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Report to the Joint United Nations Programme on HIV/AIDS (UNAIDS)

A Framework for Classifying HIV Prevention Interventions

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Introduction

In recent years, The Joint United Nations Programme on HIV/AIDS (UNAIDS) has taken the lead in establishing guidelines and advice for policy-makers and programme implementers on tailoring HIV prevention responses to local epidemic realities and social contexts. These recommendations are codified in the UNAIDS document *Practical guidelines for intensifying HIV prevention* (UNAIDS, 2007a). In early 2007, UNAIDS convened a meeting of an external reference group of experts on behavioural HIV prevention to provide guidance on establishing quality standards for HIV prevention interventions¹ as a follow-up to the release of the 2007 guidelines. This paper responds to the recommendations of the UNAIDS HIV Prevention Reference Group, which noted that the field needed a clear framework for how to classify and define interventions to facilitate establishing evidence-informed quality standards and costing of interventions. The goal of this paper is to posit a framework for defining HIV interventions based on an examination of the state-of-the-art in HIV prevention science.

Need for a common framework

We need a common framework and language for describing HIV interventions to establish quality standards and avoid confusion

Paulo Freire stressed that to maximize human development it is necessary to put theoretical knowledge into practice, but also to base theory on practice (Freire, 1970; Freire & Macedo, 1996). For Freire, the relationship between theory and implementing an intervention—what he terms “praxis”—should not be a static process. Rather, the most effective interventions require a continuing cycle of conceptualizing based on what is learnt from experience. Clearly, conceptualizing what an intervention does and why it is effective allows for opportunities to reframe models, while also allowing for shared understandings of specific intervention strategies. Without a shared understanding of what specific interventions are, we are unable, as a field, to critique our work and to replicate effective programmes. Conversely, to enhance effectiveness, operational models of interventions also need to be regularly updated and reconceptualized, based on real experiences.

Unfortunately, in the field of behavioural HIV prevention, interventions are frequently implemented without clearly conceptualized operational models and the field lacks an accepted framework for how to classify intervention strategies. In addressing the global AIDS epidemic, it is imperative that the highest standards be used in providing services and interventions. Quality standards should be established for widely implemented interventions and should be based on scientific evidence. Novel intervention approaches should also be subject to scientific scrutiny to ensure their efficacy. Additionally, the evidence base for quality standards should incorporate evidence across studies and settings. It is therefore important that clear definitions of interventions be established to ensure that assessments are based on valid comparisons, i.e. on evaluations of the same basic intervention.

Most interventions are complex sets of interrelated activities; rarely is an intervention a highly discrete and standardized activity. However, we frequently see that in describing interventions, an approach is often given a

¹ The term “intervention” is used in this paper given its common usage in the field. Note, however, that the *UNAIDS’ terminology guidelines* suggest that the term not be used as it conveys “doing something to someone or something” and as such undermines the concept of participatory responses (UNAIDS, 2007b). The preferred terms include programming, programme, activities, initiatives etc. We expect that the use of these alternative terms will be addressed substantively as systematization of descriptions and definitions proceeds in subsequent taxonomy and quality standards work supported by UNAIDS.

simple shorthand title that is based on a single dominant aspect of the overall set of activities. It might also be argued that the best interventions are highly tailored to a target population, and therefore not amenable to standardization. While it is true that tailoring interventions to target populations is important, setting quality standards does not necessarily preclude tailoring an intervention. Quality standards can—and arguably should—include processes that allow for population tailoring, while also setting forth specific components that have been shown empirically to be effective. Therefore, it is recognized that there is an inherent tension between: i) the need for clear intervention definitions to facilitate common understanding and establishing quality standards; and ii) the need to avoid proposing rigid definitions to the detriment of tailoring interventions to populations and settings. This paper’s primary purpose is to set forth a framework for classifying and defining intervention approaches.

How have interventions been defined in the extant literature?

As a first step, we will examine how the field of HIV behavioural prevention science has described and categorized interventions historically and use this exercise to identify some of the problems with the current state-of-the-art in this regard. For this, we draw upon data collected from the Synthesizing Intervention Effectiveness project, which is being conducted jointly between the Johns Hopkins University School of Public Health and the World Health Organization’s Department of HIV/AIDS. In this project, we have been conducting systematic reviews and meta-analyses on a host of HIV behavioural prevention interventions conducted in developing country settings. The project is focused on studies of interventions from peer-reviewed publications and consequently excludes interventions that were not part of a scientific evaluation. While this introduces obvious limitations, the results clearly illustrate some of the challenges that the current ad hoc system of articulating and defining interventions presents.

