

## Addressing social drivers of HIV/AIDS for the long-term response: Conceptual and methodological considerations

Judith D. Auerbach<sup>a\*</sup>, Justin O. Parkhurst<sup>b</sup> and Carlos F. Cáceres<sup>c</sup>

<sup>a</sup>San Francisco AIDS Foundation, Research and Evaluation, San Francisco, CA, USA;

<sup>b</sup>Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, UK; <sup>c</sup>Institute of Health, Sexuality, and Human Development, Cayetano Heredia University, Lima, Peru

(Received 10 December 2010; final version received 16 March 2011)

A key component of the shift from an emergency to a long-term response to AIDS is a change in focus from HIV prevention interventions focused on individuals to a comprehensive strategy in which social/structural approaches are core elements. Such approaches aim to modify social conditions by addressing key drivers of HIV vulnerability that affect the ability of individuals to protect themselves and others from HIV. The development and implementation of evidence-based social/structural interventions have been hampered by both scientific and political obstacles that have not been fully explored or redressed. This paper provides a framework, examples, and some guidance for how to conceptualise, operationalise, measure, and evaluate complex social/structural approaches to HIV prevention to help situate them more concretely in a long-term strategy to end AIDS.

**Keywords:** HIV; social determinants; structural interventions; global response; research methods

### Introduction

Among researchers, programmers, and policy-makers alike, there is emerging consensus that, after nearly three decades of the AIDS pandemic, it is time to shift from an ‘emergency’ approach to a long-term response. A key component of this shift is a change in focus from biomedical and behavioural interventions aimed at individuals to comprehensive, strategic programming – now also called ‘combination prevention’ (Auerbach and Coates 2000, Coates *et al.* 2008, Kurth *et al.* 2011) – in which social/structural approaches become a core element. Social/structural approaches aim to modify social conditions and arrangements by addressing the key drivers of HIV vulnerability that affect the ability of individuals to protect themselves and others from acquiring or transmitting HIV infection. When implemented, they can help foster individual agency to allow people to act in their own and their community’s best interests (including taking up targeted behavioural and biomedical technologies), create and support AIDS-competent communities (Campbell 2009), and build health-enabling environments (aids2031 Social Drivers

---

\*Corresponding author. Email: [jauerbach@sfaf.org](mailto:jauerbach@sfaf.org)

Working Group 2010) – all necessary for mitigating, if not eliminating, HIV epidemics.

While there now is growing acceptance of the need for social/structural approaches, these have not yet been integrated at the country level, for example in national HIV/AIDS plans. This in great part stems from the fact that the arsenal of structural interventions – or, more generally, evidence-based and evidence-informed strategies that can be demonstrated to actually achieve social change – is quite small; and developments in this arena have been hampered by significant methodological and evidentiary obstacles that have yet to be fully explored and redressed (Blankenship *et al.* 2006, Gupta *et al.* 2008). This paper attempts to help move the field forward by providing a framework and some guidance for how to conceptualise, operationalise, measure, and evaluate social/structural approaches to HIV prevention.

### **Constructs and definitions**

HIV is transmitted by specific practices among individuals and groups that occur in a social context. We use the term ‘practices’ to convey the social dimension of the actions that usually are implicated as ‘risk behaviours’. Practices are socially produced behaviours that are organised and patterned by culture (Kippax 2003, 2008). There is disagreement about the extent to which an individual’s desires, practices and experiences are shaped by outside forces (*social determinants*) and how much they are a reflection of individual decisions to act (*social action* or *agency*), but there is a common understanding that much of what humans do, think, and desire is influenced, if not determined, by key elements of social life including *norms, values, networks, structures, and institutions*.

From a social science perspective, social norms are rules about behaviour that reflect and embody prevailing cultural values and are usually backed by social sanctions (formal and informal). Values are ideas held by individuals and groups about what is desirable, proper, good, or bad. Networks are the webs of human relationships (including dyadic, familial, social, sexual, and drug-using) through which social (including sexual) exchange occurs and social norms are played out. Structures and institutions are the patterned (and sometimes material and operational) manifestations of social norms and networks such as family units, organised religion, legislative and policy apparatus, educational systems, military and industrial organisations, and so on, in which social interaction is constructed, reshaped, and, often, controlled (see, for example, Giddens *et al.* 2009). In most settings, these social arrangements reflect and produce inequalities among groups including those related to health and illness.

These basic constructs about human interaction in social groups underlie the concept of social drivers in the HIV/AIDS context. While there is no standard or agreed-upon definition of social drivers, UNAIDS refers to them as ‘the social and structural factors, such as poverty, gender inequality, and human rights violations, *that are not easily measured* that increase people’s vulnerability to HIV infection’ (emphasis added) (UNAIDS 2007). As this definition conveys, not only are social-level phenomena difficult to measure, they also can be difficult to define and therefore difficult to operationalise for intervention, programming, and policy purposes. Our use of ‘social drivers’ is meant to refer to the core social processes

and arrangements – reflective of social and cultural norms, values, networks, structures and institutions – that operate around and in concert with individuals' behaviours and practices to influence HIV epidemics in particular settings. As such, social drivers are essentially coterminous with what commonly are referred to as 'social determinants' in the current global public health discourse (World Health Organization 2008).

### **Hypotheses and causal pathways**

It is important to unpack how aspects of social influence operate and facilitate HIV transmission in order to mount a social-level response. In both sociological and social-epidemiological conceptualisations, social drivers are understood not as discrete variables that can be described in terms of causal, one-to-one relationships. Rather, they are conceived as interactive phenomena reflective of social and cultural processes, institutional practices, and sets of arrangements that facilitate HIV transmission or its prevention. Social drivers are complex, fluid, non-linear, and contextual, and they interact dynamically with biological, psychological, behavioural, and other social factors. So, for the purposes of conceptualisation and operationalisation, they must be characterised situationally and contextually.

For example, 'gender inequality' – although mentioned in the UNAIDS definition as a major social driver in HIV epidemics – does not operate universally in one single way with respect to HIV vulnerability. In a number of sub-Saharan African countries, HIV prevalences are three to four times higher among young women than young men (Krishnan *et al.* 2008) but in other countries around the world, where similar or greater gender inequalities prevail, we do not see the same gender disparities in HIV infection (Obermeyer 2006). Thus, we cannot talk generally about 'gender inequality' as a direct driver of HIV infections, but must identify the specific ways in which gender (and sexuality) dynamics operate in conjunction with other social and cultural dynamics in particular social contexts to produce vulnerability, or not, and target HIV prevention efforts accordingly.

