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POLICY AND PROGRAMME RESPONSES FOR ADDRESSING THE STRUCTURAL DETERMINANTS OF HIV

BY PAUL PRONYK AND BRIAN LUTZ

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AIDSTAR-One AIDS SUPPORT AND TECHNICAL ASSISTANCE RESOURCES

STRIVE Tackling the structural drivers of HIV

AIDS Support and Technical Assistance Resources Project

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STRIVE

STRIVE is a research consortium based at the London School of Hygiene and Tropical Medicine, with partners in India, Tanzania, South Africa and elsewhere, focusing on the structural forces – in particular stigma, gender-based violence, limited livelihood options and drinking norms – that combine in different ways to create vulnerability to HIV transmission and to undermine prevention. STRIVE is funded by UKaid from the Department for International Development. However, the views expressed do not necessarily reflect the department's official policies.

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Corresponding Authors

Paul Pronyk, MD, PhD
paulpronyk@gmail.com

Brian Lutz, Policy Specialist: AIDS and MDGs, United Nations Development Program, New York, USA
brian.lutz@undp.org

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AIDSTAR-One

John Snow, Inc.
1616 Fort Myer Drive, 16th Floor
Arlington, VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
E-mail: info@aidstar-one.com
Internet: aidstar-one.com

STRIVE

STRIVE Research Programme Consortium
London School of Hygiene & Tropical Medicine
Room 329
15–17 Tavistock Place
London WC1H 9SH
UK
http://strive.lshtm.ac.uk/

SUMMARY

The last decade has witnessed remarkable progress in addressing the consequences of the HIV pandemic. In 2011, some 8 million people in low- and middle-income countries were on antiretroviral therapy (ART), marking the first time in which a majority of people eligible for treatment were receiving it [1]. Efforts to address the causes of the epidemic, however, have not yet matched the combined speed, scale, and successes of treatment programmes. While new infections globally have steadily declined by 20 percent since peaking in 1997, HIV prevalence and incidence remains stubbornly high. In 2011, 34 million people were living with HIV and 2.5 million new infections occurred. Moreover, the epidemic's march continues to outpace treatment efforts, with five new infections for every two people placed on therapy [2]. Global progress also masks underlying disparities, and even reversals. While there has been remarkable behaviour change in some settings, countries in Central and South Asia, for example, have seen significant increases in new infections.

One reason that prevention efforts have not kept pace has been insufficient attention to HIV's "structural factors"—those areas beyond individual knowledge or awareness that shape risk and vulnerability to infection [3]. Examples are often context-specific but can include economic inequality and livelihood insecurity, as well as hunger, gender inequality, and lack of education. These factors, many of which are rooted in various formal and informal types of marginalisation, underpin the diversity of HIV epidemics, helping to explain why some countries have a higher HIV burden than others. In addition, structural factors have been demonstrated to influence treatment access and retention.

While the importance of structural factors is well known, an understanding of effective implementation models is less well established, especially relative to biomedical interventions. Experience over the past decade has fortunately begun to bring about change in this area, with increasing numbers of successful, practical interventions—from policy measures that remove school user fees in Africa, to sex worker peer-prevention programmes in India, to economic safety nets such as cash transfers to adolescent girls in Malawi. The growing body of evidence is quite varied, spanning experimental and quasi-experimental designs. Few investigate HIV incidence per se; most focus on HIV risk proxies. When these experiences are viewed together, the evidence points to the following emerging lessons:

- Action on structural factors remains an important and necessary component of the global HIV response, even in the context of the re-medicalisation of HIV prevention.

- Action on structural factors is possible, can be highly effective and is likely context-specific. More research is needed, particularly multidisciplinary operational research that highlights effective and scalable effective implementation models that can illuminate contextual enablers and barriers.

- Action on structural factors can have multiple beneficial impacts, benefiting not only HIV-related goals but also other health, development, and human rights objectives. Future research should be more comprehensive in documenting HIV and non–HIV-related impacts.

- Implementing structural approaches will require a range of disciplinary perspectives that extend beyond the health sector.

Cross-sector governance and financing are critical for structural approaches to work. These help make structural approaches more cost-effective from an HIV perspective and contribute to improved priority setting and sustainability of AIDS responses.

INTRODUCTION

The HIV epidemic has resulted in one of history's sharpest reversals in human development [4]. AIDS is the sixth-most common cause of death worldwide [5]. Through stigma and discrimination, alongside premature disability and death, the epidemic has exacted an enormous social and economic toll on households, communities, and countries. AIDS makes it difficult to achieve basic targets for reducing extreme poverty and to accelerate gains in education, gender equity, health, and the environment [6].

AIDS has not only profound social and economic consequences; it also has social and economic causes. Economic, social, and gender inequalities fuel HIV transmission. They also limit the reach, uptake, and sustainable utilization of established prevention, treatment, and care services. These myriad and overlapping causes are broadly known as "structural factors"—those areas beyond individual knowledge or awareness that influence risk and vulnerability to infection [3, 7]. The concept draws attention to the fact that individual decisions and behaviours are influenced by a range of social and economic conditions—from levels of education and employment to norms and values deeply rooted in culture, religion, and community. The convergence of these interdependent vulnerabilities highlights some of the epidemic's complexity and provides insights into why some populations have a higher HIV burden than others [4, 8, 9].

