Structural barriers and facilitators in HIV prevention: a review of international research

Richard G. Parker, Delia Easton* and Charles H. Klein†

Richard Parker, Delia Easton and Charles Klein, "Structural Barriers and Facilitators in HIV Prevention: A Review of International Research," *AIDS*. 14(Suppl. 1): S22-S32, 2000.

Objectives: This article provides an overview of a growing body of international research focusing on the structural and environmental factors that shape the spread of the HIV/AIDS epidemic, and create barriers and facilitators in relation to HIV-prevention programs.

Overview of structural-factors literature: Most of the research on structural and environmental factors can be grouped into a small number of analytically distinct but interconnected categories: economic (under)development and poverty; mobility, including migration, seasonal work, and social disruption due to war and political instability; and gender inequalities. An additional focus in research on structural and environmental factors has been on the effects of particular governmental and intergovernmental policies in increasing or diminishing HIV vulnerability and transmission.

Interventions: A smaller subset of the research on structural factors describes and/or evaluates specific interventions in detail. Approaches that have received significant attention include targeted interventions developed for heterosexual women, female commercial sex workers, male truck drivers, and men who have sex with men.

Conclusions: The structural and environmental factors literature offers important insights and reveals a number of productive intervention strategies that might be explored in both resource-rich and -poor settings. However, new methodologies are required to document and evaluate the effects of the structural interventions, which by their very nature involve large-scale elements that cannot be easily controlled by experimental or quasi-experimental research designs. Innovative, interdisciplinary approaches are needed that can move beyond the limited successes of traditional behavioral interventions and explicitly attempt to achieve broader social and structural change.

AIDS 2000, **14 (suppl 1)**:S22–S32

Keywords: international HIV prevention, structural interventions, policy

Introduction

In seeking to understand the factors that shape the HIV/AIDS epidemic, and the ways in which societies and communities around the world have responded to it, a rapidly growing body of research has focused on structural issues rather than on individual behavior or even cultural context as the key object of analysis [1–13]. Because this research has emerged in a number of different institutional settings, as well as from a variety of different disciplinary traditions, the language it has used and the conceptual tools it has

From the Sociomedical Sciences Division of the Joseph L. Mailman School of Public Health and the HIV Center for Clinical and Behavioral Studies at Columbia University, New York, USA, the Department of Health Policies and Institutions of the Institute of Social Medicine at the State University of Rio de Janeiro (IMS/UERJ), Rio de Janeiro, Brazil, and the Brazilian Interdisciplinary AIDS Association (ABIA), Rio de Janeiro, Brazil, *Behavioral Research Intervention Branch, Divison of HIV/AIDS Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia, USA and †Department of Public Health, San Francisco, California, USA.

Requests for reprints to: Dr Richard Parker, ABIA, Rua da Candelária 79, 10° andar, CEP 20091-020, Rio de Janeiro, RJ. Brazil.

employed often vary. In social sciences such as medical anthropology and medical sociology, for example, researchers have tended to frame their discussions in terms of 'political economy', and have typically sought to underline the ways in which broad historical processes in economy and society have contributed to a range of social structural inequalities (such as class, race or ethnicity, and gender), which in turn have conditioned the vulnerability of different individuals and groups to HIV infection [1–7]. In public health and health-related behavioral research, on the other hand, discussions have often been framed in terms of 'structural and environmental factors', including social structural inequalities, as well as policies and institutional practices that influence the context or environment of health behavior, and that thus concretely shape the spread of HIV infection and create barriers to AIDS prevention [9–11].

In spite of the differences in terminology and, at times, of emphasis in the research and analysis that has been carried out, it is useful to examine this body of work as a whole precisely because it has consistently addressed a number of common issues in seeking to understand the impact of broader structural factors and conditions that impact upon the HIV/AIDS epidemic. It has consistently focused on the interactive or synergistic effects of social factors such as poverty and economic exploitation, gender power, sexual oppression and racism in creating what can be described as forms of 'structural violence', which directly determine the social vulnerability of groups and individuals [13]. It has also typically linked this to a consideration of the ways in which such structural violence is itself situated in historically constituted political and economic systems – systems in which diverse political processes and policies (whether related to economic development, housing, labor, migration or immigration, health, education and welfare) not only create the dynamic of the epidemic, but also provide what is potentially the most effective source for intervention in order to curb its impact [1–7].

In this paper, we seek to review the increasingly extensive international research literature (with special emphasis on the so-called developing world) that focuses on the political, economic, structural and environmental factors that shape the spread of the HIV/AIDS epidemic, and create barriers and facilitators in relation to HIV-prevention programs. We attempt to map out the main lines of research activity that have provided the focus for attention to date. We also suggest that many issues identified through research in developing countries are equally pertinent in some parts of the developed world, such as among inner-city populations in the United States, where strikingly similar political and economic factors affect HIV infection patterns and prevention efforts. We conclude by identifying some of the key challenges confronting research on structural issues and interventions carried out in both developing and developed contexts.

Overview of research on structural forces shaping the epidemic

During the past decade, researchers have documented a number of structural factors that facilitate HIV transmission and its concentration within particular geographic areas and populations [1–13]. Most of these factors can be grouped into three analytically distinct but interconnected categories: (i) economic (under)development and poverty; (ii) mobility, including migration, seasonal work, and social disruption due to war and political instability; and (iii) gender inequalities. This research reveals that despite the uniqueness of each local HIV/AIDS epidemic, the same general structures and processes are at work in Africa [14–31], Asia [32–35], Latin America and the Caribbean [36–42], and certain groups and communities in North America [7,43,44]. In addition, a number of studies focus on the effects of particular public policies in increasing or diminishing HIV vulnerability and transmission; this fourth category within the structural-factors literature will be analyzed later in a separate section. [This list is not meant to be inclusive, as there are other structural factors (e.g. stigma and discrimination associated with HIV/AIDS) that also increase HIV vulnerability. However, the vast majority of literature on structural factors in the developing world fits within the delineated categories.]