Poverty is also often implicated as a social driver in HIV epidemics (Rwenge 2003, Hallman 2005, Weiser *et al.* 2007). Yet the 'poverty drives HIV' hypothesis has been challenged by authors who have illustrated how, in several sub-Saharan African countries, it is wealthier groups that often see higher HIV prevalence rates (Shelton *et al.* 2005, Chin 2007, Mishra *et al.* 2007), and how across Africa, it is wealthier countries that tend to report higher national HIV prevalence rates (Chin 2007). Some studies have attempted to look beyond such simple correlations, illustrating that the relationship of HIV prevalence to wealth will differ across countries and may shift over time as well (Wojcicki 2005, Parkhurst 2010). These studies illustrate that, rather than a simple correlation, it is the context in which some people are wealthy and some people are poor that can lead to relational patterns resulting in forms of sexual networking that can spread HIV. Again, this has direct implications for HIV prevention efforts. Public health efforts aiming to intervene structurally must be locally informed and target aspects of poverty that are relevant. For example, people living in poverty may be driven to specific practices that increase their HIV risk, such as transactional or 'survival' sex, while those whose economic status is improving as a result of poverty mitigation programs may encounter situations, such as access to broader social and sexual networks, that increase their vulnerability to HIV.

Describing and drawing the causal pathways through which these complex and situationally defined social drivers operate to confer vulnerability to or protection from HIV transmission is challenging. Over the past two centuries and with the advent of social epidemiology, causal models have evolved from fairly simple binary models (cause-effect) to include increasingly complex, multi-level models (Krieger 2001) that can possibly include determinants at the molecular as well as the societal levels. Parallel developments have taken place in biostatistical models, wherein health outcomes do not have *single causes* but *contributing causal factors*. The contribution of these factors to disease is often non-linear, and a certain few of them can modify (i.e., increase or decrease) the effect of others (for example, economic migration might increase the effect of poverty on sexual risk, or provide a conduit through which poverty manifests in risk behaviour). What is critical to keep in mind, however, is that the effect of each contributing causal factor is often not independent of others: the risk parameter (or the amount to which it contributes positively or negatively to disease occurrence) may change depending on other mediating factors and the context in which it is seen.

Multi-level models of causality are further necessary because social drivers also interact with psychological (i.e., cognitive and affective) and behavioural processes operating at the level of the individual, whether this is in the form of exercising self-efficacy, responding to a financial incentive (Medlin and De Walque 2008) or applying self-reflection and meaning to one's actions. Through our actions and the meaning we bring to them, we are constantly creating and recreating social institutions (Giddens 1986). Thus, society is not static – humans are constantly changing it – and we cannot even accurately describe, much less figure out how to intervene in, social life unless and until we grasp the concepts and meanings people apply to their actions and the motivations and constraints governing them (Somers 1994, Popay *et al.* 1998).

Such challenges often have led public health practitioners to abandon, or simply ignore, the social perspective, perhaps out of frustration with what they see as lack of guidance for action from social science. This frustration is understandable, but ignoring complexity and context does not make them go away, and a lack of universal solutions does not mean that there are no ways forward to make better-informed decisions and to design more effective interventions. In the biomedical and clinical science literature, the concept of 'biological plausibility' is used to make inferences in the absence of mechanistic data but where an association 'makes biological sense,' meaning that it is consistent with what is known about biochemical, anatomical, or pathophysiological data or animal models (Dicker 2002, Hoffer 2003, Gehlbach 2006). We suggest a similar notion of 'sociological plausibility' as a way to hypothesise causal links between social drivers and HIV vulnerability where such associations 'make sociological sense' – that is, where they are consistent with what is known about psychological, social, cultural, economic and political data in specific contexts. We recognise that, given the inherently political nature of intervening in social structures and arrangements, the concept of sociological plausibility could be distorted for ideological purposes. Our point is that research on 'social causality' and structural interventions should be guided by theoretical frameworks that are well accepted in the social sciences.

The context specificity and dynamic nature of the social factors that can drive HIV risk and vulnerability requires that we gather adequate information about local

situations in order to make recommendations about interventions that may have a meaningful impact on HIV epidemics. Addressing social drivers, therefore, means taking a different tack from past public health strategies that presume a set of fixed-value causal factors that can be pre-defined and listed in advance for targeting. Instead, the starting point for operationalising a social drivers approach should be the adoption of methodologies that promote knowledge, understanding, and monitoring of local epidemics and local contexts. These can be analysed in relation to key social factors and arrangements known or thought to be relevant – that is, having a ‘sociologically plausible’ link – to HIV transmission. Hypotheses and intervention or programme choices and designs should derive from this form of analysis.

### **Operationalisation**

A number of frameworks have been proposed to characterise the range of structural factors thought to influence HIV epidemics, so as to guide operationalisation and serve as potential targets of programmatic action. Some focus on factors that affect people’s ability to access or use protective devices, such as condoms or clean needles, taking the underlying risk practices (the pattern of sexual behaviour or the use of injection drugs) as given (Blankenship *et al.* 2000, Cohen *et al.* 2000, Sumartojo 2000). Others address broader social forces such as social stability/instability and social equality/inequality that may lead to particular patterns of behaviour in the first place (Auerbach 2008). These frameworks also differ in how they address scope. Some look at the relatively micro-level phenomena shaping individuals’ practices, while others look at much larger macro-level phenomena thought to drive broader patterns of practices across a large population.

Despite the differences in approach, taken together these frameworks suggest that the operationalisation of social drivers and social responses must begin with a clear understanding of the level at which it is hoped an intervention or larger social response will work (i.e., targeting individuals, communities, or the broader social, legal, or economic environment), and to what extent fundamental behavioural patterns are seen as fixed or changeable (i.e., to enable individual practices that people already find desirable, or to fundamentally change patterns or norms of practices; Geronimus 2000). Structural interventions for HIV prevention also have been described as encompassing one or a combination of the following types of actions: (a) policy-legal changes (e.g., decriminalisation of HIV transmission or of homosexuality), (b) environmental enablers (e.g., provision of infrastructure, increasing access to services and condoms), (c) shifting harmful social norms (e.g., confronting stigma and discrimination), (d) catalysis of social and political change (e.g., promoting policy dialogue, advocacy), (e) empowerment of communities and groups (e.g., community formation, promotion of leadership and support) and (f) economic interventions (e.g., microcredit, microenterprise, cash incentives) (Auerbach 2009, Vincent 2009).

A key challenge in operationalising HIV prevention with a structural focus is deciding where and how to frame social drivers and at which level to intervene. As an example, one can consider the case of HIV prevention among migrant mine workers in southern Africa. HIV prevention efforts could range from making condoms more available and accessible, to improving social services and mine safety (as studies have

shown these conditions may foster patronage of sex workers; Campbell and Williams 1999), to much more macro efforts to address a country's dependence on migrant labour industries. All approaches – from the most 'proximal' to the most 'distal' – may be considered structural, but in each case, different bodies of information are needed to formulate a plan and predict outcomes. Obviously, the scope of the three projects would be very different (including whether they are conceived as an HIV prevention intervention or, rather, as a broader development programme), as would be the timeframes for their observed impact on HIV incidence.