For a range of political and technical reasons, structural factors have been poorly addressed within the global HIV response. Politically, addressing structural factors is often difficult and uncomfortable, as it requires engaging socially excluded groups (men who have sex with men [MSM], people who inject drugs [PWID], sex workers) and can touch on power imbalances, sensitive social and cultural norms, and deeply entrenched legal and policy systems. Technically, less is known about how structural factors act and interact relative to biomedical approaches. Assessing the impact of structural interventions is generally more complex, requiring longer time horizons. Interventions may be context-specific and less generalisable. Randomised controlled trials (RCTs) are more challenging to conduct or, in some cases, impossible. Finally, systems to support multi-sectoral programming are generally missing or inadequate. These technical challenges become ever more difficult to address against the backdrop of advances on the biomedical front (particularly ART, male circumcision, microbicides, pre-exposure prophylaxis [PrEP], and treatment as prevention [TasP]). These spate of advances, which promise HIV gains with perhaps fewer political complexities than broader structural approaches, have contributed strong and consistent momentum towards an increasingly medicalised response to the epidemic [7, 10, 11].

Despite the political and technical headwinds that structural approaches face, the past decade has witnessed a resurgence of interest, experience, and evidence on the role of such approaches in the context of a comprehensive AIDS response. There are a number of reasons for this change:

- First, at a political level, prioritising HIV resources is at the heart of the Joint United Nations Programme on HIV/AIDS (UNAIDS) Investment Framework, as structural approaches are embedded in two of the framework's three pillars, as "critical enablers" and "development synergies"—noting both their importance as well as the implications for cross-sector governance and financing [12, 13]. A similar framing of AIDS within broader health and development responses, including the Millennium Development Goals (MDGs), has recently been highlighted [4].

- Second, a reorientation of global priority setting away from specific diseases, such as AIDS, could reinforce a common structural lens through which to examine and

address wider health issues. There are numerous spaces where this broader discourse seems to be taking shape. Global initiatives such as the World Health Organization (WHO) Commission on the Social Determinants of Health (CSDH) and efforts by the Global Fund to support health systems strengthening are recent examples [14, 15]. Efforts to address global pandemics such as non-communicable diseases (NCDs) are also deeply engaged in addressing structural factors [16]. The approach taken by the WHO Framework Convention on Tobacco Control is a good example, with its focus on issues like multi-sectoral governance, tax policy, and alternative livelihoods proving to be central. Finally, discussions on health in the post-2015 agenda reflect a movement away from vertical, disease-specific approaches to horizontal approaches, perhaps nested within an overarching framework of healthy life expectancy and concepts of universal health coverage [17, 18]. Since structural approaches often touch on more than one health objective at a time, a shift toward horizontal approaches in a post-2015 agenda would only make structural approaches more appealing.

- Third, even the newest and most promising biomedical approaches to HIV prevention do not obviate the need for complementary, integrated action on relevant social and economic issues. Structural factors play important roles in the feasibility and potential effectiveness of TasP or PrEP, for example. Social and economic barriers can impede regular, continuous use of ART and medical care more generally. In response, addressing biomedical, behavioural, and structural approaches together has been highlighted in recent calls for "combination prevention" programmes [19].

- Finally, and importantly, an emerging body of experimental and quasi-experimental evidence is starting to demonstrate convincingly that structural approaches can be highly effective, with significant impacts on HIV as well other health and development objectives. The evidence base is smaller than that for biomedical approaches and often relies on inferences based on proxy indicators (i.e. HIV incidence is rarely directly measured), for the reasons outlined earlier. Nonetheless, the evidence that has emerged over the past decade, including that from RCTs, is showing how to translate the concept of structural factors into effective and scalable interventions.

This paper takes stock of relatively recent evidence. It profiles interventions and policy actions that address structural determinants of HIV with the aim of generating insights to strengthen the global AIDS response. The paper profiles two types of efforts. The first are those that address structural factors while also measuring effects on HIV-related behavioural and biological outcomes. In discussing the second group of efforts, and to stimulate thinking on the importance of cross-sectoral approaches, the paper describes interventions that have been demonstrated to affect known HIV-related structural factors, whether or not clinical or behavioural endpoints were assessed.

STRUCTURAL FACTORS: POLICY AND PROGRAMME RESPONSES

An overview of broad categories for structural factors is outlined in Box 1. Within each category, a series of policy and programme options will be presented; these are summarised in Table 1. It should be understood that categories may not be discrete, with many of the most effective programmes addressing multiple structural factors simultaneously.

ECONOMIC WELL-BEING

Causal pathways between economic well-being and HIV are complex, as poverty often acts through other structural factors to influence transmission [4, 8, 20, 21]. At the population level, relative deprivation may play a greater role than poverty itself, as inequalities shape gender norms and sexual negotiation. National and regional inequalities also accelerate the flow of people between more and less affluent areas in search of work, education, and a better life—potentially catalysing the spread of HIV. Finally, poverty may act as a financial barrier limiting access to HIV prevention, care, and support services.