Methods

We used standard methods for conducting systematic reviews and meta-analyses. “Systematic” refers to the use of predetermined written procedural guidelines designed to make our research methods transparent, appropriate to the task and replicable. We first developed a written definition and associated inclusion criteria for each intervention topic and established minimum design characteristics for studies to be included. The interventions topics we assessed encompassed:

- voluntary counselling and testing
- condom social marketing
- partner notification
- family planning for HIV-positive women
- mass media
- abstinence and abstinence-only
- needle and syringe exchange
- psychosocial support
- medical treatment’s impact on HIV risk behaviour.

We then systematically searched for studies that met our inclusion criteria, consistently extracted data from eligible study reports and compared and carried out meta-analyses of the results across studies.

Inclusion criteria

For purposes of this analysis, study citations were included based on four criteria. The study: i) was conducted in a developing country or emerging economy as defined by the World Bank; ii) evaluated a specific intervention, as was predefined for each topic; iii) results presented were from pre- and post-intervention assessments or comparing people who received the intervention with those who did not; and iv) was published between January 1990 and December 2006. Comparisons of more rather than less intensive versions of the intervention and studies that measured outcomes across levels of intervention exposure were also included if they met all other criteria. Unpublished material and conference abstracts were excluded from the review.

Search and acquisition

Trained staff conducted a broad search for citations meeting the inclusion criteria using computer databases and manual searching of key journals. We also searched the references of those papers selected for inclusion, a process that was iterated until no new papers were identified. Finally, we carefully reviewed the references from any previous review papers and meta-analyses found for possible citations. Two senior staff then separately screened the citations for eligibility. From this process a list of citations for acquisition was derived, the citations were obtained and two coders independently conducted an additional screening of the full citation. A third screener resolved discordant results of the complete citation screening.

Coding

Two coders extracted data from each eligible citation independently using a highly detailed coding form. Data were extracted on 15 content areas: i) citation information, ii) study inclusion criteria, iii) study methods, iv) study population characteristics, v) setting, vi) sampling, vii) study design, viii) unit of analysis, ix) loss to follow-up rates, x) study arms or comparison groups characteristics, xi) intervention characteristics, xii) intervention topic-specific questions, xiii) outcome measures, xiv) eligible outcome results, and xv) additional information (costs, limitations, potential harms, community acceptance and other relevant information). Once each of the two coders independently coded citations, data were transferred to a statistical database (using SPSS Data Entry software, SPSS™, Chicago, IL, USA). Senior staff resolved coding discrepancies across coders.

Analysis

We examined the citation distribution by intervention topic and then examined which of the citations cross-cut intervention topics, indicating how many programmes included multiple intervention topics. We then conducted a content analysis of the intervention descriptions from the published citations to identify common approaches to defining interventions used in the field. We also used this analysis to illustrate frequent pitfalls associated with how interventions are currently being portrayed.

Results

We identified 88 scientific citations meeting our minimum inclusion criteria, as described above. The distribution by intervention topic is summarized in Table 1. These citations represent studies of interventions that were examined for their effectiveness in reducing HIV-related risk behaviour in developing country settings.

Table 1
Distribution of citations by intervention topic

Topic	No. of citations meeting minimum inclusion criteria
Voluntary counselling and testing	23
Condom social marketing	8
Partner notification	0
Family planning for HIV-positive women	2
Mass media	25
Abstinence and abstinence only	14
Needle and syringe exchange	12
Psychosocial support	1
Medical treatment's impact on HIV risk behaviour	3

Many of the citations also met our criteria for more than one intervention topic, based on the inclusion of multifaceted interventions. This is true even though they were most commonly presented as a test of a single intervention. For example, all of the condom social marketing interventions also qualified as mass media interventions. One of the two interventions providing family planning for HIV-positive women also provided voluntary counselling and testing. Having multiple interventions provided to clients as a package was also reified in the content analysis we conducted of the intervention descriptions the authors provided, described below.

Content analysis results

We identified several important findings from the content analysis that we conducted on the above-mentioned intervention descriptions included in the synthesis analysis: i) most interventions were combinations of multiple activities; ii) despite having multiple intervention components, investigators tended to identify the intervention by a single, often prominent component; iii) frequently, detailed descriptions of interventions were missing completely and only a word or brief phrase was used to describe the activities conducted; and iv) several distinct and competing frameworks for defining interventions were used, including by activity, mode of delivery, target population, setting, commodity provided, outcome sought and theoretical orientation. Highlighted below are several examples of study descriptions from citations that we reviewed to illustrate these findings.

Example of multicomponent intervention

The intervention consisted of enhanced care and support services offered to newly diagnosed HIV-infected adults. These services included ongoing counseling on prevention and problem-solving for the HIV-infected person, education to other family members, provision of condoms, and, when necessary, referral for treatment.

(MacNeil, Mberesero & Kilonzo, 1999)

Example of portraying the intervention by a single, prominent component

Citation title: “Evaluation of a pilot study on needle and syringe exchange program among injecting drug users in a community in Guangdong, China”.

