Of the total population aged 15 and over, 81% of men and women are literate. Country E has 33 daily newspapers with a circulation of 63/1,000 population. There is one radio receiver for every 3.2 persons; 1 television set for every 7.1 persons; and 1 telephone for every 9.1 persons.

Plan for Country E

Session Co-Chairs: Carlos Caceres, Peru; Ward Cates, Family Health International
Recorder: Rafael Diaz, UCSF

General Description

Country E is in Latin America and has moderate resources to respond to the HIV epidemic. The epidemic to date has been concentrated in defined risk groups; 4,000 cumulative AIDS cases have been reported. The estimated HIV prevalence is 0.1% (males 15:1, females 9:1). Sex is the predominant mode of transmission with MSM and heterosexual cases of transmission both increasing. IDUs have shown a slow but steady growth in cases. Significant concerns include the increasing rates of STDs in CSWs and MSM.

To date, HIV prevention programs have involved the general media but little specific interventions directed to specific risk groups. The country does have sufficient resources to provide AZT to HIV-infected pregnant women.

Prevention Goals and Needs

Given the epidemic's concentration in specific subgroups, such as men who have sex with men and commercial sex workers, administrators' major prevention goal is to stop further transmission of HIV in the affected subgroups and, if at all possible, avoid a more generalized epidemic in the heterosexual population. However, in order to plan for more effective educational, preventive, and clinical interventions, there is a need for 1) better epidemiological data to further characterize the epidemic; and 2) a deeper understanding of the sociocultural context and political history that can explain both barriers to and facilitators of preventive activities among vulnerable subgroups.

Groups to be Targeted

In order to prevent a generalized epidemic, prevention should target groups with higher prevalence/incidence and higher potential for bridging such as MSM, IDUs, CSWs, and STD patients. In addition, clinical services should be provided to those accessible affected subgroups, such as persons living with HIV (known status) or pregnant seropositive women, for whom special (and cost effective) interventions are already available. Youth, especially young women, as a group with high potential vulnerability, should be the target of intense educational and prevention activities. Finally, in light of their potential influence over the future course of the epidemic, policy makers should be intentionally targeted and educated to facilitate political, legal and economic support to the country's HIV prevention goals.

Suggested Interventions

The country's health officials should implement both general and specific targeted interventions. General interventions should include "risk-free" testing and counseling that is open to all, with facilitated access for pregnant women and marginalized populations. Awareness campaigns on sexual behavior and health-seeking behavior should be carried out in the general population. More specific/targeted interventions would include support of Community Based Organizations (CBOs) and Non-Governmental Organizations (NGOs) for the inclusion of HIV/STD prevention into community organizing approaches, specifically targeting MSM, IDUs, and CSWs (both female and male). Interventions should include expanded/enhanced STD control programs for vulnerable populations as well as expanded sex education for all young people in the country.

Information/research priorities

1. Ongoing sentinel surveillance of incidence of new infections and behavioral surveillance among identified risk groups.
2. Evaluation research on existing HIV prevention programs, epidemic impact studies, and cost effectiveness studies on possible targeted interventions.
3. Identify sociocultural and structural determinants of risk and vulnerability, such as the impact of gender and social inequalities, sexual and reproductive norms as well as expectations, and the social contexts of drug injection.
4. Operations research to facilitate the "real-world" design and adaptation of interventions that have been scientifically tested in the context of research studies.
5. Research to better describe current standards of preventive and clinical care.
6. Evaluation research on intervention funding mechanisms, in particular the use of local planning and external reviews.

Profile of Country F

Country F is an Asian country. While Country F has a large number of ethnic and linguistic groups, these diverse groups make up less than 10% of the total population. A single ethnic group constitutes more than 90% of the total population, and, though unified by tradition, they do not all speak the same dialect. About 70% of the population profess no religious affiliation.