Economic development

One of the key themes examined in the structural and environmental factors literature is the connection between economic development and HIV/AIDS vulnerability. An excellent example showing the richness of this approach is Decosas' historical analysis of how the Akosombo dam project in Ghana in the 1960s contributed to the HIV/AIDS epidemic among the Krobo in the 1980s and 1990s [18]. During the building of the dam, many Krobo men went downstream to work on the project, while many Krobo women provided services, including sexual–economic exchanges, for men in the construction area. When the creation of Lake Volta destroyed the Krobo's agricultural base, a sizable number of these women, and, later on, their daughters, went abroad to work as prostitutes, and remittances from sex work became an important source of income and economic capital in the region. Both these generations of women have high HIV prevalence. Today, with the economic future of Ghana looking brighter, remittances from women working abroad

are becoming scarce, fewer young girls are entering sex work, and HIV incidence among younger Krobo women is approaching the lower rates seen in the rest of Ghana. Decosas' analysis demonstrates the difficulties in establishing the mechanism of association between economic development and HIV, since causes and effects, as well as costs and benefits, are dynamic and play out over decades. These findings indicate that new and refined analytical and evaluation strategies are needed to address these complex and changing realities.

Farmer's work on Haiti similarly documents how large-scale development initiatives – once again, a major hydroelectric project – can propel the spread of HIV infection. In this case, the building of a dam to provide electric energy for the Port-au-Prince metropolitan area displaced an entire community and greatly damaged the local environment, thereby disrupting the local agricultural economy and stimulating migration from Do Kay to Port-au-Prince in search of employment. This migration, in turn, produced changes in sexual union and sex work patterns, which placed impoverished migrants – and their rural sexual partners upon their return to Do Kay – at increased vulnerability for HIV infection [2,37,38].

More broadly, and as will be discussed further, international and intergovernmental development policies have been linked to the disintegration of traditional socioeconomic structures and the accentuation of socioeconomic inequalities, which in turn have contributed significantly to the severity of the epidemic in sub-Saharan Africa and other parts of the developing world. (Similar processes of social disintegration have been identified as playing a key role in HIV/AIDS epidemics in US inner cities [13,45,46].) Indeed, poverty itself has been identified as perhaps the key socioeconomic force behind the epidemic, and virtually all of the structural and environmental literature has highlighted the synergistic effects of poverty, when linked to other forms of social inequality, instability and discrimination, in promoting the spread of HIV [7,13]. More recent literature has also focused attention on the intersection between globalization, rising socioeconomic inequality, and HIV infection [1,5,6].

Migration, population movement and political instability

In addition to the general conditions of poverty and (under)development, research has specifically linked migration/mobility to increased HIV incidence and vulnerability in a variety of contexts and places, including seasonal laborers in southern Africa [20,21] and West Africa [19], Dominican migrants to the USA [40], rural to urban migrants in Haiti [37,38] and Zaire [22,23], Filipino overseas contract workers [35], female sex workers in Thailand [32], Ghana [15], Zimbabwe [29] and the Philippines [35], and male sex workers and other men who have sex with men in Brazil [47–49]. The causation patterns behind this mobility/HIV connection are complex. Male migrant laborers, for example, regularly frequent female sex workers (themselves often migrants) and/or establish secondary households in the field, leading to increased incidence of sexually transmitted diseases (STD) and HIV in locations that usually lack adequate healthcare services. Back in the communities of origin, women face severe economic and emotional demands, which they attempt to meet through agricultural and, sometimes, sex work. Finally, since male and female migrant workers move back and forth between two or more locations, HIV may spread from higher to lower incidence areas.

As is discussed further later in this article, this migration-related vulnerability to HIV/AIDS can be further exacerbated by the introduction of 'economic reforms' such as structural adjustment programs (SAPS), in which the receipt of international development loans is conditioned on converting domestic economic resources to production for export, and opening the domestic economy to transnational corporations (often accompanied by significant decreases in government spending for health, education and welfare programs) [41]. Bassett, for example, describes how Zimbabwe's structural adjustment in the 1990s reduced social expenditures and condom availability [16], while Turshen outlines the negative health consequences that resulted throughout Africa after the World Bank imposed SAPS in the late 1980s and 1990s [27]. Equally if not more devastating in terms of increasing HIV/AIDS vulnerability have been the social and economic dislocations caused by war and political conflict [12,17,28,30]. Even in the absence of ongoing armed conflict, the work of Farmer in Haiti [37,38] and Webb in southern Africa [28] has shown that political instability exacerbates poverty and stimulates migration to urban areas, where a series of factors, including sexism, sexual-union patterns, STD prevalence, and governmental inattention to AIDS, all facilitate HIV transmission.

Gender inequality

These examples of the relationship between poverty, migration/mobility and HIV incidence levels effectively demonstrate that the political economic factors driving the HIV/AIDS epidemic are closely intertwined with existing gender and sexuality structures, whose hierarchies make women, and especially low-income women, extremely vulnerable to HIV infection. Nonetheless, there have been few in-depth studies of gender and sexuality as structural, rather than simply behavioral, factors shaping HIV transmission. Farmer *et al.* [39] attribute this neglect to the initial predominance of AIDS cases among gay men, the fact

that social scientists only poorly understand sexuality, and the frequent reliance of AIDS-intervention programs on superficial 'rapid ethnographic assessments'. The resulting inadequacies of AIDS research and interventions directed toward women has led scholars to look more closely at gender and sexuality systems in order to develop more realistic and effective HIV risk-reduction options for women [23,24,26,33, 34,50,51]. Heise and Elias [52], for example, argue that the three-pronged approach of most global AIDS-prevention programs (i.e. partner reduction, condom promotion, and STD treatment) are inadequate to protect most of the world's women, who are poor and frequently face difficulties negotiating the terms of sexual encounters. Moreover, the association of condoms with distrust, communication failures between men and women regarding sexual and reproductive health matters, and a lack of perception of HIV vulnerability further limit the ability of many women to practice safer sex [52–54], a situation compounded by the lack of female-controlled HIV-prevention technologies [50,55].

Within the gender and sexuality literature are several impressive ethnographic analyses that illuminate the cultural and political economic factors behind HIV vulnerability. Kammerer *et al.*, for example, describe how state and capitalist penetration has produced a breakdown in the economy of the mountain tribes in the northern Thailand periphery [33]. As a result, young people have migrated to valley towns to work, sometimes in prostitution, while at the same time traditional sexuality and its core values of 'shame, name and blame' have presented significant obstacles to taking precautions against HIV [33]. Symonds, also writing on northern Thailand, likewise explains HIV vulnerability among the Hmong to be the product of a combination of political, economic and cultural factors, including the entry of the highland Hmong into lowland economies, the growth of the commercial sex industry, increased injection drug use linked to disruptions in local economies and cultural practices, racism and discrimination against the Hmong by the Thai majority, and sexual double standards [34]. Schoepf's analysis of life histories of women in Zaire further shows that HIV is spread not through 'exotic' cultural practices, but because of normal responses to everyday problems such as substantial economic hardship and uncertainty, including various forms of sexual–economic exchange that are not conceived as prostitution [24]. All three writers also promote participatory and collaborative forms of action research with vulnerable women as a means to redefine the gendered social roles and socioeconomic conditions that contribute to the spread of HIV [23,24,26,33,34].

