An Overview of Combination Prevention

Introduction

I. Definition of the Prevention Area

Combination prevention uses a mix of biomedical, behavioral, and structural interventions, and targets the prevention needs of different populations based upon epidemiologic and demographic data. Historically, programs that achieved significant, lasting improvements required change at the individual, organizational, and societal levels, providing mutually reinforcing messages and interventions.

Combination programs aim to select the optimal mix of interventions that will have the greatest impact on reducing HIV transmission, individuals' susceptibility and vulnerability to HIV, and the infectivity of the virus.

Combination approaches can be developed for implementation at a national level, or tailored to the needs of specific at-risk populations. Programs should take into account the epidemiology, demographic patterns, and the specific context and drivers of the epidemic.

The 2009 U.S. President's Emergency Plan for AIDS Relief (PEPFAR) Five-Year Strategy provides general guidance on working with countries to design, implement, and monitor combination HIV prevention programs that address the needs of populations in both generalized and concentrated epidemic settings.

II. Epidemiological Justification for the Prevention Area

There is no one intervention--no "magic bullet"--capable of eliminating HIV. No single prevention intervention is fully protective and each has its own strengths and limitations. HIV epidemics occur simultaneously within different populations and among people in diverse social networks, requiring a range of prevention interventions. Personal preferences also play a role, and individuals may prefer certain risk reduction options over others. Individuals often require different prevention messages and interventions at different times in their lives. For example, approaches will differ for the person just entering into sexual relations than for a discordant couple.

Momentum for combination approaches is building in regions of Southern and East Africa, where prevalence levels in the general population are disturbingly high and the best programmatic efforts have only recently begun to stabilize HIV transmission. There have been recent calls for program efforts in Southern Africa to more fully address broader social and economic factors that can increase vulnerability to HIV and AIDS. Others advocate for programs to focus on a much smaller set of high-impact interventions, to maximize resources.

In the absence of well-tailored combination prevention programs, serious programmatic gaps can occur. Even as better data become available, those engaged in national strategic planning struggle to match their programs to major at-risk populations and drivers. Within any given country, the involvement of multiple agencies, implementing organizations, and development partners in the response to HIV can result in multiple (and sometimes conflicting) messages, approaches, and a patchwork of program activities that only rarely achieve national goals. Systematic biases can also limit effectiveness; recent analyses suggest that, in generalized and concentrated epidemic settings alike, spending on prevention for most-at-risk populations is disproportionately low.

III. Core Programmatic Components

The PEPFAR Five-Year Strategy recommends a comprehensive approach to prevention that includes three types of

mutually reinforcing interventions, all of which are described in more detail in AIDSTAR-One's Prevention Knowledge Base:

- *Biomedical interventions* include medical approaches to block infection, decrease infectiousness, or reduce infection risk. Providers are encouraged to employ the biomedical intervention as an opportunity to engage with clients in broader prevention messaging: for example, PEPFAR recommends that clinics providing male circumcision procedures also provide risk reduction counseling.

- *Behavioral interventions* include a range of activities designed to encourage people to reduce behaviors that increase risk of HIV and increase protective behaviors. For example, behavioral approaches aim to delay sexual debut; reduce sexual partnerships; encourage mutual monogamy; promote correct and consistent use of condoms; and increase HIV counseling and testing. Effective approaches often employ mutually reinforcing messages at different levels. One example is an intervention to promote individual behavior change, while also encouraging families, communities and social networks to adopt and maintain healthy norms and a supportive environment.

- *Structural interventions* take into account social, political, and economic factors that contribute to individual risk and vulnerability. Such interventions could include efforts to change social norms that contribute to gender violence, which in turn affects women's vulnerability to HIV, or it might include microloans to reduce dependence on sex work.

UNAIDS encourages countries to "Know Your Epidemic and Response." Yet, often not enough is known about the social, cultural and economic drivers of HIV epidemics in the general population in seriously affected countries of Southern and East Africa. Gathering information can also be challenging in concentrated HIV epidemics, which tend to affect groups of people who are marginalized and hard to reach.

HIV epidemics are dynamic. Publicly available software packages are making it possible for countries to model common modes of transmission and to adapt outreach activities to reflect current and emerging trends.

IV. Current Status of Implementation Experience

Although the term "combination prevention" is relatively new, the concept is not new. Countries experiencing generalized epidemics routinely implement complex packages of prevention interventions; yet, geographic coverage of these interventions is often incomplete and only a minority of programs include interventions designed to address structural drivers of the epidemic. Complex programs have also existed for some time in concentrated epidemics, where service packages include biomedical, behavioral, and structural interventions; yet these approaches remain under-implemented.