Demographic Parameters

The most recent estimates put the population at 324,795,000. The distribution by age and gender is as follows:

Age	Percent of Total	Male	Female
0-14	26.5% 86,071,000	51.5% 44,326,565	48.5% 41,744,435
15-49	54.9% 178,312,000	51.6% 92,008,992	48.4% 86,303,008
50 & over	18.6% 60,412,000	50.2% 30,326,824	49.8% 30,085,176
Total	100% 324,795,000	51.31% 166,662,381	48.69% 158,132,619

Life expectancy at birth is 69.1 years for men and 72.4 years for women. The population growth rate is 1.3% annually.

Marriage patterns -- Less than 10% of women are married at 15-19 years, but by age 20 approximately 20% are married; by age 25, 60% are married; by age 30, 85% are married. Few people remain unmarried. The mean age at marriage for women is 22.4 and for men 25.1.

Fertility rates in Country F are lower than the world average; women have an average of 2 children during their childbearing years. The birth rate is 17.1/1,000 population compared to the world average of 25.0.

The government of Country F has initiated programs to provide medical care and sanitation to its inhabitants and has been successful in controlling infectious diseases such as cholera, plague, typhoid, and scarlet fever. Thus, current health problems are cardiovascular diseases and cancer. Major causes of death are diseases of the circulatory system, 22.1%; malignant neoplasms, 21.8%; diseases of the respiratory system, 16.1%; diseases of the heart, 15.0%; injuries and poisonings, 6.7%; and digestive diseases, 3.5%. The crude death rate is 6.6/1,000 population, lower than the world average of 10.5; while the infant mortality rate is 26/1,000 live births. By the mid-1990s the major causes of deaths in Country F had become pulmonary and cerebrovascular diseases, malignant tumors, and cardiac disease. Severe environmental pollution has become a major health hazard in several parts of the country.

HIV/AIDS Behavioral and Epidemiologic Parameters

HIV and AIDS Epidemiology

The first HIV infection in Country F was detected in 1990, and the first case of AIDS was reported in 1993. To date, three HIV surveys have been carried out in 1994, 1995 and 1996. Population groups selected for inclusion in these surveys have been "captive" groups, including injection drug users (IDU) in rehabilitation centers, female commercial sex workers (CSW) in educational centers, blood donors, male sexually transmitted disease (STD) patients, TB patients, military recruits, and antenatal clinic attendees. Approximately half of the provinces in Country F have been included in these surveys.

The general findings from these surveys show significant differences in HIV prevalence rates in the three general regions of the country. A consistently low prevalence of HIV infection (1-3 percent) has been found among IDUs in the northern provinces. HIV prevalence rates among female CSWs range from zero or close to zero in most of the northern and central provinces to up to 5 percent in a couple of southern provinces. The distribution of HIV infection among male STD patients is similar to that found in female CSWs, but the highest rates detected so far is about 1-2 percent. HIV prevalence rates in all of the other groups are zero or very low.

As of early 1998, about 30,000 cumulative HIV infections and close to 5,000 AIDS cases have been reported to the national AIDS program (NAP). Based on these data, it has been estimated that the HIV prevalence in Country F, as of 1998, may be about 250,000, and that over 90 percent of these infections are in the southern provinces. The estimated prevalence of other STDs in Country F is believed to be much lower compared to surrounding countries.

No specific data are available on STDs in Country F. It is known that STDs were at a very low level 20 to 30 years ago. There is no doubt now that STD rates are rising and have been rising over the past 10 years. The rise in rates appears to be due especially to migration to those zones where the economy is showing the greatest improvement and the greatest opportunities for jobs at higher wages.

Current estimates of the number of female CSWs (including those who work part time or occasionally) is as high as 2 million, while brothels in a 1992 study were estimated to number about 8,000. Government campaigns in recent years against "unhealthy behaviors" has had the effect of spawning a plethora of Karaoke bars, cafes, massage parlors, and discos in urban areas that have essentially replaced the classic brothel model in Country F. Systematic studies of condom use among female CSWs have not been done, but the general levels are believed to be rising. However, one small study of street female CSWs showed that only about 40 percent reported regular use of condoms with their clients and almost no condom use with their steady sexual partner.

Limited drug behavioral studies indicate that in the northern provinces, IDUs often are adolescents who experiment with injecting a variety of substances, while in the south, drugs injected and injecting behaviors are more diverse. The total number of IDUs in Country F has

been estimated to be as high as 500,000. In the capital city alone, the total number of IDUs is estimated to be over 100,000.