Finally, although considerably less research has been carried out on men who have sex with men in developing countries, findings show that HIV vulnerability related to gender inequality and sexism is also almost universally present in same-sex relationships [56]. In this context, the structures of gender inequality are typically replicated through the stigmatization of particularly effeminate homosexual men and transgendered persons, who often have few employment options outside of sex work and who frequently are subject to socially sanctioned physical violence [47]. These studies suggest that men who have sex with men are present in all societies and that the synergy between multiple oppressions (e.g. homophobia, poverty, racism, and gender inequality) place such men at markedly increased vulnerability to HIV infection [57].

Research on the politics of AIDS-related policy

A second major area of international and cross-cultural research on structural and environmental factors has focused on AIDS-related policy-making, and the impact of development and public-health policies on the epidemic. This literature can be grouped into four categories. First, extensive debate has developed surrounding the link between international or intergovernmental policy, including structural adjustment programs, and the socioeconomic instabilities that foster HIV transmission [10,27,58–61]. The second category centers on national HIV/AIDS policies [36,48,59–69]. Third, a number of articles have examined international injecting-drug-related policies and programs [43,70–72]. Finally, interwoven through each of these categories are explorations of the ethical and human rights issues raised by AIDS-related policies [36,56,65–68,73–75].

Structural policies and social and economic devastation

As discussed in the previous section, cultural, political and economic upheaval have all been identified as critical structural vulnerabilities fostering HIV transmission [1–6]. Ironically, the very policies directed toward alleviating such conditions during the 1980s – for example, international aid and SAPS – in fact exacerbated economic hardship and contributed to the explosion of HIV incidence in Asia and Africa during the late 1980s and early 1990s. Lurie *et al.*, for example, describe how the oil embargo of the early 1970s caused a recession in developed countries that severely reduced the demand for exports from developing countries [61]. In response to these economic difficulties, many developing countries sought out international loans, whose availability was conditioned on the adoption of SAPS such as the privatization of governmental corporations, the promo-

tion of raw material and industrial exports, import liberalization and the elimination of trade barriers, restrictive monetary policies and high interest rates in order to control inflation, and the elimination or reduction of subsidies for agriculture, healthcare, education and related social areas. In practice, the SAPS produced lower government spending, the decline of rural economics, and substantial rural to urban migration [4,61]. As a result, many couples were separated, often multiplying the number of sexual contacts and intensifying the spread of HIV. Turshen similarly criticizes USAID AIDS interventions for supporting such adverse social and health outcomes of SAPS, and failing to address the socioeconomic determinants of HIV transmission [76]. In contrast, Elmendort and Roseberry, representing the World Bank, defend the utility of SAPS, arguing that they lay the foundation for long-term, sustainable economic and social growth, and suggest that economic decline, rather than decreases in central government health spending associated with SAPS, may be responsible for the high levels of HIV incidence in parts of sub-Saharan Africa [60].

National policies facilitating or slowing HIV transmission

Like work on international development policies, studies of national HIV/AIDS policy-making and impact have been carried out in a number of different developing countries. Perhaps the most extensive discussion of national HIV/AIDS policies centers on Cuba, where the state has provided free food, shelter and treatment for people living with HIV/AIDS in sanitaria isolated from the rest of the Cuban populace [66–68]. Scheper-Hughes has argued that Cuban AIDS policy is worth examining because of the country's extraordinarily low HIV incidence, although she mentions that sexual puritanism and infrequent injecting drug use may also have contributed to these rates [68]. Nonetheless, Scheper-Hughes cautions that this approach may not be applicable in other locations because of the ethical issues inherent in enforcing isolation. Somewhat differently, Santana *et al.* explain that the sanitarium system is effective in Cuba because Cubans are used to sacrificing personal desires for the greater good [66,67]. Gil describes a similar dynamic in China, where national HIV-prevention policies have been framed in terms of socialist cultural and moral values, and suggests that while these policies may be appropriate for rural populations who still conform to socialist ideology, they are less likely to be effective for urban dwellers, who often have different sexual practices and values that are neither acknowledged nor addressed in these campaigns [63].

In Brazil, Parker and Daniel have examined how the cultural, economic and political changes associated with that country's redemocratization in the 1980s affected the development of the Brazilian AIDS epidemic [36,65,77]. During the early and mid-1980s, Brazilian federal government officials largely ignored AIDS because they viewed it as a problem of homosexual men rather than the general populace. In response, nongovernmental organizations filled the AIDS education void and played a key role in campaigning for and shaping more effective governmental AIDS policies as the redemocratization of Brazilian society evolved over time [48,65]. In contrast, research in Thailand [62,78,79] and Uganda [69] highlighted the link between governmental acknowledgment of the gravity of AIDS and the development of more successful governmental interventions (e.g. Thailand's 100% Condom Program and Five Year National AIDS Program, Uganda's multi-sectoral approach and collaborative governmental/community-based organization education and prevention programs).

While national case studies provide important insights, there unfortunately has been little comparative research on the historical development of AIDS policies in developing countries (in spite of the fact that by far the greatest burden of the global pandemic has been concentrated in the developing world), or on how these policies have affected the epidemic. At least one long-term study of the history and consequences of national AIDS policy is currently underway in Brazil [77,80], but such relatively large-scale undertakings are exceptional. Moreover, virtually no work has compared the development of AIDS policies in different developing countries, such as that Kirp and Bayer and their collaborators have carried out for the industrialized democracies of the Anglo-European world [81], making it especially difficult to assess the relative impact of different policy initiatives.

Drug legislation, HIV transmission and prevention

Most international policy research on injecting drug use has examined the efficacy of treatment and needle-exchange programs in reducing HIV transmission. Stimson, for example, attributes the high HIV seroprevalence rates among drug users in southeast Asia to governmental unwillingness to take early action and the absence of cross-national, regional collaboration in maintaining adequate drug-treatment programs [72]. Comparative analyses of the epidemiology of injecting-drug-related HIV infection have also been conducted, and highlight how drug trafficking and law-enforcement practices have led to the increased consumption of injecting drugs that can be efficiently transported and distributed [43]. Finally, cross-national studies of injecting drug use in both developed and developing countries demonstrate that many of the social processes associated with drug injecting are remarkably similar across place, suggesting that the elements needed for effective prevention

programs in sites as different as Bangkok, Glasgow, New York City and Rio de Janeiro are in many ways the same [71]. Thus far, however, there have been few published results of the efficacy of needle exchange and other harm-reduction policies in developing countries, although a number of studies currently underway may fill this gap, such as Brazil's pilot needle-exchange program.