CASH TRANSFERS, MICROFINANCE, AND OTHER SOCIAL ASSISTANCE PROGRAMMES

A range of poverty-reduction strategies has been shown to improve economic and social well-being in low-income settings, with recent evidence supporting reductions in HIV risk. Cash transfers, both unconditional and conditional, are one such example. Access to conditional cash transfers (CCTs), where payments are provided on the condition that households access basic services, have been linked to significant gains in health and nutrition outcomes

Box 1.
Broad Categories of Structural Factors

Globally, the structural factors influencing HIV transmission can be broadly grouped into a series of interconnected categories (see figure below); 1) economic well-being; 2) education; 3) gender inequalities, including intimate partner violence (IPV); 4) mobility, including migration, seasonal work and social disruption due to war and political instability; 5) stigma and discrimination; and 6) social capital. Mapping these relationships and better understanding their links to HIV risk provide a potentially useful starting point for getting specific how interventions at these levels might strengthen the global HIV response. While these categories are not exhaustive and the components vary in importance from place to place, their convergence and interaction within a specific context has the potential to amplify transmission, while posing challenges to prevention and support programs [1-6].

Structural Factors Influencing HIV Infection

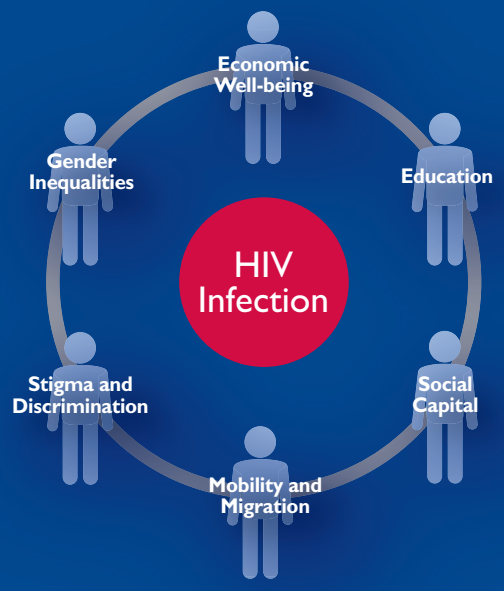


Table 1. Overview of Interventions to Address Structural Determinants of HIV

Structural Factor	Sector	Intervention	Location	Evidence	Outcomes	References
ECONOMIC WELL-BEING						
Policy	Health	User-fee elimination	Low- and middle-income countries	Systematic review	Increased service utilization	Lagarde and Palmer 2011 (43)
	Agriculture	National fertilizer subsidies	Malawi	Observational	Increased crop productivity	Denning et al. 2009 (53)
Programme	Social welfare	Unconditional social assistance grants (pensions, child support, disability)	South Africa	Cross-sectional, controlled; phased implementation	Poverty reduction, increased school enrolment and child nutrition	Case et al. 2005 (39); Aguero et al. 2007 (40)
	Social welfare/ health	Conditional cash transfers	Low- and middle-income countries	systematic review; RCTs	Coverage with child health services, stunting, education	Lagarde 2007 (22); Leroy et al. 2008 (23); Fernald et al. 2009 (25)
	Non-governmental	Microfinance	Low- and middle-income countries	RCTs; quasi-experimental studies; observational	Poverty reduction	Goldberg 2005
	NGO/health	Combined microfinance and health	Bolivia, Ghana, Bangladesh South Africa	quasi-experimental; RCT	Better nutritional outcomes Reductions in intimate partner violence and HIV risk behaviour	MkKnelly and Dunford 1998 (31); 1999; Pitt et al. 2003 (34) Pronyk et al. 2006 (35); 2008 (36); Kim et al. 2009 (38)
	Agriculture	Fertiliser subsidies; improved seeds; co-ops; improved crop-storage facilities; farm extension training	Sub-Saharan Africa	Observational; quasi-experimental	Increased crop productivity; greater income; reductions in child stunting	Juma 2011 (47); Nzibuheba et al. 2010 (50); Sanchez et al. 2007 (51); Gladwin et al. 2001 (49); Remans 2011 (52)
EDUCATION						
Policy	Education	Removal of primary and secondary school fees	Sub-Saharan Africa	Observational	Increased enrolment and attendance rates	UNICEF and World Bank 2009 (58)
Programme	Social welfare	Conditional cash transfers	Brazil, Malawi, Mexico, Nicaragua	RCT	Increased attendance, lower HIV prevalence among 13–22-year-olds	Lagarde 2007 (22); Baird et al. 2012 (28)
	Education	School meals; providing uniforms and textbooks; mass de-worming	Low- and middle-income countries	RCT	Increased attendance	Kremer 2003 (59)
	Education	Remedial education	India	RCT	Improved learning outcomes	Banerjee et al. 2005 (60)
	Education	Gender: reduce access barriers, bilingual learning; early childhood development; female teachers; single-sex classes	Low- and middle-income countries	Observational	Increased attendance of girls	Kane 2004 (63)
	Education	Quality: school financing innovations; increase teacher:learner ratios; curriculum revitalisation	Low- and middle-income countries	Observational	Low-quality evidence for shifts in learning outcomes	Moulton 2003 (61); Dembele and Oviawe 2007 (62)