The project consisted of a needle and syringe exchange program and health education carried out in both drug rehabilitation centers and the community. The intervention activities in the rehabilitation centers included distribution of brochures, posters, exhibitions, video shows, and lectures on drug and HIV/AIDS knowledge. The intervention activities in the community included distribution of brochures, posters, face-to-face education by professionals, peer education, and needle and syringe exchange activities. Activities were carried out by professionals and peer educators.

(Lin et al., 2004)

Example of lack of detailed description or using only a brief phrase

“Participants were interviewed and had a blood draw, followed by pre-test counseling. VCT [voluntary counselling and testing] was provided in the home or another venue of the respondents choosing.”

(Matovu et al., 2005)

Multiple approaches used in defining and describing interventions

Our review of the scientific literature showed that there is little consistency in how interventions are described and defined. The logic for what constitutes an intervention varies significantly across citations. However, several common approaches have been taken. Table 2 describes some of the most common ways that interventions are defined.

Table 2

Common ways of defining interventions

Characteristic emphasized	Examples
Activity —the specific activities undertaken by project staff	Counselling, testing, education, training, policy enactment
Mode of delivery —reflects the channel of content delivery	Mass media, peer education, faith-based intervention, community-based intervention
Target population —definition is based solely on a target population, most typically a behavioural risk group	Men who have sex with men intervention, injecting drug user intervention, sex worker intervention
Setting —focus on the location where the intervention is delivered	Workplace intervention, school-based intervention
Commodity —describes a product that is provided	Condom social marketing, needle exchange, microcredit, condom distribution
Outcome or goal —describes the intervention by its intended goal	Abstinence intervention, empowerment intervention
Theory —reflects the theoretical basis of the intervention	Structural intervention, policy intervention

Critique of current approaches to defining interventions

There are various challenges with the current ad hoc strategies used for defining interventions in the field. Foremost is the lack of clarity and descriptive detail. For example, by describing an intervention based only on the setting, target group or desired outcome, others cannot know which specific activities were and were not conducted. As described above, in written reports information on the intervention is often sketchy and lacking descriptions of key aspects of the activities undertaken. The labels currently used also make it extremely difficult or impossible to compare interventions, since written reports frequently do not provide enough detail to know whether similarly labelled projects were also similar in their content and implementation. Two different abstinence-based programmes may have provided very different activities, and relying only on the description “abstinence-based intervention” may result in spurious comparisons. These problems make it difficult to compare and evaluate the effectiveness of interventions conducted in different regions and among different populations. Finally, and importantly, the current ad hoc manner of conveying the content of interventions results in difficulty in establishing quality standards. If we in the field do not share a common terminology and understanding of what we mean by each particular term and intervention strategy, it is not possible to establish guidelines and standards for interventions.

A proposed ontology

Given these issues, we propose a way forward, based on our content analysis and principles derived from other scientific fields on how to best develop a systematic scientific nomenclature. In all areas of science, a technical vernacular develops among practitioners, which signifies specific activities, processes, events and entities. Technical terms are only meaningful when a consistent, shared understanding exists of what each technical term or phrase signifies. Much effort on the part of the scientific community in all disciplines is dedicated to forging consensus on the meanings associated with commonly used terms. Once established and agreed upon, these shorthand terms are typically codified in the scientific literature and taught and replicated through the educational and socialization process of each scientific discipline. These technical terms are enormously beneficial since they enable more efficient communication and therefore allow science to progress rationally as concepts are agreed upon and debated.

An ontology is a specific system of classification based on an explicit logic (Genesereth & Nilsson, 1987). Moreover, an ontology is purposefully designed with objective criteria. The following characteristics have been proposed as desirable in defining an ontology (Gruber, 1993):

- clarity—it should communicate the intended meaning of terms effectively, not be subject to social context and be documented in natural language;
- coherence—the defining rules should be logically consistent;
- extendibility—it should allow and accommodate new developments and entries;
- minimal encoding bias—it should allow for consistent application and be resistant to bias when applied;
- minimal ontological commitment—it should be only as complex as is needed to meet the desired purpose. It should not be unnecessarily broad theoretically.

We propose the criteria below for an ontology of HIV interventions, based on the recommendations listed above and our review and analysis presented earlier.

- There is a need for *concise definitions* for commonly implemented intervention approaches,

based on a consistent definitional logic.

- To enhance specificity, interventions should be foremost defined by *activities or services, and commodities* provided.
- When relevant, the secondary focus of intervention definition should be based on *message content*.
- *Outcomes* along the causal chain of events *should not be the primary basis of the definition* of an intervention.
- Defining interventions solely by the intervention's *theoretical basis* leads to a lack of clarity and should be avoided.
- A *list of intervention characteristics* is needed, which should be described in written reports to complement the use of shorthand phrases for interventions.
- Carefully designed *consensus-building* is needed to wed theory to practice. It is the ideal manner of deriving agreement on standards for specific interventions. This is a continuing process, subject to updating as approaches in the field evolve and populations change.