AIDS policies and ethics

Despite the far-reaching ethical implications of AIDS-related policy and programs, most of the structural and environment factors literature has limited its consideration of such questions to sweeping condemnations of the detrimental effects of structural adjustment policies and global economic inequalities. Exceptions include Sweat and Denison's review article on structural interventions, which discusses several well-known AIDS policies (e.g. the closing of the gay bathhouses in San Francisco, Cuba's AIDS sanitaria, Thailand's 100% condom program) to highlight the potential for AIDS interventions to violate individual civil rights [10], and Altman's comparative analysis of community-based AIDS advocacy organizations [82], as well as Parker and Daniel's work on Brazilian AIDS activism [36,65], both of which describe how non-governmental organizations have successfully fought for the civil rights of people living with AIDS.

Research on specific structural and environmental interventions

In comparison with the relatively large and compelling research literature on the structural and environmental factors shaping the spread of the epidemic, and the smaller but important literature on the politics of AIDS-related policy-making, the number of published studies that describe and/or evaluate specific structural interventions in detail is unfortunately restricted. More extensive references on these topics can be found in the abstracts of recent International AIDS Conferences, but the information provided is almost always limited. Only a very small percentage of what is presented at the International AIDS Conferences goes on to be published in scientific journals or other formats – perhaps as little as 5%, for example, according to one review focusing specifically on HIV/AIDS research conducted in Brazil [83] – making it difficult to assess research findings.

In part, the relative paucity of published studies describing and evaluating specific structural interventions may well be due to the perceived (and very real) difficulties of developing public health interventions that would be capable of significantly altering the kinds of broad-based, historically constituted political economic conditions that have been identified as shaping both collective and individual vulnerability to infection. Yet, if taken seriously as factors that might be influenced, however slightly, through the development of social services and intervention programs on the local level, such factors nonetheless might offer possible targets for intervention design that are perhaps no less extraordinary than the equally elusive targets of health beliefs or rational processes which have typically been the focus of behavioral interventions. Based primarily on those few studies that have been published, it is possible to identify some of the approaches that have received significant international attention, including targeted interventions which have been developed for heterosexual women, female commercial sex workers, male truck drivers, and men who have sex with men, which we will now describe in greater detail. (It is also worth noting the existence of a much larger 'gray' literature of project reports, manuals, and popular media reporting, although most research scientists in the developing world often lack the necessary infrastructure and financial support to analyze and disseminate their results adequately.)

Heterosexual women

Despite the impressive literature examining structural HIV vulnerability among heterosexual women in developing countries [13,39,51], it is striking how few projects have attempted to address this vulnerability through structural changes. Instead, the vast majority of prevention programs targeted toward women have concentrated on condom promotion and partner-reduction strategies, even though it has been repeatedly shown that these behavioral approaches are inadequate given the realities of most women's lives [52,55,84].

Most of the reported structural interventions with heterosexual women describe attempts to support safer sexual practices given the realities of gender and economic inequalities. Examples of such enabling approaches include testing and counseling programs that not only inform women of their serostatus, but also provide ongoing psychosocial support for HIV decision-making and risk reduction [85], and action research projects such as CONNAISSIDA in Zaire during the 1980s [22–26]. Such strategies of promoting female economic empowerment as a means to avoid the risks of sex work and to promote greater autonomy in contraceptive use and sexual decision-making has grown in importance as the fields of HIV/AIDS and reproductive health have become increasingly integrated in the 1990s [86]. Nonetheless, more empirical data and rigorous evaluation is needed to understand the effects of these enabling interventions and the processes through which increased autonomy and empowerment occur.

A related body of work on heterosexual women has focused on expanding the range of female-controlled HIV-prevention methods [50,55,87,88]. For example, a recently completed cross-national study has provided comparative data on how the female condom, when added to the already existing prevention options available in developing country settings, can increase women's ability to protect themselves from HIV infection [87]. While the cost of most female-controlled or initiated methods still restricts their accessibility, various intervention studies currently underway seek to increase women's options through the elaboration of more complex dual-protection prevention strategies within women's reproductive health services [89], which we believe represent among the most important structural changes taking place in developing countries today.

Female sex workers

Many of the most extensive and recognized attempts to develop structural and environmental interventions in developing countries have focused on female sex workers. Indeed, one of the most acclaimed structural interventions of any type is the 100% Condom Program [78,79], which seeks to prevent the sexual transmission of HIV through increasing condom utilization in Thai sex establishments to 100%, and involves the active involvement of governmental authorities and owners of sex establishments. Condoms are supplied free of charge to all sex establishments, which, it is important to note, technically remain illegal despite the existence of the 100% Condom Program. If clients refuse to use condoms, sexual services are withheld; condom use is strictly enforced through provincial AIDS committees, local police, monitoring, and the imposition of sanctions on commercial sex establishments that fail to comply. Since its inception in 1989 and its expansion nationwide in 1991, condom-use rates in brothels rose from under 50% in 1989 to 94% in 1993. However, despite the apparent success of the program, whether this approach is possible in other contexts is uncertain due to the particularities of Thai society (i.e. a hierarchical social structure, a very specific set of sexual values, a booming economy during the early 1990s, and a political system that combines a traditional monarchy with military authoritarian rule).

Whatever the transferability of the Thai 100% Condom Program, the centrality of the cooperation of commercial sex establishments and governmental officials in promoting HIV risk reduction among female sex workers is nonetheless confirmed by the more mixed results of two projects in Bombay, India [90,91]. Bhave *et al.* [90] describe a controlled study in which intervention-group participants underwent a 6-month program of educational videos and small group discussions, and were provided pictorial educational materials and free condoms. Women reported increased levels of condom use; however, and in stark contrast to the 100% Condom Use Program, both sex workers and madams were concerned about losing business if condom use was insisted upon. At the same time, levels of knowledge about HIV transmission and prevention among control group women remained low despite HIV testing and counseling, leading the authors to posit that high levels of illiteracy and isolation make it difficult for many women to understand even basic concepts about HIV transmission without intensive education.