GENDER						
Policy	Legal	Enshrine property rights: Customary Marriages Act	South Africa	N/A	N/A	Republic of South Africa 1998 (73)
	Legal	Gender-based violence legislation	Low- and middle-income countries	N/A	N/A	
Programme	Health	Reproductive and sexual health services	Low- and middle-income countries	Reviews; observational	Improved coverage; better child health outcomes; poverty reduction	Cleland et al. 2006 (71); Joshi and Schultz 2007 (72)
	Health-legal-social welfare	Integrated health, social and legal services for victims of gender-based violence	South Africa	Observational	Improved service delivery including post-exposure prophylaxis for HIV	Kim et al. 2009 (38)
	Health	Working with men and couples to shift norms: Program H, Men as Partners, Stepping Stones	Brazil, India, South Africa	RCT (Stepping Stones); observational (India)	Reduced violence perpetration by men (Stepping Stones); shifts in inequitable norms (India)	Jewkes et al. 2008 (68); Verma et al. 2006 (67)
MOBILITY AND MIGRATION						
Policy	Legal	Harmonisation of laws and policies between countries in high-risk areas, including anti-trafficking legislation	Southeast Asia	N/A	N/A	UNDP 2007 (79)
	Legal	HIV impact assessments for large-scale development projects	Low- and middle-income countries	N/A	N/A	Krieger et al. 2004 (80)
Programme	Health/social welfare	Workplace and migrant-focused care and support programmes	Sub-Saharan Africa	N/A	N/A	IOM 2010 (82); ILO 2010 (81)
SOCIAL CAPITAL						
Programme	Community-advocacy	MSM community-based peer mobilisation programmes	USA	RCT	Lower rates of unprotected sex	Wohlfeiler 2002 (84); Kegeles et al. 1996 (85); Kelly et al. 1991 (87); 1997 (86)
	Community-health-social welfare	Prevention efforts targeting high-risk groups: (FSWs, migrants, MSM, PWID) through health care, social mobilisation, legal advocacy, media work	India	Observational	Less violence and HIV among FSWs; lower HIV prevalence at population level	Ng 2011 et al. (91); Beattie 2010 (109); Cohen 2004
	Political-community	Political leadership, civil society work, community mobilisation	Uganda	Observational	Reductions in HIV prevalence	Stoneburner and Low-Beer 2004 (93)
STIGMA AND DISCRIMINATION						
Policy	Legal	Decriminalization of HIV, same-sex relationships, sex work	International	N/A	N/A	aids2031 2010 (95)
	Political-community	Measure stigma, political leadership, address root causes	International	N/A	N/A	UNAIDS 2007 (96)
Programme	Media-community-health	Media campaigns, school-based programmes, victims programmes, people living with AIDS (PLA)-based education	International	N/A	N/A	DFID 2007 (98)
	Community-advocacy	Mobilization of police, lawyers, media, and government by FSWs to address stigma	India	Observational	Improved access to entitlements, better legal redress, more positive media reporting	Gurnani et al. 2011 (99)

[22–24]. CCTs are likely to work best where high rates of poverty continue to limit access to well-established services. However, as CCTs may not sustainably alter the structural conditions in which poverty exists, benefits may be short-lived [25].

A recent review of 10 completed studies in high-HIV-risk settings suggests cash transfers targeting adolescents can lead to reductions in sexual risk behaviour [26]. These include a recent RCT from rural Malawi which demonstrated that cash transfers aimed at keeping girls in school can lead to a 64 percent reduction in prevalent HIV infection after 18 months. Reductions in sex with older men and lower levels of herpes simplex virus–type 2 (HSV-2) infection were also observed [27, 28]. While the economic incentives were clearly important, the content and context of such programmes are critical to interpreting findings, and the degree to which conditionality on school attendance has bearing on the results remains unclear [26].

Microfinance initiatives provide access to credit and savings for households where the penetration of formal-sector financial services has historically been limited. A number of studies from a diverse range of low-income settings suggest that microfinance may improve economic well-being [29]. In addition, several programmes have linked participation in microfinance programmes to participation in health interventions [30–34]. In relation to HIV, a recent RCT from South Africa of the Intervention with Microfinance for AIDS and Gender Equity (IMAGE) Project suggests that a combined microfinance and training intervention can empower women and reduce both levels of intimate-partner violence and HIV risk behaviours among programme participants [35, 36]. The study also examined whether these gains might also be observed among groups not directly benefiting from the intervention. No reduction in HIV incidence was observed in the wider community, possibly a result of limited intervention exposure in this group and the short duration of follow-up [37]. A complementary study comparing the integrated (microfinance plus training) model to microfinance alone suggested reductions in levels of violence and HIV risk were only demonstrated in the integrated programme, highlighting the potential synergy of combined approaches [38].