The impact and efficiency of combination approaches have not yet been well studied. Prevention programs often lack adequate funding to conduct full evaluations and they rarely track costs per client, making it difficult to assess the impact and efficiency of combination programs. In addition, combination prevention programs do not readily lend themselves to experimental designs that allow outcomes to be objectively measured. It remains difficult to map causal pathways and measure the effects of simultaneous (and perhaps synergistic) prevention interventions on HIV acquisition. Data that are available, however, suggest that there is room to further strengthen many national programs.

Planning the optimal mix of behavioral, biomedical, and structural services is necessary, but not sufficient, for an effective program. Managers must implement programs of adequate scale and intensity; manage complex programs well; and monitor and evaluate their results. This has been difficult to achieve and has resulted in less effective prevention programs.

Case studies provide some information on the actions that need to be taken. Because epidemics are dynamic, as is the environment of risk, prevention programs must empower local learning and data utilization. Programs can manage complexity, but it takes serious commitment to develop management structures that support it.

Coordination and linkages are essential since no single organization or sector can support all the functions that are required. Investments must be made to develop the skills of cadres of community-level workers that link clients to the full range of services they require, and to foster community-level ownership, support decentralized decision making, and enable local-level advocacy.

Better approaches are needed to determine the optimal mix of services, calculate costs, and understand the effectiveness of programs, including methods to observe and measure synergistic effects.

Updated: March 2011

What we know

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Financing the Response to HIV in Low-Income and Middle-Income Countries

Izazola-Licea, J.A., Wiegelmann, J., Aran, C., et al. *Journal of Acquired Immune Deficiency Syndromes* (2009), Vol. 52, No. Suppl. 2, pp. S119-S126.

Most countries are not using their funds for HIV treatment and prevention efficiently. According to this study of 50 low- and middle-income countries, funds for prevention constituted 21 percent of all AIDS expenditures. According to UNAIDS, about 45 percent of funding should be invested in prevention. Spending on most-at-risk populations accounted for less than 1 percent in countries with generalized epidemics and 7 percent in countries with concentrated epidemics. The mismatch in the burden of risk and funding was most acute in Latin America, where 60 percent of the people living with HIV are men who have sex with men, but only 0.5 percent of funds were directed toward this group. Among the 17 low-income countries, 87 percent of their funding came from international donors.

View Full Text (PDF, 411 KB)

Making HIV Prevention Programmes Work

Bertozzi, S.M., Laga, M., Bautista-Arredondo, S., et al. *Lancet* (2008), Vol. 372 No. 9641, pp. 831-844.

HIV prevention programs will underperform when any of the following four issues is not appropriately addressed: targeting of risk groups; selection of programs to match the needs of risk groups; delivery and implementation of programs; and funding. Inadequate surveillance or failure to monitor and evaluate interventions can lead to programs that are mismatched for the needs of the region or country. Since quantity is often easier to measure than quality, incentive schemes have favored the former over the latter. This has resulted in situations such as the recent implementation of antiretroviral therapy in which the number of people treated was emphasized over changes in patients' life expectancy.

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Behavioural Strategies to Reduce HIV Transmission: How to Make Them Work Better

Coates, T.J., Richter, L., & Caceres, C. *Lancet* (2008), Vol. 372 No. 9641, pp. 669-684.

Behavioral strategies, such as programs to encourage condom use or to reduce or eliminate sex with non-primary partners, can be difficult to sustain and should be combined with other strategies (biomedical and structural) to effect population-level changes. Promoting behavioral change in the absence of structural change can be particularly difficult, for example, when drugs or alcohol are central to a country's economy. Monitoring and evaluation (M&E) of programs should be integrated into local programs; current M&E projects are often conducted largely in high-income countries with uncertain relevance to lower-income countries. Four key steps to achieving behavioral change are described.

View Full Text (PDF, 526 KB)

Structural Approaches to HIV Prevention

Gupta, G., Parkhurst, J.O., Ogden, J.A., et al. *Lancet* (2008), Vol. 372 No. 9640, pp. 764-775.

Structural factors (economic, social, political, environmental) can affect HIV risk. For example, gender inequality is linked to unprotected sex. That could be due to male control of finances or due to male physical violence, causing some women to submit to unprotected sex out of fear of physical violence or fear of losing financial support. Although the outcome is the same in either case, the necessary interventions differ. Financial problems could be addressed by micro-loans and changes in inheritance laws that treat men and women unequally. Male violence might be addressed by programs exploring concepts of masculinity. Monitoring and evaluation of structural approaches can be difficult since such programs don't readily lend themselves to experimental design; the authors give recommendations for program assessment.