Such structural obstacles to developing successful interventions were particularly evident in a peer education project among prostitutes and madams in the Kamathipua and Khetwadi areas of Bombay. The project sought to educate sex workers about their health problems, including HIV and STD, and to create an ongoing network of health educators among female sex workers in the two areas [91]. Although women reported personal benefits from the training, most were not interested in attending follow-up meetings, nor did many women conduct education sessions among their peers, as madams did not allow them to leave their own brothels. This experience suggests, as Gadgil argues, that peer education and group empowerment models may not be successful in structural contexts where freedom of movement and camaraderie among sex workers are absent.

Finally, as in work focusing on women who are not commercial sex workers, a number of intervention projects have attempted to promote empowerment and personal autonomy through cultivating alternative employment opportunities for female sex workers. A project in Machakos Town and Nairobi, Kenya, for example, provided women with relevant HIV/AIDS, safer sex and fertility education, training in small business management, and start-up funds for their own businesses (mostly selling vegetables, fruits and grains or making handicrafts) [92]. The authors report a decline in the number of the women's sexual partners, an increase in condom use, and the creation of an overall sense of wellbeing and pride as a result of not having to sell sex and be exposed to HIV infection.

Truck drivers

Interventions designed for male truck drivers and sex workers often overlap because sex work is typically embedded within truck-driver culture (e.g. truck drivers often provide transportation to women in exchange for sex, women offer truck drivers sex and/or a place to stay for a small fee) [93]. Mwizarubi *et al.*, for example, describe an AIDS intervention in Tanzania that targeted truck drivers, their assistants, and their female sex partners at seven truck stops along the Dar es Salaam highway, and sought to raise HIV

and STD awareness, promote condom use and distribution, reduce the overall number of sexual partners, and encourage peer-based STD/HIV education [94]. During the project, AIDS awareness increased and condom distribution rose by 100 000; however, the authors report that women at truck stops remain in need of greater condom negotiation skills and empowerment more generally.

In Zimbabwe, Wilson *et al.* conducted semi-structured interviews, focus groups, and participant observation with 74 truckers. Baseline interviews revealed high levels of prior STD infection and low levels of knowledge of the efficacy of condoms as an HIV prevention strategy [93]. The truckers complained that the low wages and long hours they worked decreased their contact with wives and children, and led them to seek companionship and sex while on the road. Based on these data, the authors suggest that structural interventions such as raising salaries and limiting overtime, providing nursery care so that wives could travel with their husbands, and providing truckers with better contact with their families through increasing telephone access, could all help reduce HIV transmission.

Men who have sex with men

In keeping with the small amount of research, intervention or otherwise, on men who have sex with men in the developing world, virtually no official governmental or intergovernmental programs have prioritized men who have sex with men, even in regions where homosexual transmission has been pronounced, as in Latin America and parts of Asia [56,57]. Nonetheless, in a number of regions, community-based organizations have developed groundbreaking prevention programs, particularly through strategies aimed at community mobilization [57], which in many cases overlap and complement structural and environmental interventions.

In Sri Lanka, a gay organization known as Companions on a Journey has combined outreach work with support networks and advocacy aimed at decriminalizing homosexual behavior [57]. In Mexico, the Coletivo Sol, a community-based gay and AIDS-service organization, has worked with bathhouse managers and clients to provide information on safer sexual practices, and to distribute condoms and water-based lubricants in these locations [56,57]. In Brazil, a large-scale and long-term prevention program developed in Rio de Janeiro and São Paulo by the Associação Brasileira Interdisciplinar de AIDS, the Grupo Pela Vidda-Rio de Janeiro, and the Grupo Pela Vidda-São Paulo combined intensive outreach work with safer-sex workshops, cultural activities, collaboration with the owners and managers of commercial establishments, and the creation of special STD treatment and counseling programs for men who have sex with men, in order to build social support networks and provide a safe environment capable of nurturing risk reduction [57,95].

This work among men who have sex with men in developing countries has rarely been systematically evaluated due to the lack of financial and technical resources, although novel forms of evaluation have been developed, such as the use of ongoing ethnographic assessment to monitor and revise intervention activities in Brazil [57,96]. These experiences suggest that community attachment strategies (e.g. gay-identified men working to link nongay-identified men who have sex with men to gay community organizations and gay cultural spaces) based not only on outreach work, but also on the actual construction and/or reorganization of local environments may be particularly relevant today in many developed countries, where early prevention efforts designed for and by self-identified gay men have been redesigned and reinvented to reach men who have sex with men who do not necessarily share a defined gay identity or participate in organized gay communities. In such contexts, the perspectives of community mobilization and structural intervention may need to merge in order to construct safer environments and to sustain safer sex as a form of community practice [97].

Key challenges for future research

Ultimately, we would like to highlight the emergence of an important and growing body of international AIDS research that has moved beyond the more limited approaches of behavioral science to examine the structural and environmental forces and sociocultural contexts which shape HIV vulnerability. Most of this work has remained relatively general in its analysis and might therefore be criticized as being poorly operationalizable, since far-reaching dilemmas such as poverty, migration and gender inequality are unlikely to be overcome in the short run or through the limited resources available for health-related interventions. Yet, contextual variables and AIDS-related policies must be seriously addressed if we are to bring about effective HIV-risk reduction, and work on these broad structural factors should therefore be understood as centrally important in order to contextualize and design relevant interventions.

While the structural and environmental factors literature offers extremely important insights and reveals a number of productive intervention strategies that might be explored in both resource-rich and -poor settings, many important questions remain. Among these, a few are worth highlighting.

- How can we better document and measure the effects of large-scale structural and environmental factors (e.g. poverty, the denial of humans rights) on the highly localized behavioral events (e.g. unprotected sex, needle sharing) that ultimately shape the course of HIV infection?

- How can we facilitate comparative analysis of policy processes that is attentive to local nuances and capable of systematically assessing how specific policies and programs affect transmission rates within particular population groups and communities?

- How can we design and implement focused structural interventions that address the consequences of large-scale factors such as economic justice and gender inequality, and provide clients of the program options which produce meaningful reductions in behavioral risk, without presuming that such small-scale programs will end poverty or sexism?

- How can we develop rigorous methodologies to evaluate and measure the effects of structural and environmental interventions, since by their very nature these interventions involve large-scale elements that cannot be easily controlled by experimental or quasi-experimental research designs?

- How can we adapt structural interventions that have been shown to be effective in one context to other locations and situations in which some, but not necessarily all, of the same underlying structural factors are present or important?