Finally, **social assistance programmes** such as old-age pensions, disability payments, basic income grants, and child support grants have played critical roles in helping households cope with poverty. Such programmes have been linked to reductions in household poverty, improvements in school enrolment, and better child nutrition [39–41]. While effective in addressing economic well-being as a key structural determinant of HIV, their impact on HIV-related risk behaviour has not been specifically examined.

HEALTH SECTOR INTERVENTIONS—USER FEES

Despite compelling evidence that out-of-pocket fees at the point of service, co-payments, and insurance schemes deter health care utilization, many low-income countries retain insurance and cost-recovery mechanisms to fund basic primary services [42]. **User-fee elimination for basic primary health services** can have immediate effects on service utilization in low- and middle-income countries [43], carrying major implications for HIV-specific prevention and treatment programmes, including potential reductions in secondary transmission [2, 44, 45]. WHO has endorsed a public health approach for scaling up access to HIV treatment in developing countries, calling for the provision of "free-of-charge ART at the point of delivery" as a key component for reaching the goal of universal access to HIV treatment and care [46].

NON–HEALTH SECTOR POLICIES AND PROGRAMMES—AGRICULTURE

Many policies and programmes to improve economic well-being fall outside the health sector. For example, in rural areas of Africa and Asia, small-scale farming accounts for 80 percent of employment and household income. Africa in particular has been largely bypassed by the "Green Revolution", and most farming remains subsistence-based. Just 3 percent of farmland is irrigated, mechanisation remains uncommon, and fertiliser use is just 9 kg per hectare, compared with more than 100 kg per hectare worldwide [47]. A range of proven interventions has been linked to dramatic improvements in food security and nutritional outcomes. These include subsidies and loans to increase uptake of fertiliser and improved seeds, extension training for farmers, modern methods of crop storage, value-chain interventions such as agro-processing, and efforts to improve market access [47–52]. In Malawi, for example, a national policy to subsidise the purchase of fertiliser contributed to a two-to-three-fold increase in crop productivity, with major implications for household income and food security [53]. While such efforts fall outside the usual scope of HIV prevention activities, their effect on HIV-related structural factors can be profound.

EDUCATION

In many high HIV prevalence settings, poor access to quality education remains a compelling structural determinant of infection. In sub-Saharan Africa, the net primary school attendance rate is just 71 percent, with a primary school completion rate of just 65 percent. These figures dramatically diminish for secondary school [54]. School attendance is felt to be HIV protective by enhancing learners' exposure to HIV/AIDS education; providing psychosocial benefits and life skills for young people; enhancing economic prospects, which in turn lead to lifestyle changes; influencing power dynamics in relationships, particularly for girls; and fostering age-appropriate and HIV-protective social and sexual networks [55, 56].

IMPROVING ACCESS TO EDUCATION AND SCHOOL ATTENDANCE

As outlined in the CCT example from Malawi above, reducing formal and informal economic barriers can enhance school attendance, which, in turn, may reduce HIV risk, provided that the school environment is actually a safe one, especially for girls. Following on from this and similar to the health sector experience, the removal of user fees leads to a large and immediate increase in school enrolment. This has been demonstrated repeatedly in countries such as Ethiopia, Ghana, Kenya, Malawi, Mozambique, Tanzania, and Uganda [57, 58]. Unfortunately, financial barriers continue to restrict access to secondary schools in much of Africa. This represents a major opportunity for addressing a key structural factor, both because education is important in its own right, and because this demographic corresponds most closely with the age of sexual debut and high HIV risk.

Highlighting the further potential for cross-disciplinary efforts to address structural determinants of HIV, RCTs of interventions in the education sector where improvements in school attendance have been observed include school meals initiatives, the provision of uniform and textbooks, and mass-deworming campaigns [59].

IMPROVING EDUCATION QUALITY AND ADDRESSING GENDER GAPS

While gains in school attendance are clearly important, strategies to improve the quality of education are also essential for school retention and transition to higher levels. Few interventions have been subject to rigorous

evaluations, but interventions such as remedial education programmes have been demonstrated to improve learning outcomes in India [60]. Many programmes are highly context-specific and have only been evaluated using operational data. These include novel approaches to school financing, teacher-training initiatives, curriculum revitalisation, school learning assessments to track education quality, and early childhood development interventions that ensure learners are ready to enrol at age-appropriate levels [61, 62].

Finally, strategies to address gender gaps in education are also important. Again, most of the evidence has been derived from observational data and programme experience rather than rigorous evaluations. Successful approaches generally consist of a flexible package of interventions that have been tailored to the local situation and include components such as reducing access barriers such as distance and cost, bilingual programmes (using local language in the first years of schooling), early childhood development programmes, female teachers, and single-sex schools or classes [63].