In the following sections we describe and justify several of these principles in greater detail.

Use of shorthand phrases for complex interventions

Use of shorthand phrases for complex interventions facilitates efficient communication, but only when a shared understanding exists for what the shorthand phrases signify

Problems arise when a naturally occurring shorthand phrase becomes inculcated in a technical field before consensus on its meaning and its codification in the technical literature is established. Once a technical term is agreed upon and its meaning is well documented, its use enhances communicating complex concepts much more efficiently. We noted above that in many cases we found very brief terms and phrases are used to describe an HIV intervention in the literature. Interestingly, this appears to be most commonly done when these phrases are supported by the weight of technical documents that describe well the meaning of these interventions. The use of the abbreviation “VCT” to signify “voluntary counselling and testing for HIV” is an excellent example. There are clear, published international guidelines with minimum standards for voluntary counselling and testing, most of which were developed through consensus-driven processes. Therefore, when an investigator states that they used the UNAIDS (2000) guidelines for voluntary counselling and testing in their intervention, what actually transpired is well understood. Interestingly, in our review it was topics with the shortest descriptions, such as VCT and condom social marketing, that often were the easiest to understand, since they are supported by published technical descriptions.

In biomedicine there have been major efforts to harmonize and standardize medical terminology. The classification of diseases was driven by the need to determine how to group and define illnesses. It now constitutes a distinct branch of medicine known as nosology. Interestingly, there are some parallels between biomedicine and prevention science regarding classification challenges. For example, there are competing systems of disease classification, based on etiology, pathogenesis, symptoms and organ systems affected. Table 3 illustrates some of the parallels with prevention science.

Table 3
Systems of disease classification

Classification logic	Definition	Medical example	Prevention analogue
Etiology	<i>Agent</i> causing the disease	Allergen	Sex worker intervention (vector mentality)
Pathogenesis	<i>Mechanism</i> by which disease is caused	Inflammation, shortness of breath, hypoxia, leading to brain death	Poverty, leading to commercial sex, then HIV infection
Symptom	Experienced <i>outcome</i> of disease	Anaphylaxis	HIV-related disease
Organ system	<i>System</i> affected	Immune system	Structural intervention

Elaborate standardized criteria for disease classification have emerged in medicine, driven largely by the mandates of those funding medical care. In addition to classifying diseases, medicine has established published guidelines and standards of care for almost all procedures imaginable. This holds medical practitioners and institutions accountable for meeting quality standards and allows for a thoughtful process of challenging the standards as scientific progress is made. It also facilitates demanding adequate remuneration from funders to provide the minimum standard of care when a particular health issue is encountered. This is the heart of evidence-informed medicine, which in recent years has emerged as a global gold standard in medical practice.

Primary focus: specific activities or services and commodity

It is recommended that the specific activities or services and commodities provided be the primary focus of intervention definitions

In HIV prevention there are complex systems of causal effects that mediate risk and vulnerability, many of which are non-linear, or contain feedback loops along the causal pathway. Therefore, it can be challenging to establish the starting and stopping points for an intervention, in determining how to define and evaluate it. In Figure 1 an example is provided of a hypothetical intervention in which a nongovernmental organization arranges and provides a venue for meetings, carries out training on advocacy and encourages legal rights with the aim of enhancing social mobilization among a vulnerable and marginalized group of women. This, in turn, is designed to empower women in the community and enhance their access to financial resources. Consequently, it is believed that condom use will increase and HIV incidence will decrease. Is this a “social mobilization” intervention, a “women’s empowerment” intervention, a “condom promotion” intervention or an “HIV incidence reduction” intervention? Rather than focus on distal effects of interventions, we suggest that greater descriptive clarity is provided by framing the intervention in terms of *specific activities or services and commodities provided to the target population*. In this case, the services are advocacy training. Therefore, the clearest definition would be to refer to it as an “advocacy training” intervention. However, it would likewise be important to capture the intended downstream goals of the intervention in written reports, presentations and evaluation measures associated with the project.