The answers to these questions are not simple or straightforward and often take us far afield from the kinds of theoretical frameworks, methodologies and research designs that have been at the center of behavioral health research as a whole, and HIV/AIDS research in particular. They push us, on the contrary, toward innovative approaches as well as new, and hopefully productive, dialogues with fields of work and disciplinary traditions that, until recently, have been at the margins of mainstream AIDS research. Yet the fact remains that, despite recent advances in HIV treatment, in very few settings has AIDS prevention been able to declare victory over the epidemic. After nearly two decades, traditional behavioral intervention strategies have demonstrated some effectiveness in a number of particular contexts but have not had widespread impact. At the very least, over the course of the past decade, dissenting voices have increasingly called for a re-evaluation of such strategies, together with a shift of emphasis in both research and intervention to focus on political economic, structural and environmental factors shaping the epidemic and conditioning our ability to respond to it. The time has surely come to strike out in new directions that explicitly attempt to achieve more broad-based social and structural change.

References

1. Altman D. **Globalization, political economy, and HIV/AIDS.** *Theory Soc* 1999, **28**:559–584.
2. Farmer P. *Infections and Inequalities.* Berkeley, CA: University of California Press; 1999.
3. Parker R. **Empowerment, community mobilization and social change in the face of HIV/AIDS.** *AIDS*, 1996, **10(suppl 3)**:S27–S31.
4. Zwi A. **Reassessing priorities: identifying the determinants of HIV transmission [editorial].** *Social Sci Med* 1993, **36**:iii–vii.
5. Lee K, Zwi A. **A global political economy approach to AIDS: ideology, interests and implications.** *New Political Econ* 1996, **1**:355–373.
6. Parker R. *The Global Political Economy of HIV/AIDS.* London: Routledge; 2000.
7. Singer M. *The Political Economy of AIDS.* New York: Baywood Publishing Company; 1998.
8. Aggleton P. **Global priorities for HIV/AIDS intervention research.** *Int J STD AIDS* 1996, **7(suppl 2)**:13–16.
9. Caraël M, Buvé A, Awusabo-Asare K. **The making of HIV epidemics: what are the driving forces?** *AIDS* 1997, **11(suppl B)**: S23–S31.
10. Sweat MD, Denison JA. **Reducing HIV incidence in developing countries with structural and environmental Interventions.** *AIDS* 1995, **9(suppl A)**:S251–S257.
11. Tawil O, Vertser A, O'Reilly K. **Enabling approaches for HIV prevention: can we modify the environment and minimize the risk?** *AIDS* 1995, **9**:1299–1306.
12. Turshen M. **Societal instability in international perspective: relevance to HIV/AIDS prevention.** *National Academy of Sciences/Institute of Medicine Workshop on the Social and Behavioral Science Base for HIV/AIDS Prevention and Intervention*, Washington, DC; 1995:117–128.
13. Farmer P, Connors M, Simmons J. *Women, Poverty, and AIDS: Sex, Drugs and Structural Violence.* Monroe, ME: Common Courage Press; 1996.
14. Akeroyd A. **HIV/AIDS in Eastern and Southern Africa.** *Rev Afr Political Econ* 1994, **60**:173–184.
15. Anarfi J. **Sexuality, migration and AIDS in Ghana: a socio-behavioral study.** *Health Transition Rev* 1993, **4(suppl)**:273–295.
16. Bassett M. **Social and economic determinants of vulnerability to HIV infection: the Zimbabwe experience.** *AIDS Anal Afr* 1993, **July/August**:9–11.
17. Bond GC, Vincent C. **Living on the edge: changing social structures in the context of HIV.** In *Changing Uganda: The Dilemma of Structural Adjustment and Revolutionary Change.* Edited by Hansen H, Twaddle M. London: James Curry; 1991.
18. Decosas J. **HIV and development.** *AIDS* 1996, **10(suppl 3)**:S69–S94.
19. Decosas J, Kane F, Anarfi J, Sodii K, Wagner HU. **Migration and AIDS.** *Lancet* 1995, **346**:826–828.
20. Jochelson K, Mothibeli M, Leger JP. **Human immunodeficiency virus and migrant labor in South Africa.** In *AIDS: The Politics of Survival.* Edited by Krieger N, Glenn M. Amityville, NY: Baywood Publishing Co.; 1994:141–160.
21. Romero-Daza N, Himmelgreen D. **More than money for your labor: migration and the political economy of AIDS in Lesotho.** In *The Political Economy of AIDS.* Edited by Singer M. New York: Baywood Publishing Company; 1998:185–204.
22. Schoepf, BG. **Women, AIDS, and economic crisis in Central Africa.** *Can J Afr Studies* 1988, **22**:625–644.
23. Schoepf, BG. **Gender relations and development: political economy and culture.** In *Twenty-First Century Africa: Towards a New Vision of Sustainable Development.* Edited by Seidman A, Anang F. Trenton, NJ: African World Press; 1992.