GENDER INEQUALITIES

Gender inequalities, referring to power imbalances between men and women, remain a major structural determinant of HIV in many settings. Improving the status of women and girls has been demonstrated to be central to effective HIV control [64]. Gender-based violence continues to operate as an independent risk factor for HIV infection [65]. As gender cuts across multiple structural domains for HIV risk, interventions are required at a number of levels, with the aims of providing gender-responsive programmes and services. These include economically and socially empowering women (the potential role of microfinance has been highlighted above); engaging men and boys as partners for gender equality and for challenging harmful gender norms; improving access to reproductive health services; and creating enabling policy and legislative environments that promote gender equality and the empowerment of women.

GENDER-RESPONSIVE PROGRAMMING

Clinical and social support programmes for victims of gender-based violence are important for mitigating the influence of gender inequalities on HIV risk. In the short term, they provide access to basic services such as HIV post-exposure prophylaxis. In the longer term, they may offer support to women who wish to leave abusive relationships. Best practices in this regard include training for public officials, providing services to victims, monitoring the effectiveness of legislation, and raising awareness—all prerequisites to ensuring proper implementation of gender-based violence legislation. Victim support units in Kenya and South Africa are examples of attempts to ensure women receive adequate legal counsel and health and social support when victims of these crimes. Observational data suggest that integrated approaches improve levels of coverage, with critical interventions including post-exposure prophylaxis for HIV [66].

There is a growing body of evidence that suggests that **working with men** is a potentially effective mechanism to support transformations in gender roles and normative behaviour. Examples of this type of intervention are Program H, first developed in Brazil and now adapted for use in India [67]; and both Men as Partners and Stepping Stones, developed and tested in South Africa to combat gender-based violence and AIDS [68]. These programmes foster constructive roles for men in sexual and reproductive health issues and focus on helping young men to examine traditional norms and definitions of masculinity in their communities. An RCT of the Stepping Stones intervention has documented lower rates of violence perpetration among male participants.

REPRODUCTIVE HEALTH SERVICES

Improving access to and the quality of reproductive health services can lead to HIV-specific benefits such as gains in testing and counselling and lower rates of mother-to-child transmission. In addition, there is growing evidence of a range of additional impacts further upstream in the casual pathway. For example, high fertility negatively impacts women's labour force participation and serves to lower lifetime earning potential [69]. Studies from Africa and elsewhere have demonstrated that the introduction of culturally sensitive family planning programmes can facilitate fertility reductions even under conditions of extreme poverty [70, 71]. While much work remains to disentangle the complex relationships among variables, recent longitudinal evidence from Bangladesh suggests that access to family planning programmes and fertility declines can lead to major gains in earnings and assets among women [72].

LEGAL INTERVENTIONS

Measures to uphold women's property rights can, by empowering women, have indirect impact on HIV. The Customary Marriages Act of South Africa is one example of a legal initiative that recognises the equal status of women who are married in traditional rather than civil marriages [73]. In the past, women in such situations were treated as minors after the loss of a spouse, and were not allowed to own property, sue or be sued in court, or exercise the power of contract. Women could not negotiate or terminate their marriages, nor could they have legal custody of their children. This act recognises their rights, including those of inheritance.

An additional policy-level approach is the existence and implementation of **laws that prosecute offenders of gender-based violence or that criminalize rape that takes place in marital relationships**. Such mandates are central to ensuring women's dignity, life, security, and health. While most countries have enacted domestic-violence laws, many are either weak or poorly implemented. It is essential that marital rape and intimate-partner violence are incorporated into definitions of rape and domestic violence respectively, with clear sentencing guidelines, and that they are prosecuted with equal force whether they occur inside or outside the home [74]. A detailed assessment of measures to address legal drivers of HIV can be found in a recent Global Commission on HIV and the Law [75].

MOBILITY AND MIGRATION

Rapid population movements have been responsible for accelerating the transmission of a range of communicable diseases, and HIV is no exception. Migration comprises population movements both across international borders and within states, either legally or illegally, and either voluntary or forced. While the majority of the estimated 175 million migrants worldwide are men, more women and children are becoming international labour migrants, thus also becoming more vulnerable to human trafficking [76].

In one striking example, migrant men in South Africa have a 26-fold greater risk of HIV acquisition from non-primary partners than non-migrants [77]. Similarly, in Southeast Asia, the trafficking of women and girls is recognised as

a major violation of human rights and a structural factor contributing to HIV transmission [78]. Among repatriated Nepalese girls who had been trafficked from as young as 14 years old, one study found HIV prevalence levels of over 60 percent [79].

LEGAL AND POLICY INTERVENTIONS

Legal and policy interventions must include appropriately harmonised laws and policies between countries if migration is to be legal and safe [79]. This includes minimising the potential for exploitive practices in the context of bilateral relationships that facilitate the flow of cheap labour from poor to rich countries tied to employment with a specific firm or industry.