Using another example of a sex work-driven HIV epidemic, Figure 1 illustrates a series of steps that might be used to plan interventions of a structural nature. As shown, there are distinct steps where the factors shaping behaviours and practices are considered (step 2) and the level of possible structural intervention is explicitly addressed (step 3). The figure also illustrates the types of information that may be needed at each step. It should be clear that a structural approach requires a good deal of information that is specific to the target community and that comes from multiple

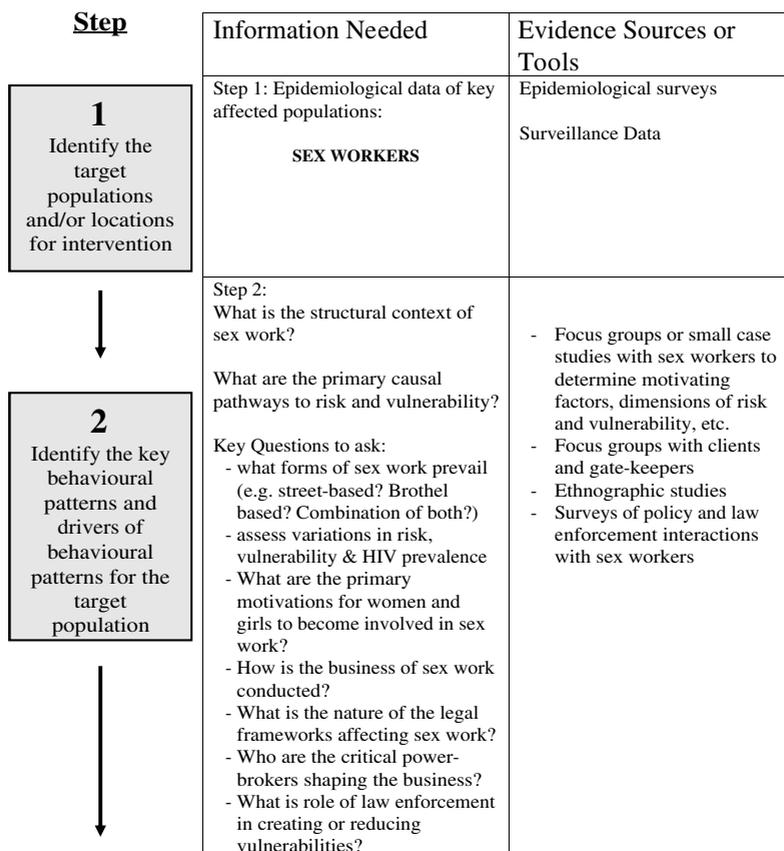


Figure 1. Example of approach to assessing relevant social dynamics/identifying appropriate structural response in an epidemic concentrated around sex work. *Source:* aids2031 Social Drivers Working Group (2010), adapted from the original, developed by Auerbach *et al.* (2009).

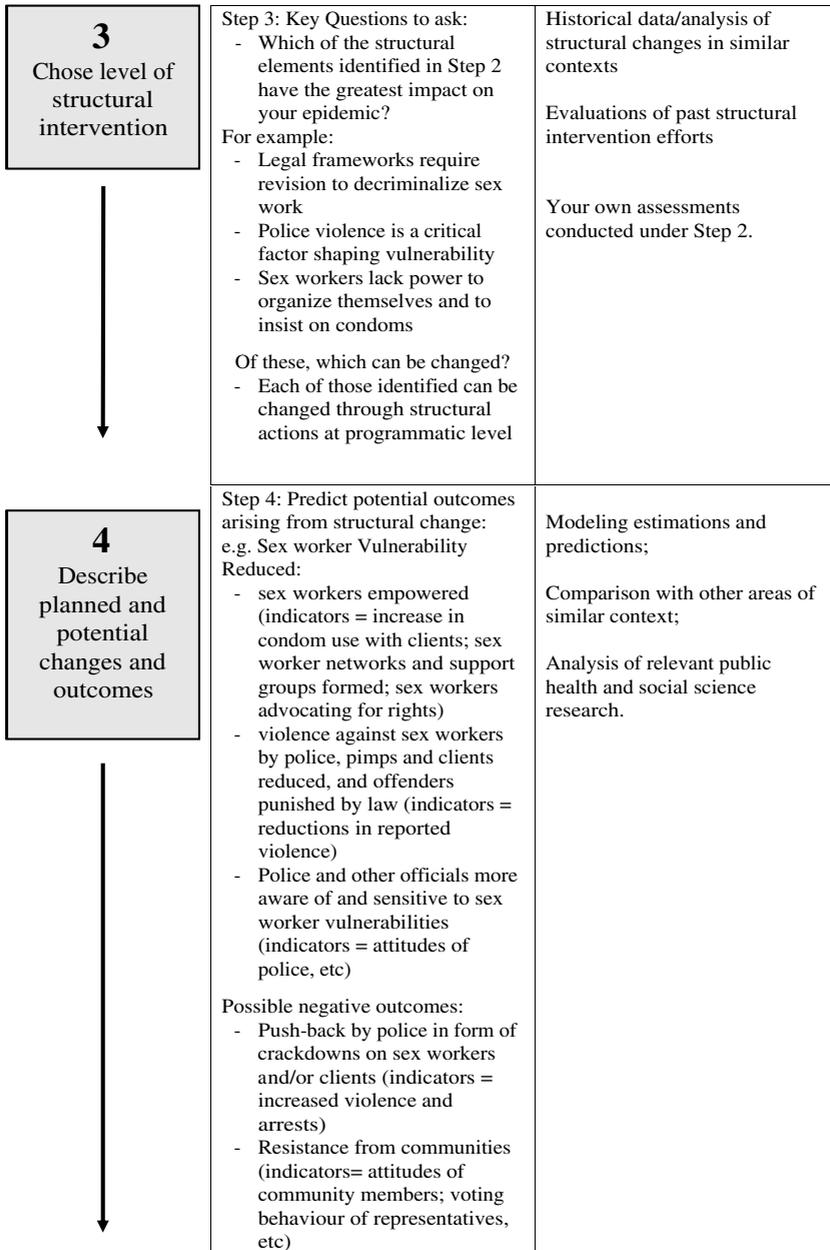


Figure 1. (Continued)