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The History and Challenge of HIV Prevention

Merson, M.H., O'Malley, J., Serwadda, D., & Apisuk, C. *Lancet* (2008), Vol. 372 No. 9637, pp. 475-488.

The history of HIV is traced from June 5, 1981, when the disease was first announced by the U.S. Centers for Disease Control and Prevention, to the present. Biomedical, epidemiologic, political, and activist history provides insights into an era of tremendous discovery; obstacles; and social and political ferment. Although the disease was first recognized in men, women now constitute 61 percent of adults living with HIV in sub-Saharan Africa. Projections about the course of the disease were often wrong. The most successful early prevention efforts didn't come from the medical or public health communities, but from people living with HIV and from combination programs that addressed structural, biomedical, and behavioral issues simultaneously.

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Biomedical Interventions to Prevent HIV Infection: Evidence, Challenge, the Way Forward

Padian, N.S., Buvé, A., Balkus, J. et al. *Lancet* (2008), Vol. 372 No. 9641, pp. 585-599.

Several biomedical interventions have proven efficacy; the benefits of other medical interventions are less clear. According to a Cochrane review, male condoms are 85 percent effective in preventing transmission of HIV. However, longterm compliance, especially with primary partners, tends to wane. Disinhibition - or an increase in risky behaviors associated with a sense of being protected - is a problem with this and several other interventions. Male circumcision is estimated to be 58 percent effective, and has the benefit of being a one-off commitment. However, circumcised men also reported increased numbers of sexual partners. The benefits and limitations of female condoms, cervical barriers, treatment of

sexually transmitted infections, vaccines, topical and oral antiretroviral prophylaxis, and microbicides are discussed.

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Coming to Terms with Complexity: A Call to Action for HIV Prevention

Piot, P., Bartos, M., Larson, H., et al. *Lancet* (2008), Vol. 372 No. 9641, pp. 845-859.

Despite widespread knowledge about the transmission of HIV, approximately 7,000 people are newly infected each day. The impact of combination programs is complex and can cause unexpected consequences. For example, HIV infection in men who have sex with men in Bangkok, Thailand, paradoxically increased in 2005 as sex venues were closed - driving men into illegal settings for sex. There is no single "magic bullet" intervention, and combination prevention approaches are as necessary as combination treatment of HIV. Globally, about 85 percent of HIV transmission is sexual. The promise and limitations of current combination interventions for youth, high-risk groups, and women are discussed.

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Reassessing HIV Prevention

Potts, M., Halperin, D.T., Kirby, D., et al. *Lancet* (2008), Vol. 372 No. 9641, pp. 845-859.

Nine countries in southern African--where more than 12 percent of adults are infected with HIV--account for two-thirds of infections globally. In these generalized epidemic settings, emphasis has been placed on condom promotion and distribution, voluntary counseling and testing (VCT), and treatment of other sexually transmitted infections (STIs). The authors review the evidence and find that the assumptions driving this choice of HIV prevention strategies are largely unsupported, concluding that the largest donor investments are being made in interventions that will fail to deliver large-scale impact. Greater focus on two promising interventions, male circumcision and reducing multiple sexual partnerships, is suggested.

View Article

Expert Think Tank Meeting on HIV Prevention in High-prevalence Countries in Southern Africa Report

Southern African Development Community (2006) Maseru, Lesotho.

Southern Africa is home to 40 percent of all people living with HIV globally. The Southern African Development Community, with support from UNAIDS, USAID, WHO and other organizations, convened a meeting of 38 participants to analyze the drivers of the epidemic and to make recommendations for stepped-up prevention. Key drivers identified included multiple and concurrent partnerships; low levels of circumcision; and sexual violence. Factors underlying the drivers were identified, such as wealth disparities and high population mobility. The report includes recommendations to address the drivers of HIV and their causes; key priorities and processes; and monitoring and utilizing resources.

View Full Text (PDF, 559 KB)

Identifying Appropriate Livelihood Options for Adolescent Girls: A Program Design Tool

Caro, D. (2009).

Limited data are available on the effectiveness of economic strengthening interventions among adolescent girls and the impact--if any--on HIV prevention. As such, a series of tools was developed, including this livelihoods tool. It is designed

to help program managers conduct more in-depth design, monitoring, and evaluation of activities reducing adolescent girls' economic vulnerability. The user is guided through a series of diagnostic steps to identify how such girls are at risk of HIV resulting from their lack of control over their immediate environment. Once the program manager identifies constraints and opportunities these youths are living in, they are guided to livelihood interventions that are most appropriate in those situations.