In 1997, surveys of IDUs throughout the country showed an HIV prevalence range from zero to 50 percent, with a national mean of about 12 percent. More extensive spread of HIV in IDUs may be expected since a recent study indicates that over 60 percent of IDUs in the south inject at illicit shooting galleries where needles and syringes are routinely shared.

HIV Prevention

The government has gradually been giving the AIDS program a higher priority. The NAC, created within the Ministry of Health in 1993, was upgraded to Ministry status last year. Funding of the NAC has leveled off during the last couple of years and the budget for next year has been reduced by about ten percent. The government is actively seeking additional and increased support from external donors. The prospects for government purchase of specific anti-HIV drugs for treatment of HIV-infected persons are negligible.

A growing cadre of Western trained scientists and public health professionals are capable of sophisticated laboratory and epidemiological studies, but their main problems continue to be up-to-date equipment and facilities. Some capabilities for behavioral research are available in Country F, but to date, almost all of the HIV/AIDS related behavioral studies have been carried out by research teams of external donors.

The concept of harm-reduction is difficult for the conservative government officials to accept. Needle-exchange programs have been advocated by the increasing number of NGOs developing in recent years in the country, but official approval for such programs is unlikely at the present time.

Other Parameters

Country F has been in a state of transition for approximately the last 30 years. The economy now relies on individual and cooperative farms and a mixture of state-owned, cooperative, and private enterprises in manufacturing and services. Government policies which encouraged the growth of light, consumer goods industries proved highly successful and gave Country F a high economic growth rate during the past 2 decades. Still, the gross national product (GDP) remains relatively low: manufacturing and agriculture are the main components of the gross domestic product (GDP). Country F has had a positive balance of trade in the current decade. Government expenditures in recent years have exceeded revenues and have been allocated as follows: culture, education, and public health, 12%; debt service, 10.8%; capital construction, 9.2%; defense, 7.8%; government administration 6.2%; enterprise development, 5.8%.

The average household size is 3.9 persons, but that is higher in rural areas at 4.5 persons per household, and lower in urban areas at 3.3. The average annual household income is US\$ 1,097, but again that is lower in rural areas at US\$ 981 and higher in urban areas at US\$ 1,387. The daily per capita caloric intake is 2,727 of which vegetable products constitute 87% and animal products 13% -- the equivalent of 116% of the FAO recommended minimum requirement.

Despite rapid industrialization and urbanization, the population is still predominantly rural with about 71% living in countryside villages. Most employed persons are eligible for work injury, sickness, and maternity benefits in addition to old age, disability, and survivor pensions. Government policy has placed particular emphasis on providing medical services and undertaking sanitation measures in the countryside. Medical teams circulate regularly in rural areas. There is 1 physician for every 630 persons, and 1 hospital bed for every 378 persons.

The government of Country F is trying to provide medical and welfare services to meet the basic needs of the population whose per capita income and caloric intake are far below the world's average. A combination of Western and traditional medicine are available in most clinics and hospitals. The Ministry of Public Health oversees the health-services system, which includes a substantial rural clinic system. All the major medical facilities are run by the government, but many government physicians have a separate private practice after their normal working day. The health of the population of Country F has improved considerably over the past several decades. Average life expectancy has gone up about three decades and now ranks nearly at the level of that in advanced industrial societies. Many communicable diseases, such as plague, smallpox, cholera, and typhus, have either been wiped out or brought under control. Official statistics also indicate that the incidences of malaria and schistosomiasis have declined by 90% and 80%, respectively, since the 1950s.

As evaluated on a per capita basis, Country F's health facilities remain unevenly distributed. Only slightly more than half of the country's medical and health personnel work in rural areas, where approximately four-fifths of the population resides. The doctors of Western medicine, who constitute about one-sixth of the total medical personnel, are even more concentrated in urban areas. Similarly, close to two-thirds of the country's hospital beds are located in the cities.