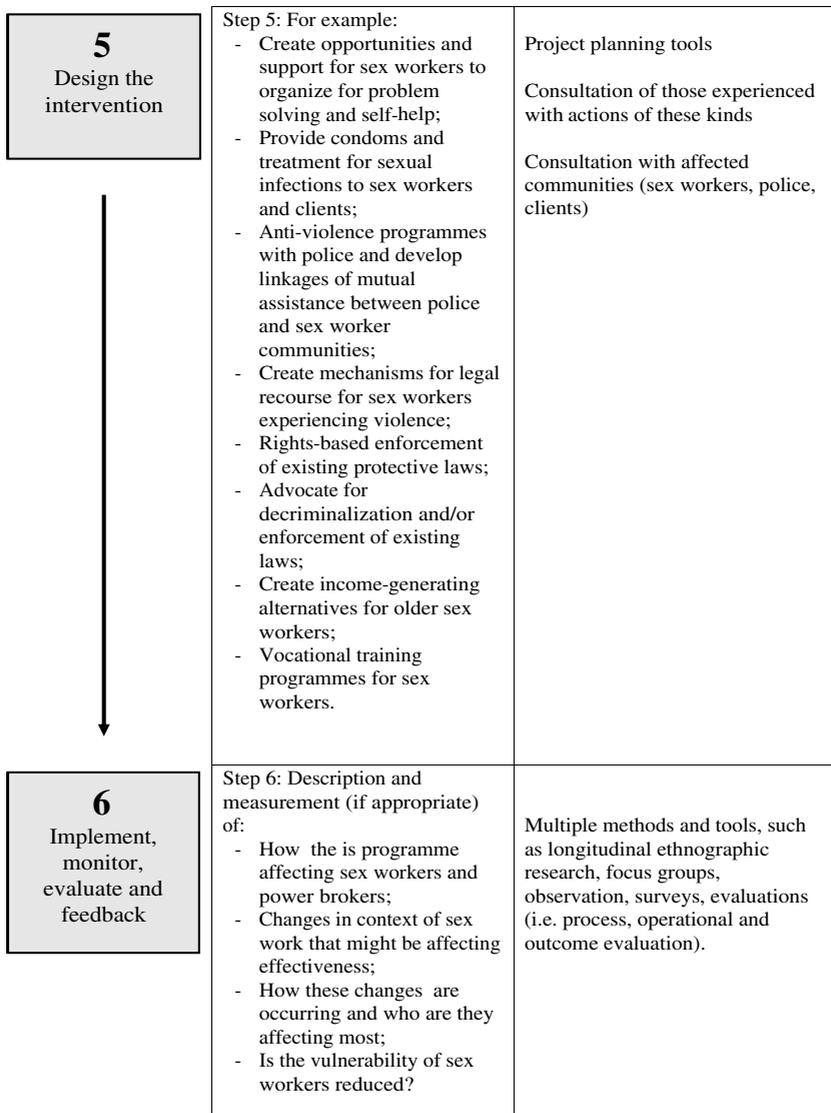


Figure 1. (Continued)

sources. At the same time, the structural approach enables multiple intervention strategies, depending on what level of structural change is targeted (or how social drivers are framed).

The project of social science in HIV prevention is to unpack the social drivers and social arrangements, such as those articulated in Figure 1 and in the migrant worker example above, to better understand how they operate in concert with HIV transmission dynamics at the individual, couple, and social network levels *in particular social contexts*, and then to determine how best they can be modified for HIV prevention purposes. When considering how to design a social/structural

intervention based on this analysis, it is imperative to define clearly the units of observation and the level(s) of change anticipated, and to make explicit any assumptions or hypotheses about the relationships between these units and patterns of risk and vulnerability in specific contexts (see Figure 2).

**Methods, measures, and evaluation**

There is increasing discussion in public health science about how best to evaluate structural interventions and social change with respect to generating evidence of HIV prevention outcomes (Gupta *et al.* 2008). Simply put, structural change is fundamentally social change. Yet social change involves a wide range of shifts and alterations, while HIV prevention has one very specific biological outcome of interest – reduced HIV incidence. In the field of HIV prevention this has led to some tensions in the past, between researchers and practitioners, or between those who feel HIV incidence should be the sole criteria for evaluating programmes and those who believe in addressing broader social issues that influence HIV epidemics but that also are important to address in their own right (e.g., for social justice reasons).

The tension is exacerbated when attempting to integrate social-level interventions into a hegemonic health-science paradigm characterised by the identification of cause-and-effect relations operating at the level of the individual, usually irrespective of context (Raphael and Bryant 2002). Within this dominant paradigm, the efficacy of individually focused behavioural and biomedical interventions is often evaluated along a hierarchy of research methodologies in which the strongest level of evidence

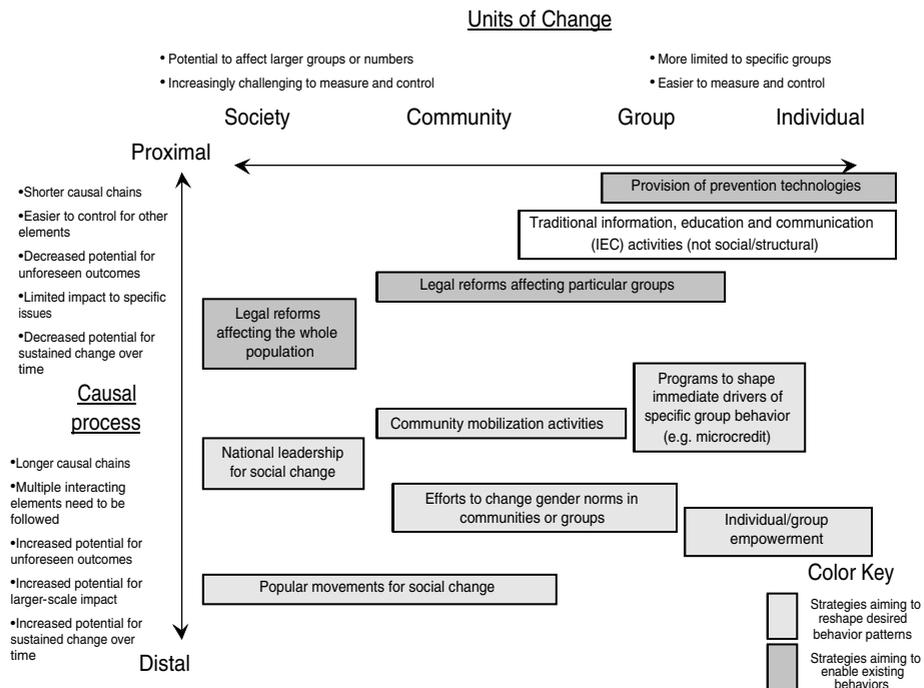


Figure 2. Intervention focus.

is ascribed to randomised controlled trials (RCT) and, ultimately, to systematic reviews of multiple, large-scale RCTs. But, as numerous authors have argued, the RCT, while very appropriate for evaluating the efficacy of drugs and devices, may not be the best method for assessing social- or structural-level interventions (Black 1996, Pawson and Tilley 1997, Victoria *et al.* 2004, Pawson *et al.* 2005, Sanson-Fisher *et al.* 2007). The goal of RCTs is to assess hypothesised cause-effect relationships believed to follow a potentially universal mechanism of action that operates proximally to the individual (or community) in isolation from the ‘noise’ of social context. However, the mechanisms by which social change takes place are likely not universal, nor are they ‘quiet’. Not only can context not be controlled for, it shapes *how* the intervention works in the first place (Pawson and Tilley 1997) and is inseparable from the intervention. Moreover, for practical and ethical reasons, the HIV-related effects of structural interventions usually cannot be assessed in an experimental fashion, particularly for higher-level environmental change such as legal and policy changes.