Figure 1
Proximal/distal causal effects of an intervention

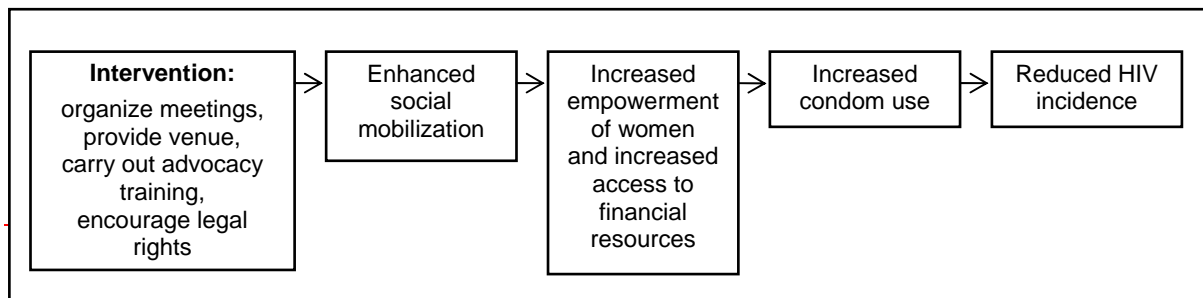
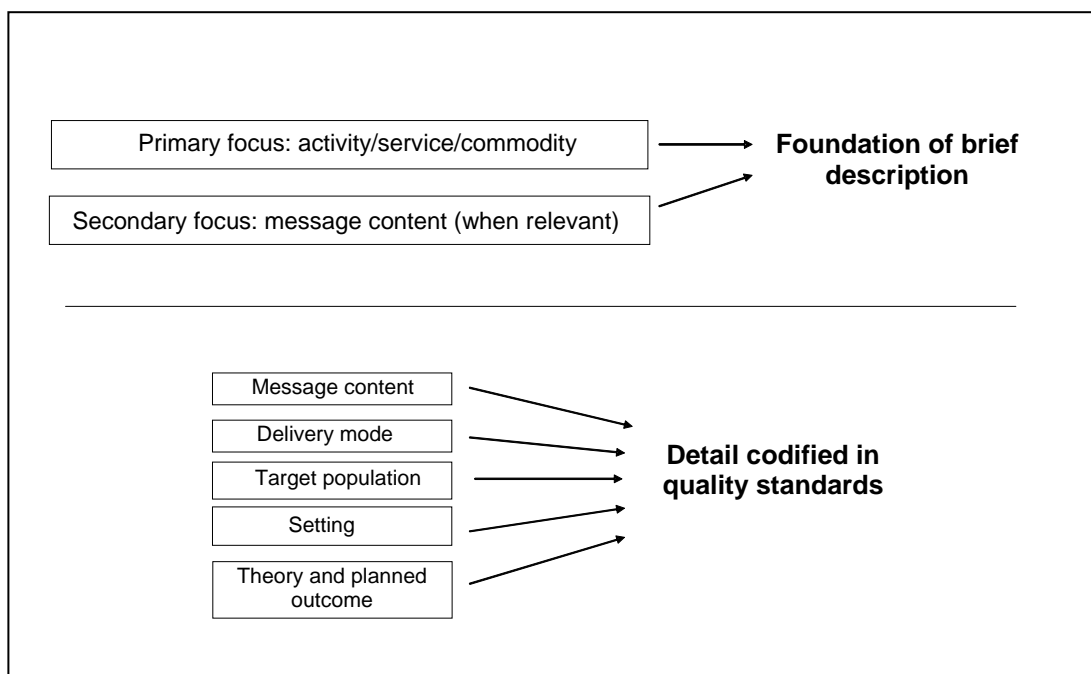


Figure 2
Process for establishing intervention definitions



We recommend that the following steps be taken to establish clear definitions for interventions. First, identify brief (shorthand) definitions describing activities or services and commodities provided in the intervention. When relevant, also refer to key message content included with the intervention. Next, through consensus meetings with key stakeholders and experts, provide a rich description of other requisite components of the intervention, including message content, the method of delivery, how to tailor the intervention to audiences and settings, the intervention’s desired outcomes and its theoretical basis. This process is summarized in Figure 2.

In summary, we propose that an intervention should be defined *primarily* by the activity or service and commodity provided. However, in applying interventions to specific settings they should be tailored to the realities of the epidemic scenario and target population, as recommended by the UNAIDS *Practical guidelines*

for intensifying HIV prevention (UNAIDS, 2007a). Quality standards, however, should be established for each broad intervention component based on empirical evidence of efficacy. In this regard, a much more detailed description of specific interventions should also be provided in describing specific intervention applications. The following list includes the type of information that should be included in a specific intervention's description:

- specific activities or services and commodities are delivered with the intervention
- key messages and behavioural recommendations imparted with the intervention
- eligibility to receive the intervention with regard to risk behaviours or medical conditions
- age group of those receiving the intervention
- gender distribution of those receiving the intervention
- geographical setting in which the intervention is conducted
- institutional setting or venue in which the intervention is implemented
- who specifically delivers the intervention
- frequency of delivering the intervention delivered to the target audience
- intended ecological level of focus for the intervention (e.g. individual, family, community)
- the theory the intervention is based on
- the main desired outcomes of the intervention.