HIV impact assessments (HIAs) for large-scale development projects are similar to environmental impact assessments and help to project and minimise the impact of such efforts on human health and HIV risk. The HIA process should interrogate how core aspects of the business model might influence HIV transmission and what modifications might be made to keep infection rates among workers and the surrounding community at the lowest possible level. HIAs have now become a required element for all World Bank environmental impact assessments [80]. In fact, both a formal HIA and a mitigation plan have become a required part of any project development for areas significantly affected by HIV. In partnership with the Southern African Development Community, the United Nations Development Programme (UNDP) is currently working with countries in east and southern Africa to integrate HIV, health, and gender impact assessments into national legal and policy frameworks for environmental impact assessments. While migration is one key lens through which these assessments are applied, they are meant to focus on a number of interrelated risk behaviours, such as alcohol use and sex work, that can combine in the contexts of large capital projects.

MIGRANT-FOCUSED PROGRAMMES

There is a need to reach out to migrants with specific programmes that address their vulnerabilities and health care needs. These often fall outside the reach of mainstream health and social services, as well as HIV prevention programming. An appropriate response entails targeting interventions to reduce migrants' health risks and launching or strengthening programmes and services that are "migrant-sensitive." These include workplace programmes in high HIV transmission areas to ensure access to prevention, care, and support services [81] and "place-based" programmes targeting areas known for high concentrations of migrants such as truck routes, farms, mining areas, and cross-border areas [82].

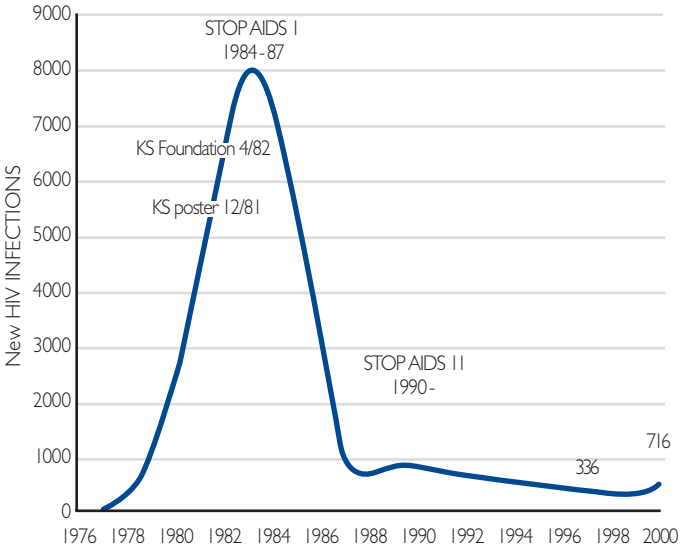
Several basic principles influence a public health approach to addressing the complex challenge of migration [76]. These include minimising disparities in access to services; ensuring civil, political, and health rights of migrants are preserved; and minimising the negative health impacts of migration. The latter is particularly relevant in the case of HIV/AIDS, because basic living conditions and the relative "affluence" of migrants relative to the surrounding host community can catalyse HIV transmission. Conversely, the vulnerability of female migrants in Southeast Asia, such as migrant domestic workers, places them at extremely high risk of exploitation, coerced sex work, and HIV infection [79, 83].

SOCIAL CAPITAL

Strengthening solidarity and collective action among vulnerable populations can play a critical role in enhancing resilience to HIV. For example, early in the HIV epidemic among **men who have sex with men (MSM)**, there was an eight-fold reduction in new HIV infection rates in San Francisco over a four-year period. Most behaviour

change took place very quickly and to a large degree was simultaneous with the establishment of AIDS prevention agencies, rather than a result of those efforts [84]. Much of the decline was attributed to collective social mobilisation among MSM—an educated, resourceful, and socially active community facing a direct and immediate threat. Furthermore, public health initiatives were formulated through substantial consultation with and involvement of the gay community itself, with many examples of successful initiatives [85–87]. The second example comes from a **sex worker–led social mobilisation programme** in Kolkata, India, known as the Sonagachi project [88]. Through mobilising and empowering female sex worker (FSW) groups who themselves organise and conduct peer outreach, the project achieved high levels of condom use and substantially lower levels of HIV prevalence relative to sex workers in other large Indian cities [89]. Efforts to move the project to scale have taken place through the Avahan initiative, with 80 percent of FSWs in four heavily affected states now receiving HIV prevention services. Additional efforts expanded to include MSM, migrant workers, and PWID, often with a major component of advocacy to engage the legal system and the media. Between 2003 and 2006, HIV prevalence among FSWs in India fell by more than half, corresponding with evidence of increased condom use among male partners [90] and a suggestion of population-level effects of fewer new HIV infections [91].

Figure 1. Reductions in new HIV infections among gay men in San Francisco [90]



In Uganda, **civil society mobilisation** played a major role in contributing to reductions in antenatal HIV prevalence from 30 percent to under 10 percent between 1990 and 2005—reductions not witnessed in neighbouring countries such as Kenya, where the epidemic was of similar severity [92]. A number of factors are suggested to have played a role in this decline—from strong and visible political leadership, to high levels of HIV related deaths, to a country emerging from an immediate post-conflict environment. An extensive review of Uganda's experience suggests that the effect of social mobilisation was pronounced and "equivalent to a highly effective vaccine" [93]. Reductions in HIV came prior to the widespread introduction of more technical prevention efforts, such as condom distribution, testing, and scaling up treatment of sexually transmitted infections [94].