The valorisation of RCTs in HIV prevention intervention science, often to the exclusion of other methodologies, has resulted in the inhibition of innovative research questions that may not lend themselves to experimental methods (Sanson-Fisher *et al.* 2007, Denzin 2009), contributing to slow progress in theoretical development and its application in alternative research designs. But, understanding social drivers and designing and evaluating social responses require a broad range of methodologies and standards of evidence. Classical experimental designs may be appropriate for some structural interventions at the social network, community, neighbourhood, or venue level (particularly when proximal causality and large effects are hypothesised; Vincent 2009), although the requirement for multiple units of intervention or sites in order to achieve adequate statistical power can be daunting and expensive (Institute of Medicine 1995, Bonell *et al.* 2006). Quasi-experimental designs may be more feasible and appropriate for assessing social change through ‘natural experiments’ – organic, spontaneous action – or the staged introduction of interventions (Institute of Medicine 1995). Observational data derived from such natural experiments and from designs such as cohort, case-control, cross-sectional, and ecologic studies are key for the generation of hypotheses about causal relationships that sometimes can be explored through experimental designs. Quantitative and qualitative social science methods – such as surveys, interviews and focus groups, behavioural and participant observation, life histories or narratives, case studies, policy and content analysis, network mapping, and mathematical modelling – also play a key role in the description of patterns and identification of contexts that lead to causal hypotheses (Institute of Medicine 2005). In addition, programme monitoring, evaluation and operations research are key to obtaining field data about the actual benefit of implementation of programmes (i.e., effectiveness).

Moreover, there are a number of options derived from recent interdisciplinary work and critical social theory for innovative approaches to the evaluation of structural interventions (Vincent 2009). These include *whole systems action research* (Burns 2007), *realistic evaluation* (Pawson *et al.* 2005), *qualitative comparative analysis* (Byrne 2002) and *outcome mapping* (Verma 2005). All of these approaches recognise that social change processes are complex, emergent and context-dependent. Indeed, there have been a number of HIV success stories in the world, where

behavioural change has been achieved, and HIV incidence has fallen across a large population group – from gay male communities in many high-income countries (Coutinho *et al.* 1989, Grulich 2000) to Thailand’s brothel-based risk reduction (Poolcharoen 1998), to Uganda’s general population HIV incidence decline (Kirby 2008). It is worth noting that none of these real-life examples of success occurred through the simple application of a single intervention that can be easily measured in an experimental trial. Rather, they can be considered real-world examples of combination prevention (undertaken before the term was formulated), which, in the case of Uganda has perhaps best been evaluated through a creative *combination evaluation* (or multi-method) approach (Kirby 2008).

In sum, choice of methods for structural intervention design and evaluation should always be informed by the causal hypothesis and the scope and level at which the intervention is attempting to work. There is a continuum of outcomes of interest ranging from changes in the practices of individuals and groups to processes of social change affecting societies as a whole. Traditional HIV prevention through individual (or group) behaviour change communication, with a limited or non-existent social/structural focus is conducive to evaluation quantitatively and through group comparison. Yet once the desire is to address broader structures – either those structures directly enabling group and individual behaviours or more distal structures shaping patterns of social practices – a range of innovative qualitative, observational and participatory methods may be more appropriate for providing relevant explanations, as well as outcome measures.

There are a number of things to consider when evaluating the quality and strength of evidence from structural (or other) interventions for HIV prevention for the purposes of deciding what to implement and scale up. With respect to quality, some criteria include transparency in research design, including theoretical framework and data analysis techniques; representativeness of the data (at least within a specific population or community); appropriate analysis of all relevant data; internal and external validity; and plausibility of findings (Ross *et al.* 2006). In considering the strength of evidence, it is important to assess the intervention’s feasibility, potential for adverse outcomes and unintended consequences, acceptability in the target population (or community), potential effect size, and whether it produces other health or social benefits (Ross *et al.* 2006).

Following is an example that illustrates some of the important conceptual, methodological and evidentiary issues in designing, implementing and evaluating social and structural approaches that we have raised above.

### ***Economic empowerment to reduce HIV vulnerability among women and girls***

As noted earlier, poverty and gender inequality are often construed as structural pathways to HIV/AIDS risk for women and girls globally (UNAIDS 2007, Krishnan *et al.* 2008). By addressing gender inequality and economic empowerment, microenterprise – also referred to as microfinance and microcredit – is one potential intervention model for HIV/AIDS prevention that has been targeted where rates of infection are alarmingly high among women and girls. Small loans are used for income generation and have the potential to reduce poverty directly while also facilitating better health (Pronyk *et al.* 2006). Additionally, microfinance programmes have been shown to foster empowerment for women, improve child health

and welfare, and increase women's agency in intra-household decision-making (Center for Interdisciplinary Research on AIDS 2007). A number of microfinance models exist and include a wide range of activities, such as basic life-skills training, development of commercially viable products and services, access to markets, financial training and financial support (Stratford *et al.* 2008).

In recent years, a few microfinance interventions for HIV prevention among women and girls have been implemented and evaluated with mixed results (Dworkin and Blankenship 2009). Most notable among these was the Intervention for Microfinance and Gender Equity (IMAGE) Programme in South Africa, which was a comprehensive community-level intervention that combined a gender equity, anti-violence, and HIV/AIDS education curriculum with a microcredit programme in an experimental design. At one-year follow-up, the communities receiving the intervention saw a 55% reduction in intimate partner violence compared with the control communities (Pronyk *et al.* 2006). Subsequent data showed increased HIV knowledge, communication, testing and risk reduction among young women who participated in the intervention than among those who did not. However, one ultimate aim of IMAGE was to reduce HIV incidence in the wider community in which the intervention occurred (not just among credit recipients), but no difference in HIV incidence between communities was observed at the time of analysis (Pronyk *et al.* 2008). It is possible that the intervention truly did not work as intended, but it is also possible that the difficulty in measuring changes in HIV incidence in a short period affected the observed outcome. Nevertheless, IMAGE is generally seen as a successful intervention due to its efficacy in reducing gender based violence and its possible impact on HIV in the future.