24. Schoepf BG. **Women at risk: case studies from Zaire**. In *The Time of AIDS: Social Analysis, Theory and Method*. Edited by Herdt G, Lindenbaum S. Beverly Hills, CA: Sage Publications; 1992:259–286.
25. Schoepf BG. **Gender, development, and AIDS: a political economy and culture framework**. In *Women and International Development*. Vol 3. Edited by Gallin R, Ferguson A, Harper J. Boulder, CO: Westview Press; 1993:53–85.
26. Schoepf BG, Engundu W, Nkera WA, Ntsomo P, Schoepf P. **Gender, power, and risk of AIDS in Central Africa**. In *Women and Health in Africa*. Edited by Turshen M. Trenton, NJ: Africa World Press; 1991:187–203.
27. Turshen M. **The political ecology of AIDS in Africa**. In *The Political Economy of AIDS*. Edited by Singer M. New York: Baywood Publishing Company; 1998:169–184.
28. Webb D. *HIV and AIDS in Africa*. London: Pluto Press; 1997.
29. Wilson D, Sibanda B, Mboyi L, Msimanga S, Dube G. **A pilot study for an HIV prevention programme among commercial sex workers in Bulawayo Zimbabwe**. *Social Sci Med* 1990, **5**:609–618.
30. Zwi A, Cabral AJR. **Identifying 'high risk situations' for preventing AIDS**. *BMJ* 1991, **303**:1527–1529.
31. Zwi, A, Bachmayer, D. **HIV and AIDS in South Africa: what is an appropriate public health response?** *Health Policy Planning* 1990, **5**:316–326.
32. Archavanitkul K, Guest P. **Migration and the commercial sex sector in Thailand**. *Health Transition Rev* 1994, **4(suppl)**:273–295.
33. Kammerer CA, Hutheesing OK, Maneeprasert R, Symonds PV. **Vulnerability to HIV infection among three hilltribes in Northern Thailand**. In *Culture and Sexual Risk: Anthropological Perspectives in AIDS*. Edited by Brummelhuis H, Herdt G. New York: Gordon and Breach; 1995:53–78.
34. Symonds, PV. **Political economy and cultural logics of HIV/AIDS among the Hmong in Northern Thailand**. In *The Political Economy of AIDS*. Edited by Singer M. New York: Baywood Publishing Company; 1998:205–226.
35. Tan ML. **Socio-economic impact of HIV/AIDS in the Philippines**. *AIDS Care* 1993, **5**:283–288.
36. Daniel H, Parker RG. *Sexuality, Politics and AIDS in Brazil*. London: The Falmer Press; 1993.
37. Farmer P. *AIDS and Accusation: Haiti and the Geography of Blame*. Berkeley, CA: University of California Press; 1992.
38. Farmer P. **Culture, poverty, and the dynamics of HIV transmission in rural Haiti**. In *Culture and Sexual Risk: Anthropological Perspectives in AIDS*. Edited by Brummelhuis H, Herdt G. New York: Gordon and Breach; 1995:3–28.
39. Farmer P, Lindenbaum S, Delvecchio-Good MJ. **Women, poverty and AIDS: an introduction**. *Culture Med Psychiatry* 1993, **17**:387–397.
40. Kreniske J. **AIDS in the Dominican Republic: anthropological reflections on the social nature of disease**. In *AIDS in Africa and the Caribbean*. Edited by Bond G, Kreniske J, Susser I, Vincent J. Boulder, CO: Westview Press; 1991.
41. Lurie P, Fernandes ME, Hughes V, *et al.* and Instituto Adolfo Lutz Study Group. **Socioeconomic status and risk of HIV-1, syphilis and hepatitis B infection among sex workers in São Paulo State, Brazil**. *AIDS* 1995, **9(suppl 1)**:S31–S37.
42. Susser I, Kreniske J. **Community organizing around HIV prevention in rural Puerto Rico**. In *AIDS in Africa and the Caribbean*. Edited by Bond GC, Kresiske J, Susser I, Vincent J. Boulder, CO: Westview Press; 1997:51–64.
43. Des Jarlais DC, Friedman SR, Choopanya K, Vanichseni S, Ward, TP. **International epidemiology of HIV and AIDS among injecting drug users**. *AIDS* 1992, **6**:1053–1068.
44. Lindenbaum, S. **Images of catastrophe: the making of an epidemic**. In *The Political Economy of AIDS*. Edited by Singer M. New York: Baywood Publishing Company; 1998:33–58.
45. Wallace R, Fullilove M, Fullivove R, Gould P, Wallace, D. **Will AIDS be contained within U.S. Minority Urban Populations**. *Social Sci Med* 1992, **8**:1051–1062.
46. Wallace, R. **A synergism of plagues: 'planned shrinkage', contagious housing destruction, and AIDS in the Bronx**. *Environ Res* 1998, **47**:1–33.
47. Parker, R. **The negotiation of difference: male prostitution, bisexual behavior and HIV transmission in Brazil**. In *Sexuality, Politics and AIDS in Brazil*. Edited by Daniel H, Parker R. London: The Falmer Press; 1993:85–94.
48. Parker, R. **Migration, sexual subcultures, and HIV/AIDS in Brazil**. In *Sexual Culture and Migration in the Era of AIDS: Anthropological and Demographic Perspectives*. Edited by Herdt G. Oxford: Clarendon Press; 1997:55–69.
49. Larvie, P. **Homophobia and the ethnoscape of sex work in Rio de Janeiro**. In *Sexual Culture and Migration in the Era of AIDS: Anthropological and Demographic Perspectives*. Edited by Herdt G. Oxford: Clarendon Press; 1997:143–164.
50. Elias CJ, Heise LL. **Challenges for the development of female-controlled vaginal microbicides**. *AIDS* 1994, **8**:1–9.
51. Gupta GR, Weiss E. **Women's lives and sex: implications for AIDS prevention**. *Culture Med Psychiatry* 1993, **17**:399–412.
52. Heise LL, Elias C. **Transforming AIDS prevention to meet women's needs: a focus on developing countries**. *Social Sci Med* 1995, **40**:931–943.
53. Michal-Johnson P. **The dark side: barriers to changing high-risk behaviors**. *AIDS Public Policy J* 1994, **9**:18–19.
54. Zoysa I, Sweat MD, Denison J. **Faithful but fearful: reducing HIV transmission in stable relationship**. *AIDS* 1996, **10(suppl A)**:S197–S203.
55. Stein, Z. **HIV prevention: the need for methods women can use**. *Am J Public Health* 1990, **80**:460–462.
56. McKenna N. *On the Margins: Men who have Sex with Men and HIV in Developing Countries*. London: Panos Institute; 1996.
57. Parker R, Kahn, S, Aggleton P. **Conspicuous by their absence? Men who have sex with men (msm) in developing countries: implications for HIV prevention**. *Crit Public Health* 1998, **8**:329–346.
58. Bloom DE, Glied S. **Who is bearing the cost of the AIDS epidemic in Asia?** In *Economic Implications of AIDS in Asia*. Edited by Bloom DE, Lyons JV. New Delhi: UNDP; 1993.
59. Quam, M. **AIDS policy and the United States political economy**. In *Global AIDS Policy*. Edited by Feldman D. Westport, CT: Bergin & Garvey; 1994:142–159.
60. Elmendort AE, Roseberry W. **Structural adjustment: what effect on health?, on vulnerability to HIV?** *AIDS Anal Afr* 1993, **July/August**:4–7.
61. Lurie P, Hintzen P, Lowe RA. **Socioeconomic obstacles to HIV prevention and treatment in developing countries: the roles of the International Monetary Fund and World Bank**. *AIDS* 1995, **9**:539–546.
62. Brown T, Xenos P. *AIDS in Asia: The Gathering Storm*. Asia Pacific Issues 16. Program on Population. Honolulu: East–West Center; 1994.
63. Gil VE. **Behind the wall of China: AIDS profile, AIDS policy**. In *Global AIDS Policy*. Edited by Feldman D. Westport, CT: Bergin and Garvey; 1994:7–27.
64. Packard R, Epstein P. **Epidemiologists, social scientists, and the structure of medical research on AIDS in Africa**. *Social Sci Med* 1991, **33**:771–794.
65. Parker RG. **Public policy, political activism, and AIDS in Brazil**. In *Global AIDS Policy*. Edited by Feldman D. Westport, CT: Bergin and Garvey; 1994:28–46.
66. Santana S, Fass L, Wald K. **Human immunodeficiency virus in Cuba: the public health response of a Third World country**. *Intl J Health Services* 1991, **21**:511–537.
67. Santana, S. **AIDS prevention, treatment and care in Cuba**. In *AIDS in Africa and the Caribbean*. Edited by Bond GC, Kreniske J, Susser I, Vincent J. Boulder, CO: Westview Press; 1997:65–84.
68. Scheper-Hughes N. **AIDS, public health and human rights in Cuba**. *Lancet* 1993, **342**:965–967.
69. Shuey D, Bagarukayo H. **AIDS: despair, or a stimulus to reform?** In *AIDS in the World II*. Edited by Mann J, Tarantola DJM. Oxford: Oxford University Press; 1996:122–124.
70. Bastos, FI. *Ruína o Reconstrução: AIDS e Drogas Injetáveis na Cena Contemporânea*. Rio de Janeiro: Relume-Dumará Editora; 1995.
71. Des Jarlais DC, Friedman SR, Fridemann P, *et al.* **HIV/AIDS-related behavior change among injecting drug users in different national settings**. *AIDS* 1995, **9**:611–617.
72. Stimson GV. **Reconstruction of subregional diffusion of HIV infection among injecting drug users in Southeast Asia: implications for early interventions**. *AIDS* 1994, **8**:1630–1632.
73. Mann J, Tarantola DJM, Netter TW. *AIDS in the World*. Cambridge, MA: Harvard University Press; 1992.
74. Mann, J, Tarantola, DJM. *AIDS in the World II*. Oxford: Oxford University Press; 1996.