Country F has a health insurance system that provides virtually free coverage for people employed in urban state enterprises and relatively inexpensive coverage for their families. The situation for workers in the rural areas or in urban employment outside the state sector is far more varied. There are some cooperative health-care programs, but their voluntary nature produced a decline in membership from the late 1970s.

The severest limitation on the availability of health services, however, appears to be an absolute lack of resources, rather than discrimination in access based on the ability of individuals to pay. An extensive system of paramedical care has been fostered as the major medical resource available to most of the rural population, but the care thus provided has been found to be of quite uneven quality. The paramedical system feeds patients into the more sophisticated peri-urban and county-level hospitals when they are available.

The educational system now stresses the acquisition of scientific and technical knowledge as well as professional skills. Nearly all children of primary school age attend school, and the current program includes 9 years of compulsory education. Literacy is rising and for the population aged 15 and over, about 78% are literate -- 87% of men and 68% of women. Country F has many daily newspapers with a circulation of 43 per 1,000 population; 1 radio for every 5.5 persons; 1 television set for every 5.3 persons; and 1 telephone for every 41 persons.

Plan for Country F

Session Co-Chairs: Khanchit Limpakarnjanarat, Thailand; Myron Cohen, University of North Carolina; Recorder: K'jung Hee Choi, UCSF

General Description:

Country F is a large Asian country with a population of 325 million and modest resources. The country has an economy in transition, an exceptional public health infrastructure and a conservative government. While more data would be desirable to characterize epidemic, the pattern appears to be nascent. To date, the country has reported close to 5,000 AIDS cases and HIV infections are estimated to be about 250,000. There are core risk groups with low prevalence rates; significant geographic variations have been observed.

Biomedical/Behavioral Interventions

Country F should improve access to services for sexually transmitted diseases. Condom social marketing campaigns should be initiated, particularly targeting commercial sex workers. Sentinel HIV surveillance needs to be improved. Information, education and communication campaigns for the general public are needed to increase public awareness. Voluntary counseling and testing is a basic intervention that should be made widely available. Social marketing is also recommended to improve the policy environment, including establishing outreach and needle exchange programs for injection drug users. AZT and formula must be made available for HIV-infected pregnant women.

HIV Prevention Research

1. Research is needed to better characterize the prevention needs of commercial sex workers.
2. Ad hoc behavioral surveys are needed for risk groups -- truck drivers, migrants, ethnic minorities, service trade, and men who have sex with men.
3. Operations research for how best to structure services for sexually transmitted diseases and HIV are needed, including alternative health settings.
4. Research is needed on HIV prevention interventions with injection drug users.
5. Survey research is needed to better understand risk groups.
6. Cost-effectiveness and prevention-effectiveness studies are needed in the context of this country.

Appendix D:

Workshop Information

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Acknowledgements

DISCOVERING GLOBAL SUCCESS: Future Directions for HIV Prevention in the Developing World and the Workshop were made possible by the support of a number of organizations, many of whose contributions were facilitated through a grant award by the **Fogarty International Center** at the National Institutes of Health (3 D43 TW00003-10S4).

In addition to the Fogarty International Center, the contributing organizations included the following agencies at the National Institutes of Health: the Office of AIDS Research, the National Institute of Allergy and Infectious Diseases, the National Institute of Child Health and Human Development, the National Institutes of Mental Health, the National Institute on Drug Abuse, the National Institute of Dental and Craniofacial Research, and the National Cancer Institute. The Centers for Disease Control and Prevention also contributed money through the Fogarty grant award.

Financial support also came from the U.S. Agency for International Development and UNAIDS.

The co-chairs would like to gratefully recognize the incredible effort made by the Fogarty Workshop staff in putting together the event: Jenna Grant, Tanya Hicks, Debra Kent, Elizabeth Longstreth and Jay Unick. We appreciate the contribution of Jim Chin in drafting the model-country profiles, as well as Jeff Mandel, George Rutherford and Elliot Marseille who served as reviewers of the workshop materials and this monograph.

Thanks to Nicolas Sheon for creating the Fogarty Workshop Web Site and Michael Langan for preparation of this monograph.

We also wish to express our appreciation to all of the participants in the Workshop, particularly those that traveled long distances, for their contributions and willingness to work on this project.