IMAGE may be compared with SHAZ! (Shaping the Health of Adolescents in Zimbabwe) – a microcredit and life-skills training and mentorship programme, based on 'gender and power' and 'women's empowerment' theories, which attempts to address gender inequality, poverty and HIV-risk among young orphaned girls. A pilot study, using a mixed-method approach to test feasibility of an intervention combining business and life-skills training with microcredit loans, was first conducted with a small sub-sample of 50 girls. Quantitative and qualitative analyses revealed some of the challenges of conducting a microcredit intervention in this population and social context. While knowledge of HIV and relationship dynamics were improved by participation in the programme, the business end of the programme was not successful. Not only were most girls unable to repay their loans, a number of them were actually made more vulnerable to sexual abuse or coercion – and possibly HIV infection – because they had to travel and/or carry money some distances to transact business in unfamiliar places, where they did not have safe accommodations or places to store their money (Dunbar *et al.* 2010).

Both the IMAGE trial and the SHAZ! pilot study illuminate the difficulties of achieving intended intervention outcomes – and preventing unintended ones – in social contexts that are highly volatile, such as was the case in South Africa and Zimbabwe during the times the interventions took place. They also demonstrate that even where rigorous experimental methods are used to evaluate social/structural interventions, it may be many years before reductions in HIV incidence will be observed, as significant social and cultural norms, including those related to gender equity, must first be changed and these themselves take time. These

economic empowerment projects point to some next steps that must be considered by the field if it wishes to engage with structural approaches to HIV prevention.

## Conclusion

After nearly 30 years of the HIV/AIDS pandemic, there have been woefully few examples of truly successful HIV prevention initiatives conceived and implemented by national policy makers and programme planners. To ensure measurable HIV prevention success by 2031 – the 50th anniversary of the epidemic – it will be necessary to move beyond the limited, individualistic, urgency-based approaches of the past. Shifting from an emergency framework and mounting a long-term response to AIDS requires new approaches that engage with underlying social-structural drivers of patterns of practices that influence vulnerability and facilitate the spread of HIV, as part of comprehensive, strategic programming (or ‘combination prevention’).

Patterns of behaviour and practices arise from combinations of drivers, operating in specific social, economic, and political contexts. As such, no single causal pathway can be drawn from a social driver to a set of practices or behaviours; rather, a range of potential outcomes may arise. Making causal inference about correlations between social drivers and HIV burden involves identifying ‘sociologically plausible’ pathways drawn from extant social science and epidemiological data. Engaging with social drivers requires methods and approaches beyond traditional conceptualisations that seek to identify and intervene on single, causal determinants or universal mechanisms of influence.

HIV prevention researchers and advocates should reject and resist over-simplified language for social drivers. Statements that particular social-structural factors ‘do’ or ‘do not’ lead to HIV transmission are almost always too simplistic; language should shift to discussing *how, in what circumstances, and for whom* particular combinations of factors contribute to HIV vulnerability (or, conversely, resilience). In order to be rigorous, design of HIV prevention programmes and interventions aiming to address social-structural factors should:

- Begin with an assessment of the social and structural factors that may be increasing HIV vulnerability in targeted populations and settings.
- Identify (hypothesise) sociologically plausible causal chains between distal structural factors and specific individual or group practices.
- Identify levels of possible influence, in line with the HIV prevention programme’s or intervention’s scope and aim.
- Articulate any assumptions about such influences and aims including potential expected and unexpected consequences of the programme or intervention (including other social impacts).
- Build in evaluation mechanisms that are both feasible and appropriate to the aim, level, scope and method of the programme or intervention as a way to enable validation of assumptions, investigation of the mechanisms by which structures affect risk and vulnerability, and appropriate assessment of outcomes and impact.

This is an important moment – and opportunity – in the history of the HIV/AIDS pandemic, as there is (finally) a much clearer and broader recognition of the need to incorporate social/structural approaches based on social science methods more fully into the global response. HIV incidence outcomes from these approaches may not be seen immediately, but affecting the cultural, legal, political and economic conditions that drive or contribute to HIV vulnerability will prove in the long-term to have a significant impact on health and well-being worldwide.

### **Afterword**

Since writing this paper originally in 2008–2009, there have been a number of developments in the HIV prevention field worth noting. First, prevention itself has returned to the limelight internationally, as demonstrated by the creation of the UNAIDS High Level Commission on HIV Prevention launched in July 2010. The intense efforts put into scaling up HIV treatment globally in the past decade have been remarkable and successful in improving the health and prolonging the lives of millions of people. Yet the global financial crisis of recent years has led to realisations that continuing to provide antiretroviral treatment and associated health care to an increasing number of people will be difficult, if not impossible, with increasingly constrained resources. The need to prevent infection in the first place has resurfaced as a concern equal to ensuring treatment access.

There has simultaneously been an increasing awareness of the complexity of what is involved to prevent HIV, including broader attention to social/structural and environmental factors and a shared call for ‘combination prevention’. As defined by UNAIDS, combination prevention is ‘...the strategic, simultaneous use of different classes of prevention activities (biomedical, behavioural, social/structural) that operate on multiple levels (individual, relationship, community, societal), to respond to the specific needs of particular audiences and modes of HIV transmission, and to make efficient use of resources through prioritizing, partnership and engagement of affected communities’. (UNAIDS 2010). This approach implies a systematic review of evidence about the epidemic and the response in order to select, over time, the most appropriate combination of evidence-informed biomedical, behavioural and social/structural interventions. Combination approaches would look different in concentrated and generalised epidemics, in places where significant work has been conducted, and in communities where HIV work is still starting. Along these lines, the US National Institutes of Health currently is funding a set of projects looking at the feasibility of combining different biomedical and behavioural approaches into ‘packages’ of HIV prevention appropriate to specific population groups or settings globally. Unfortunately, the NIH programme does not include social/structural approaches directly in the packages. However, if shown to be feasible, the implementation of such combination prevention packages can itself be considered a social structural intervention whose design would be driven by knowledge of the relevant population and context and whose effectiveness should be evaluated using a range of quantitative and qualitative methods.

## Acknowledgements

We thank GeetaRao Gupta and William Fisher for their guidance in developing this paper in its earliest iteration and the members of the aids2031 Social Drivers Working Group for their additional input; Alan Whiteside and anonymous reviewers for their thoughtful suggestions about the paper; Jessica Ogden for contributing the sex worker example to our Figure 1; and Reilly O'Neal for her excellent assistance with copyediting the document.