STIGMA AND DISCRIMINATION

Issues of stigma and discrimination, in many settings, drive HIV underground while creating barriers to an effective HIV response. Certain sub-groups remain at increased risk of HIV transmission, including MSM, sex workers, and PWID. Social marginalisation has the potential to compel these groups to conceal high-risk activity while creating access barriers to prevention, treatment, care, and support services [75].

LEGAL AND POLICY INTERVENTIONS

An effective policy response is crucial for providing minimum legal standards for the elimination of stigma and discrimination. This involves the decriminalisation of HIV transmission, infection, and exposure; non-discrimination in access to insurance and health services among people living with HIV; and ensuring effective implementation, enforcement, and awareness of laws and social policies that decriminalise and ensure equal rights for people living with HIV, same-sex relationships, sex workers, and harm reduction efforts [75, 95].

Within the United Nations (UN) system, a number of recommendations have also been put forward to help governments and international agencies work together to reduce the negative effects of stigma and discrimination. These include using existing tools for measuring stigma and discrimination to "know your epidemic"; providing essential leadership for reducing stigma and discrimination; integrating stigma/discrimination reduction within national HIV strategic planning, funding, and programming activities; and addressing root causes, including lack of awareness, fear, and the portrayal of HIV and sexual behaviour as linked to strict moral codes [96].

The greatest impacts in addressing stigma and discrimination have been observed when national responses employ a range of approaches. Examples include "know your rights" campaigns, celebrity champions, and media campaigns; community-based programmes such as school-based programmes, participatory education, and visible social mobilisation; legal support efforts to support those affected by stigma and discrimination; and involving people living with HIV in programme design and implementation. A range of interventions, materials, and best-practice examples have been developed to facilitate these important efforts [97, 98]. Similarly, in the case of Avahan project cited above, efforts to address structural factors through legal and advocacy work with the police, government officials, lawyers, and media seemed to influence improvements in access to basic entitlements by FSWs, better redress of incidents of violence, and an increased level of positive media reports on HIV/AIDS and FSWs [99].

CONCLUSION

Efforts to address structural determinants of HIV remain an important, relevant, and necessary component of the global HIV response. While important in their own right, they also constitute an essential adjunct to and potential delivery mechanism for more conventional biomedical approaches [19]. Over the past decade, much has been learned about how structural factors influencing HIV risk can be effectively addressed through a range of policy and programme responses. Rigorous evaluations have documented important shifts in structural factors themselves, from which HIV-related impacts can be inferred. A smaller subset have demonstrated impressive effects on observed and measured HIV-related behavioural and biological outcomes—from microfinance and training interventions in South Africa [100], to cash transfer programmes for school enrolment in Malawi [28], to complex initiatives that combine access to care with social mobilisation across multiple sectors in India [91]. While additional evaluations are essential—particularly of combination prevention initiatives and programmes that examine casual effects on HIV-specific outcomes, interventions that address structural factors can be highly effective. Synergies between development processes and HIV interventions, as called for in the UNAIDS Investment Framework, are indeed worth supporting.

Integrated efforts to address structural factors can also lead to multiple synergistic effects, benefiting not only HIV prevention but also other health, development, and

human rights objectives. Against the backdrop of a global NCD pandemic, rising inequalities, demographic shifts, globalisation, and climate change, innovative and sustainable solutions will have to ask tough questions about the relationships between the underlying drivers of these changes. Such questioning should further underscore the need for structural approaches. Already, the most impressive results on HIV specifically have been observed in programmes that engage multiple entry points simultaneously. This kind of approach inevitably requires a range of disciplinary perspectives that extend outside the health sector alone and draws on experience from poverty reduction programmes, agriculture, education, law, and the media, as highlighted above. Governance and financing structures that cut across established silos are critical for structural approaches to work—and such intersections should help make structural approaches more cost-effective from an HIV perspective [101, 102]. Given the diversity of contexts and epidemics, strategies to tailor interventions and programmes to specific local and national conditions present important areas for future research.

Finally, action on structural factors places HIV squarely within a broader development framework, as articulated by the MDGs. Discussions on the post-2015 development agenda create an additional opportunity to further embed health within a wider development agenda, and strengthen structural responses to HIV alongside multiple health conditions. As health is conceptualised less as an assemblage of vertical, isolated disease states but as a combination of physical, mental, and social well-being requiring integrated, multi-sectoral responses, the political and policy space for structural approaches should become ever riper. The growing evidence summarised here is a hopeful reminder that health, including HIV, is—and should remain—a development issue as much as a medical one.

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AIDSTAR-One
John Snow, Inc.
1616 Fort Myer Drive, 16th Floor
Arlington, VA 22209 USA
Phone: 703-528-7474
Fax: 703-528-7480
E-mail: info@aidstar-one.com
Internet: aidstar-one.com

STRIVE
STRIVE Research Programme Consortium
London School of Hygiene & Tropical Medicine
Room 329
15–17 Tavistock Place
London WC1H 9SH
UK
http://strive.lshtm.ac.uk/

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