Table 4 lists many of the major intervention activities that are currently being implemented. This list is based on a review of HIV prevention programmes most commonly implemented. The table uses the framework described above and stresses primarily defining and classifying intervention by the activity, service, or commodity, with additional information provided in the table to allow tailoring of the intervention as needed. We have also grouped these interventions into broad categories, based largely on the interventions' intended purpose. The table also describes frequently seen examples of the message content, delivery mode, target population, setting, intervention outcome and theory associated with each intervention, recognizing that there are many possible variants of each of these intervention characteristics. The interventions are also grouped in the table according to the following broad categories: i) interventions that affect knowledge, attitudes and beliefs and influence psychological and social correlates of risk; ii) harm reduction interventions that lower the risk of a behaviour, but do not eliminate the behaviour; iii) biological/biomedical interventions that strive to reduce HIV infection and transmission risk; iv) mitigation of barriers to prevention and negative social outcomes of HIV infection; and v) mitigation of biological outcomes of HIV infection. We also include a summary of several hybrid interventions, which bundle discrete intervention approaches, and which are in common use and are well standardized.

Table 4
Major interventions being implemented

Interventions affecting knowledge, attitudes and beliefs and influencing psychological and social risk correlates				
Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
Mass media campaigns	Varies: e.g. people in your community are at risk of HIV infection through sexual behaviour	Television, radio, public events	Typically large segments of the population, but content can be targeted to subpopulations	Varies: reduced HIV-related risk behaviour, changes in social norms
Interpersonal education and persuasion programmes, face to face, interactive dialogue	Varies: e.g. mitigation of stigma and discrimination towards people living with HIV	Peer educators, trained outreach workers, theatre, story tellers, etc.	Typically targeted to smaller, unique populations	Varies: includes diffusion-based interventions that strive to affect behaviour through the dynamics of social networks
Sex education	Varies: e.g. value of waiting to become sexually active, condom promotion	Typically in-school	Adolescents	Higher age of sexual debut, increased condom use, fewer partners
Education to promote adherence to universal precautions	Increased risk perception and self-efficacy to use precautions	Varies	Health-care workers	Reduced occupational exposure to HIV
Prevention counselling	Client-centred	Trained counsellor	Varies	Varies

Harm reduction (lowering risk of a behaviour, but not eliminating the behaviour)				
Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
Female and male condom distribution	–	Varies, but typically free distribution in public settings	Sexually active at-risk individuals	Decrease in unprotected sex
Needle and syringe exchange	–	Most typically community-based	Injecting drug users	Decreased use of contaminated injecting equipment
Provision of equipment required for universal precautions	–	Health-care settings	Health-care workers and caregivers	Decreased occupation exposure Structural/environmental theory
Providing safe spaces for vulnerable populations to use prevention services, to inject drugs safely	–	Based in physical structure (house, van, etc.)	Injecting drug users, men who have sex with men, young people, sex workers	Reduced overdose potential and reduced use of contaminated injecting equipment Structural/environmental theory
Livelihood alternatives to transactional sex	–	Job training, job opportunities	Sex workers	Reduction in frequency of sexual contact

Biological/biomedical interventions that reduce HIV infection and transmission risk				
Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
Diagnosis and treatment of sexually transmitted infections	–	From health-care provide Typically clinic-based	Varies	Reduced prevalence of sexually transmitted infections Thought to also reduce HIV incidence
Post-exposure prophylaxis	–	From health-care provider Typically clinic-based	Health-care workers, rape victims and others exposed to biohazard material	Reduced incidence of HIV infection
Family planning services	–	From health-care provider Typically clinic-based	HIV-positive women of childbearing age	United Nations 4-component prevention of mother-to-child transmission (prong 2) (WHO, 2005)
Male circumcision	–	From health-care provider Typically clinic-based	Males	Reduced biological risk for HIV acquisition
Antiretroviral prophylaxis for infants born to HIV-positive mothers	–	Primarily clinic-based and linked to antenatal services	Infants born to HIV-positive mothers	Reduction in mother-to-child transmission and prevalence/incidence of HIV-positive infants
Breastfeeding substitution for HIV-positive mothers	–	Via distribution of feeding substitutes Requires access to clean water	HIV-positive mothers and their infants	Reduction in mother-to-child transmission and prevalence/incidence of HIV-positive infants

Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
Screening blood products and donated organs for HIV	–	Health-care facility	Recipients of blood products and donated organs Within health-care setting	Reduction in iatrogenic transmission of HIV
Screening sperm donations for HIV	–	Health-care facility	Sperm donor recipients Within health-care setting	Reduction in transmission of HIV
Disinfection of medical equipment	–	Health-care facility	Patients Within health-care setting	Reduction in iatrogenic transmission of HIV
Disinfection of tattoo, body piercing and barber equipment	–	Policies and monitoring to mandate use of clean equipment Self-procurement of clean razors by clients	Clients receiving tattoos, body piercing and barber services (especially shaving)	Reduction in transmission of HIV
Use of gloves and protective clothing during medical procedures	Universal precautions are required for all patients and procedures	Policies and monitoring in health-care settings Provision of requisite equipment.	Health-care providers Primarily within health-care settings	Reduction in workplace transmission of HIV Environmental/structural theory
Proper disposal of biohazard waste	–	Policies and monitoring in health-care settings Provision of requisite equipment	Health-care facilities and associated services	–
Drug treatment including drug substitution treatment	–	From health-care provider Typically clinic-based	Illicit drug users	Reduction in use of contaminated injecting equipment Possible reduction in sexual risks

Mitigation of barriers to prevention and negative social outcomes of HIV infection				
Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
Training of service providers and law enforcement	Respect human and civil rights	Varies	Service providers and law enforcement	Environmental theory
Separate accommodation to protect at-risk populations	–	Policy-based, legislation and policy change	Young prisoners	Structural theory
Self-help and solidarity groups	Varies by population	Typically peer-led	HIV-positive population, carers of people living with HIV, those at risk of infection	Social support, enhanced self-efficacy, advocacy
Financial and in-kind sustenance support	–	Varies, individuals, microfinance and microcredit, social protection, insurance	Individuals and families economically affected by AIDS	Environmental. May also reduce secondary transmission of HIV
Medical and legal assistance services	Varies by setting	–	People living with HIV, those affected by HIV, marginalized groups	–
Counselling	Varies by group	One-to-one or group	People living with HIV and people affected by HIV; caregivers	Enhanced coping, empowerment and advocacy
Legal, policy and institutional reform to protect human rights of vulnerable groups and HIV-positive people	–	Legal system, policy advocacy, mobilization	Leaders, decision-makers	Structural/environmental theory

Mitigation of biological outcomes of HIV infection				
Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
HIV/tuberculosis treatment services	–	From health-care provider Typically clinic-based	HIV/ tuberculosis coinfecting individuals	–
HIV treatment with antiretroviral drugs	–	From health-care provider Typically clinic-based	HIV-positive people	–
HIV-related opportunistic infection prophylaxis and treatment	–	From health-care provider Clinic-based and home-care delivery	HIV-positive people	–
Treatment of hepatitis (allowing access to antiretroviral treatment)	–	From health-care provider Clinic-based and home-care delivery	HIV/hepatitis coinfecting individuals	–
Palliative care for people living with HIV	–	Home care is frequently supported Care also provided within medical institutions	People seriously ill with AIDS-related disease at end-stage of life	–

Standardized hybrid interventions in common use				
Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
Voluntary counselling and testing for HIV	Know your infection status	Often clinic-based Integrated with other services	Varies	Decreased HIV transmission Ease fears, better plan for future, linkage to care and treatment Client-centred counselling approach
Condom social marketing	Social acceptance of condom use	Cross-cutting modalities	Varies	Changes in social norms about condom use, increased access to condoms, increased self-efficacy to use a condom
Comprehensive sex education	Reduce risk if cannot eliminate risk	Typically in-school	Youth	Offers a wide range of options in risk reduction to recipients
Social mobilization	Varies	Varies	Broad population base	Social change theory

Bundling interventions into programmes

The last section of Table 4 shows that some HIV intervention approaches have been bundled in a systematic manner. For example, condom social marketing typically includes commodity procurement and logistics management, mass media and small media marketing tailored to specific target groups, and monitoring and evaluation providing feedback on programme effectiveness. The logic for bundling these intervention components is based on the need not only to provide the commodity of condoms efficiently in the market place, but also to generate demand for condom sales and address social and cultural barriers to uptake and use of condoms. In reviewing the implementation of HIV interventions, we found that, in practice, interventions are typically bundled to create synergistic *programmes*. Therefore, such programmes comprise combinations of discrete intervention components and there is typically a logic to how these are combined to maximize impact. Additionally, in many cases there are ethical mandates to bundling discrete interventions, such as the need to provide psychosocial care and support and risk reduction interventions to people diagnosed as HIV-positive. Summarized below are several case studies of interventions being implemented and the logical basis for their bundling (Boxes 1–3).

Box 1 The Balbir Pasha HIV campaign is the talk of Mumbai^a

An HIV prevention mass media campaign, the Balbir Pasha HIV campaign, was created to address urban men aged 18–34 years in the lower socioeconomic groups in Mumbai, India. It sought to dispel myths about AIDS, increase risk perception, generate discussion, and motivate people to access AIDS hotlines and voluntary counselling and testing (VCT) services. The campaign involved placing posters and billboards at bus stops, train stations, cinema halls and throughout the red-light district, as well as advertising on radio and television commercials and in print.

Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/ setting	Outcome/ theory
AIDS hotline	Dispelling myths about AIDS, increase risk perception, motivate	Individual counsellors	Mumbai, India	Seek testing
VCT	discussion on AIDS	VCT counsellors	Men aged 18–34 years	Reduce risk behaviours
Mass media		Targeted media		

^a Source: Health e Communication, date unknown, a (<http://www.comminit.com/healthecomm/>).

Box 2 Harnessing talent, Ugandan street youth use drama to respond to AIDS^a

Uganda's Baabas project uses street and community outreach, HIV prevention clubs and training to communicate HIV prevention messages to street children, the local community and local leaders. Through collaboration with 12 nongovernmental organizations that work with street children, organizers hope to reduce this group's vulnerability to HIV and sexual exploitation.

At the centre of the project are 140 "Baabas"—street youth elected by their peers who are trained in HIV and sexual health issues as well as participatory teaching methods. These youth engage in drama, song, dance and poetry at various drama festivals (at the first drama festival, approximately 150 dignitaries and representatives from HIV programmes and youth-related organizations joined the local community and street children to watch presentations on the theme "Youth fighting AIDS on the street"). The project also works to build the capacity of local nongovernmental organizations to address HIV-related issues and to foster networking between like-minded organizations.

Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
HIV prevention clubs Street outreach Drama presentations	–	Peers	Ugandan street children Dignitaries	Reduction of vulnerability to exposure to HIV and sexual exploitation
Training	–	Staff	Local nongovernmental organizations	Increased capacity to address HIV-related issues

^a Source: Health e Communication, date unknown, b (<http://www.comminit.com/healthcomm/>).

Box 3 Stop AIDS—Love Life^a

The main purposes of the *Stop AIDS—Love Life* campaign in Ghana were to increase awareness of HIV; to increase the adoption of safer sex behaviour; to destigmatize HIV and to encourage compassion, care and support for people living with HIV.

The campaign's activities focused on advocacy, community mobilization and mass media. They included development and distribution of print materials; production of an AIDS music video featuring Ghanaian hip-life, highlife and gospel musicians with safer sex messages of abstinence, fidelity and condom use; production of testimony spots, with HIV-positive Ghanaians telling their stories; peer counselling workshop for people living with HIV; production of traditional rulers (local chiefs) radio and television spots, launch of "Journey of Hope" (a participatory tool designed to teach abstinence, fidelity and condom use) with the President of Ghana and cabinet members in attendance; training workshops on community mobilization and use of Journey of Hope; community rallies and school-based programmes; development and production of compassion spots with religious leaders; and provision of input and messages to the script of the award-winning "Things We Do for Love" television series.

Activity, service, commodity	Message content (when relevant)	Delivery mode	Target population/setting	Outcome/theory
Mass media	Risk reduction, acceptance of people living with HIV	Media	Ghanaian public	Adoption of safer sex
Counselling workshop		Peers	People living with HIV	Destigmatize HIV
Training workshops		Staff		Encourage care for people living with HIV

^a Source: Health e Communication, date unknown, c (<http://www.comminit.com/healthecomm/>).

Next steps

The UNAIDS *Practical guidelines for intensifying HIV prevention* (UNAIDS, 2007a) provide a cogent set of recommendations for advancing adaptation of HIV prevention responses to national and local epidemics. Key recommendations of the guidelines include knowing your epidemic in terms of its key drivers, vulnerable populations most in need, epidemiological scenarios and focusing on the source of new infections. It is recommended that programme planners match the response to the epidemic to these factors and prioritize efforts according to the appropriate epidemiological scenario. This is achieved through setting ambitious, realistic and measurable prevention targets and using strategic information to stay on course as prevention programmes evolve. Moreover, specific recommendations are made for certain key audiences for which intervention strategies are most appropriate. These well-conceived recommendations could be strengthened through a process of more clearly specifying quality standards and implementation costs. This document is a first step towards that end, since establishing definitions for

major interventions is needed before standards are established and standards are needed to establish the likely costs of activities.

We propose that the preliminary list of interventions described herein be expanded and subjected to further review and critique by prevention scientists and practitioners. Once consensus is established and definitions are agreed upon for major interventions necessary for intensifying HIV prevention efforts, minimum quality standards should be developed for each intervention component and estimated costs for implementation established. Finally, further analysis of the optimal manner of bundling these interventions into logical combinations should be determined. With the establishment of clearly defined interventions with associated quality standards, estimated costs and optimal bundling strategies, it will be possible to provide improved recommendations to programme planners and policy-makers striving to intensify HIV prevention programmes. Consensus in these areas would enhance our ability to plan, allocate requisite resources—including human resources—advocate prevention, and monitor and evaluate the success of prevention programmes.

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