## References

- aids2031 Social Drivers Working Group, 2010. *Revolutionizing the AIDS response: building AIDS resilient communities* [online]. Synthesis paper. Available from: <http://www.aids2031.org/working-groups/social-drivers?view=resources#137> [Accessed 4 November 2010].
- Auerbach, J., 2008. Key issues in HIV prevention research. In: *Kaiser Family Foundation International Health Journalism Fellowship Programme. Briefing session in advance of the XVII International AIDS Conference*, 1 August 2008, Mexico City, Mexico. Unpublished.
- Auerbach, J., 2009. Transforming social structures and environments to help in HIV prevention. *Health Affairs*, 28 (6), 1655–1665.
- Auerbach, J. and Coates, T., 2000. HIV prevention research: accomplishments and challenges for the third decade of AIDS. *American Journal of Public Health*, 90, 1029–1032.
- Auerbach, J., Parkhurst, J., Cáceres, C., and Keller, K., 2009. Addressing social drivers of HIV/AIDS: some conceptual, methodological, and evidentiary considerations. *Aids2031 Working Paper #24*. Available from: [www.aids2031.org](http://www.aids2031.org)
- Black, N., 1996. Why we need observational studies to evaluate the effectiveness of health care. *British Medical Journal*, 312 (7040), 1215–1218.
- Blankenship, K., Bray, S., and Merson, M., 2000. Structural interventions in public health. *AIDS*, 14 (Suppl 1), S11–S21.
- Blankenship, K., Friedman, S., Dworkin, S., and Mandel, J., 2006. Structural interventions: concepts, challenges and opportunities for research. *Journal of Urban Health*, 83 (6), 59–72.
- Bonell, C., Hargraves, J., Strange, V., Pronyk, P., and Porter, J., 2006. Should structural interventions be evaluated using RCTs? The case of HIV prevention. *Social Science and Medicine*, 63 (5), 1135–1142.
- Burns, D., 2007. *Systemic action research: a strategy for whole system change*. Bristol: The Policy Press.
- Byrne, D., 2002. *Interpreting quantitative data*. London: Sage.
- Campbell, C., 2009. Strengthening community responses to AIDS: possibilities and challenges. Paper presented at: *Mobilizing social capital in a world with AIDS*. Sponsored by aids2031 Social Drivers Working Group, 30 March–1 April 2009, Salzburg, Austria.
- Campbell, C. and Williams, B., 1999. Beyond the biomedical and behavioural: towards an integrated approach to HIV prevention in the southern African mining community. *Social Science and Medicine*, 48 (11), 1625–1639.
- Center for Interdisciplinary Research on AIDS, 2007. Can microfinance programmes reduce HIV risk in developing countries? *Policy Update*. Available from: [http://cira.med.yale.edu/law\\_policy\\_ethics/mcrofin\\_global.pdf](http://cira.med.yale.edu/law_policy_ethics/mcrofin_global.pdf) [Accessed 22 December 2008].
- Chin, J., 2007. *The AIDS pandemic: the collision of epidemiology with political correctness*. Oxford: Radcliffe.
- Coates, T., Richter, L., and Cáceres, C., 2008. Behavioural strategies to reduce HIV transmission: how to make them work better. *Lancet*, 372 (9639), 669–684.
- Cohen, D., Scribner, R., and Farley, T., 2000. A structural model of health behaviour: a pragmatic approach to explain and influence health behaviours at the population level. *Preventative Medicine*, 30 (2), 146–154.
- Coutinho, R., van Griensven, G., and Moss, A., 1989. Effects of preventive efforts among homosexual men. *AIDS*, 3 (suppl), S53–S56.
- Denzin, N., 2009. The elephant in the living room: or extending the conversation about the politics of evidence. *Qualitative Research*, 9 (2), 139–160.
- Dicker, R., 2002. Analyzing and interpreting data. In: M. Gregg, ed. *Field epidemiology*. 2nd ed. Oxford: Oxford University Press, 132–172.

- Dunbar, M., Maternowska, C., Kang, M., Laver, S., Mudekunye, I., and Padian, N., 2010. Findings from SHAZ! : a feasibility study of a microcredit and life-skills HIV prevention intervention to reduce risk among adolescent female orphans in Zimbabwe. *Journal of Prevention and Intervention in the Community*, 38 (2), 147–161.
- Dworkin, S. and Blankenship, K., 2009. Microfinance and HIV/AIDS prevention: assessing its promise and limitations. *AIDS and Behaviour*, 13 (3), 463–469.
- Gehlbach, S., 2006. *Interpreting the medical literature*. 5th ed. New York, NY: McGraw-Hill.
- Geronimus, A., 2000. To mitigate, resist, or undo: addressing structural influences on the health of urban populations. *American Journal of Public Health*, 90 (6), 867–872.
- Giddens, A., 1986. *The constitution of society: outline of the theory of structuration*. Cambridge: Polity Press.
- Giddens, A., Duneier, M., Appelbaum, R., and Carr, D., 2009. *Introduction to sociology*. 7th ed. New York, NY: W.W. Norton.
- Grulich, A., 2000. HIV risk behaviour in gay men: on the rise? *British Medical Journal*, 320, 1487–1488.
- Gupta, G., Parkhurst, J., Ogden, J., Aggleton, P., and Mahal, A., 2008. Structural approaches to HIV prevention. *Lancet*, 372 (9640), 764–775.
- Hallman, K., 2005. Gendered socioeconomic conditions and HIV risk behaviours among young people in South Africa. *African Journal of AIDS Research*, 4, 37–50.
- Hoffer, L., 2003. Complementary or alternative medicine: the need for plausibility. *Canadian Medical Association Journal*, 168 (2), 180–182.
- Institute of Medicine Committee on the Social and Behavioural Science Base for HIV/AIDS Prevention and Intervention, 1995. *Assessing the social and behavioural science base for HIV/AIDS prevention and intervention: workshop summary*. Washington, DC: National Academy Press.
- Kippax, S., 2003. Sexual health interventions are unsuitable for experimental evaluation. In: J. Stephenson, J. Imrie, and C. Bonell, eds. *Effective sexual health interventions: issues in experimental evaluation*. Oxford: Oxford University Press, 17–34.
- Kippax, S., 2008. Understanding and integrating the structural and biomedical determinants of HIV infection: a way forward for prevention. *Current Opinion in HIV and AIDS*, 3, 489–494.
- Kirby, D., 2008. Changes in sexual behaviour leading to the decline in the prevalence of HIV in Uganda: confirmation from multiple sources of evidence. *Sexually Transmitted Infections*, 84 (Suppl 2), ii35–ii41.
- Krieger, N., 2001. Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology*, 30 (4), 668–677.
- Krishnan, S., Dunbar, M., Minnis, A., Medlin, C., Gerdtts, C., and Padian, N., 2008. Poverty, gender inequities and women's risk of HIV/AIDS. *Annals of the New York Academy of Science*, 1136, 101–110.
- Kurth, A., Celum, C., Baeten, J., Vermund, S., and Wasserheit, J., 2011. Combination HIV prevention: significance, challenges, and opportunities. *Current HIV/AIDS Reports*, 8 (1), 62–72.
- Medlin, C. and De Walque, D., 2008. *Potential applications of conditional cash transfers for prevention of sexually transmitted infections and HIV in Sub-Saharan Africa*. Policy Research Working Paper Series, no. 4673. Washington, DC: The World Bank.
- Mishra, V., Bignami-Van Assche, S., Greener, R., Vaessen, M., Hong, R., Ghys, P., Boerma, J., Van Assche, A., Khan, S., and Rutstein, S., 2007. HIV infection does not disproportionately affect the poorer in sub-Saharan Africa. *AIDS*, 21 (Suppl 7), S17–S28.
- Obermeyer, C., 2006. HIV in the Middle East. *British Medical Journal*, 333, 851–854.
- Parkhurst, J., 2010. Understanding the correlation between wealth, poverty and human immunodeficiency virus infection in African countries. *Bulletin of the World Health Organization*, 88, 519–526.
- Pawson, R., Greenhalgh, T., Harvey, G., and Walshe, K., 2005. Realist review – a new method of systematic review designed for complex policy interventions. *Journal of Health Services Research & Policy*, 10 (Suppl 1), 21–34.
- Pawson, R. and Tilley, N., 1997. *Realistic evaluation*. London: Sage.
- Poolcharoen, W., 1998. HIV/AIDS prevention in Thailand: success and challenges. *Science*, 280, 1873–1874.