75. Panos Institute. *The Third Epidemic: Repurcussions of the Fear of AIDS.* Budapest: Panos Institute; 1990.
76. Turshen M. **US Aid to AIDS in Africa**. *Rev Afr Political Econ* 1992, **55**:95–101.
77. Parker RG. *Políticas, Instituições e AIDS: Enfrentando a Epidemia no Brasil.* Rio de Janeiro: Jorge Zahar Editores/ABIA; 1997.
78. Rojanapithayakakorn W. **The One Hundred Percent Condom Programme in Thailand, an update.** *X International Conference on AIDS.* Yokohama, August 1994 [abstract 478C].
79. Rojanapithayakorn W, Hanenberg R. **The 100% Condom Program in Thailand**. *AIDS* 1996, **10**:1–7.
80. Parker R, Galvão J. **HIV/AIDS policy in Brazil**. *XII World AIDS Conference.* Geneva, June 1998 [abstract 355/43560].
81. Kirp DL, Bayer R. *AIDS in the Industrialized Democracies: Passions, Politics, and Politics.* New Brunswick, NJ: Rutgers University Press; 1992.
82. Altman D. *Power and Community: Organizational and Cultural Responses to AIDS.* London: Taylor & Francis; 1994.
83. Bastos FI, Coutinho K, Galvão J, Parker R. **Research on HIV/AIDS in Brazil – 1983–1997: a comprehensive review**. *XII World AIDS Conference.* Geneva, June 1998 [abstract 43278].
84. Goldstein D. **Women and AIDS in Brazil: the emerging problem**. *Social Sci Med* 1994, **39**:319–329.
85. Allen S, Serufilira A, Gruber V, Kegeles S, Van de Perre P, Carael M, Coates T. **Pregnancy and contraceptive use among urban Rwandan women after HIV testing and counseling**. *Am J Public Health* 1993, **83**:705–710.
86. Schuler SR, Hashemi Syed. **Credit programs, women's empowerment, and contraceptive use in rural Bangladesh**. *Studies Family Planning* 1994, **25**:65–76.
87. Rivers K, Aggleton P, Elizondo J, *et al.* **Gender relations, sexual communication and the female condom**. *Crit Public Health* 1988, **8**:273–290.
88. Stein Z. **More on women and the prevention of HIV infection [editorial]**. *Am J Public Health* 1995, **85**:1485–1488.
89. Barbosa R, Lago T. **AIDS e direito reproductivo: para além da transmissão vertical**. In *Políticas, Instituições e AIDS: Enfrentando a Epidemia no Brazil.* Edited by Parker R. Rio de Janeiro: Jorge Zahar Editora/ABIA; 1997:163–175.
90. Bhave GL, Lindan CP, Hudes E, Desai, S, Wagle U, Tripathi, SP, Mandel JS. **Impact of an intervention on HIV, sexually transmitted diseases, and condom use among sex workers in Bombay, India**. *AIDS* 1995, **9(suppl 1)**:S21–S30.
91. Gadgil A. **Peer group education among prostitutes of Kamathipua and Khetwadi areas of Bombay**. *X International Conference on AIDS.* Yokohama, August 1994 [abstract PD0457].
92. Kirubi M, Ngugi EN, Kamau P, Nyanbola L, Ronald A. **The impact of social economic and sexual empowerment: commercial sex workers (CSWs)**. *X International Conference on AIDS.* Yokohama, August 1994 [abstract 447D].
93. Wilson D, Sibanda A, Nyathi B, Lamson N, Sibanda T. **Ethnographic and quantitative research to design a community intervention among long-distance truck drivers in Zimbabwe**. In *Focusing Interventions among Vulnerable Groups for HIV Infection: Experiences from Eastern and Southern Africa.* Nairobi: NARESA Monograph; 1994:99–118.
94. Mwizarubi BK, Mwaijonga CL, Laukamm-Josten U, Lwihula G, Outwater A, Nyamwaya D. **HIV/AIDS education and condom promotion for truck drivers, their assistants and sex partners in Tanzania**. VII International Conference on AIDS. Florence, June 1991 [abstract WD4017].
95. Parker R. **AIDS prevention and gay community mobilization in Brazil**. *Development* 1995, **2**:49–53.
96. Parker R. *Beneath the Equator: Cultures of Desire, Male Homosexuality, and Emerging Gay Communities in Brazil.* New York: Routledge; 1999.
97. Watney S. *Practices of Freedom: Selected Writings on HIV/AIDS.* Durham: Duke University Press; 1994.