- Popay, J., Williams, G., Thomas, C., and Gatrell, A., 1998. Theorising inequalities in health: the place of lay knowledge. In: M. Bartley, D. Blane, and G. Davey Smith, eds. *The sociology of health inequalities*. Oxford: Blackwell, 59–84.
- Pronyk, P., Hargreaves, J., Kim, J., Morison, L., Phetla, G., Watts, C., Busza, J., and Porter, J., 2006. Effect of a structural intervention for the prevention of intimate partner violence and HIV in rural South Africa: a cluster randomised trial. *Lancet*, 368 (9551), 1973–1983.
- Pronyk, P., Kim, J., Abramsky, T., Phetla, G., Hargreaves, J., and Morison, L., 2008. A combined microfinance and training intervention can reduce HIV risk behaviour in young female participants. *AIDS*, 22 (13), 1659–1665.
- Raphael, D. and Bryant, T., 2002. The limitations of population health as a model for a new public health. *Health Promotion International*, 17 (2), 189–199.
- Ross, D., Wight, D., Dowsett, G., Buve, A., and Obasi, A., 2006. The weight of evidence: a method for assessing the strength of evidence on the effectiveness of HIV prevention interventions among young people. In: D. Ross, B. Dick, and J. Ferguson, eds. *Preventing HIV/AIDS in young people: A systematic review of the evidence from developing countries*. UNAIDS Interagency Task Team on HIV and Young People. WHO Technical Report Series, 938, 79–102.
- Rwenge, M., 2003. Poverty and sexual risk behaviour among young people in Bamenda, Cameroon. *African Population Studies*, 18, 91–104.
- Sanson-Fisher, R., Bonevski, B., Green, L., and D’Este, C., 2007. Limitations of the randomised controlled trial in evaluating population-based health interventions. *American Journal of Preventative Medicine*, 33 (2), 155–161.
- Shelton, J., Cassell, M., and Adetunji, J., 2005. Is poverty or wealth at the root of HIV? *Lancet*, 366 (9491), 1057–1058.
- Somers, M., 1994. The narrative constitution of identity: a relational and network approach. *Theory and Society*, 23 (5), 605–649.
- Stratford, D., Mizuno, Y., Williams, K., Courtenay-Quirk, C., and O’Leary, A., 2008. Addressing poverty as risk for disease: recommendations from CDC’s consultation on microenterprise as HIV prevention. *Public Health Reports*, 123 (1), 9–20.
- Sumartojo, E., 2000. Structural factors in HIV prevention: concepts, examples, and implications for research. *AIDS*, 14 (Suppl 1), S3–S10.
- UNAIDS, 2007. *Practical guidelines for intensifying HIV prevention: towards universal access*. Geneva: Author.
- UNAIDS, 2010. *UNAIDS promotes combination HIV prevention towards universal access goals*. Available from: [http://www.unaids.org/en/KnowledgeCentre/Resources/PressCentre/PressReleases/2009/20090318\\_ComprehensivePrevention.asp](http://www.unaids.org/en/KnowledgeCentre/Resources/PressCentre/PressReleases/2009/20090318_ComprehensivePrevention.asp) [Accessed 9 November 2010].
- Verma, R., 2005. Outcome mapping: striking a balance between accountability and learning. International Development Research Center. Available from: [http://www.idrc.ca/evaluation/ev-85058-201-1-DO\\_TOPIC.html](http://www.idrc.ca/evaluation/ev-85058-201-1-DO_TOPIC.html) [Accessed 19 October 2009].
- Victoria, C., Habicht, J., and Bryce, J., 2004. Evidence-based public health: moving beyond randomised trials. *American Journal of Public Health*, 94 (3), 400–405.
- Vincent, R., 2009. Measuring social and structural change for HIV prevention. Paper presented at: *UNAIDS think tank on evaluation of HIV prevention*, 1–4 September 2009, Wilton Park, Sussex, UK. Available from the author.
- Weiser, S., Leiter, K., Bangsberg, D., Butler, L., Percy-de Korte, F., Hlanze, Z., Phaladze, N., Iacopino, V., and Heisler, M., 2007. Food insufficiency is associated with high-risk sexual behaviour among women in Botswana and Swaziland. *Public Library of Science Medicine*, 4 (10), 1589–1597.
- Wojcicki, J., 2005. Socioeconomic status as a risk factor for HIV infection in women in East, Central and Southern Africa: a systematic review. *Journal of Biosocial Science*, 37 (1), 1–36.
- World Health Organization, Commission on Social Determinants of Health, 2008. *Closing the gap in a generation: health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health*. Geneva: World Health Organization. Available from: [http://www.who.int/social\\_determinants/thecommission/finalreport/en/index.html](http://www.who.int/social_determinants/thecommission/finalreport/en/index.html).