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Putting it into practice

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Field experiences integrating family planning into programmes to prevent mother- to-child transmission of HIV

Rutenberg, N. & Baek, C. Studies in Family Planning (2005), Vol. 36 No. 3, pp. 235-45.

This article reviews field experiences with provision of family planning services in prevention of mother-to-child transmission (PMTCT) programs in 10 countries in Africa, Asia, and Latin America. Family planning is a standard component of most antenatal care and maternal-child health programs within which PMTCT programs are offered, yet PMTCT sites often miss opportunities to provide HIV-positive clients with family planning counseling. Demand for family planning among HIV-positive women varies depending on the extent of the communities' openness about HIV/AIDS, fertility norms, and knowledge of PMTCT programs. In Kenya and Zambia, no differences were observed in use of contraceptives between HIV-positive and HIV-negative women in the study communities, but HIV-positive women have more affirmative attitudes about condoms and use them significantly more frequently than do their HIV-negative counterparts. In the Dominican Republic, India, and Thailand, where HIV prevalence is low and sterilization rates are high, HIV-positive women are offered sterilization, which most women accept. This article draws out the policy implications of these findings and recommends that policies be based on respect for women's right to informed reproductive choice in the context of HIV and AIDS.

View Abstract
Scaling Up Rural HIV Prevention, Care and Treatment Services in India to 195 Districts Using a Community-Based Link Worker Model

Bhattacharjee, P. 2009 HIV/AIDS Implementers' Meeting, Windhoek, Namibia.

This presentation provides an overview of a "Link Worker" model to reach at-risk individuals living in rural areas. The project was successfully implemented from 2003 to 2006 as a demonstration project in Bagalkot, India. District-wide, 54,447 persons received HIV counseling and testing, of whom 13,416 tested HIV-positive, representing 77 percent of the district's estimated HIV-positive population. Approximately 6 million condoms were distributed and increased access to services for sexually transmitted infections was provided to nearly 50,000 women. Female sex workers, pregnant women, and people living with HIV, were prioritized. The link worker model is not described in any detail in this presentation, but it provides a "supervisory structure for support, mentoring, microplans and supervision" to achieve results.

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The Namibian HIV Prevention Consultation: Refocusing Namibia's Prevention Response

Forster, N. 2009 HIV/AIDS Implementers' Meeting, Windhoek, Namibia.

Namibia refocused its HIV prevention efforts in 2007 when antiretroviral coverage reached 80 percent, yet in 2008, prevalence among pregnant women aged 15 through 49 was 17.8 percent and general adult prevalence was 15.3 percent. In 2007, there was no specific national prevention strategy and no national prevention coordinator, nor was there a forum for technical deliberations on prevention, leading the National AIDS Executive Committee to plan the first National HIV Prevention Consultation. Combination strategies that take into account biological, behavioral, social, and structural factors are discussed along with current challenges and lessons learned.

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A Systematic Analysis of Three Promising Approaches to Combination HIV Prevention Programming

Stash, S. 2009 HIV/AIDS Implementers' Meeting, Windhoek, Namibia.

This presentation summarizes the findings from case studies on how combination prevention programs were implemented. Highlighted are projects in both concentrated and generalized epidemics, and three case studies (Kenya, Ukraine, and India) are included in the slide presentation.

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The U.S. President's Emergency Plan for AIDS Relief: Five-Year Strategy

The Office of the U.S. Global AIDS Coordinator (2009).

This is the guiding document through 2015 for PEPFAR, the largest international HIV/AIDS program of the United States government. The four separate documents consist of the plan and three annexes: Prevention, Care, and Treatment; Global Context of HIV; and PEPFAR's Contributions to the Global Health Initiative. A "new direction" cited as a goal is to transition from emergency responses to "sustainable country programs" that are "country-owned and country-driven." The plan calls for addressing HIV within a broader health and development context; linking HIV to women and children's health; and expanding programs to relieve hunger.

View Full Text (PDF, 3.9 MB)
The U.S. President's Emergency Plan for AIDS Relief Five-Year Strategy: Annex: PEPFAR and Prevention, Care, and Treatment

The Office of the U.S. Global AIDS Coordinator (2009).

This annex identifies obstacles to successful prevention, care, and treatment programs as well as goals and processes to overcome each obstacle. Special emphasis is placed on combination interventions. A wide range of topics are addressed. These include: blood and injection safety; innovation in prevention; helping governments to support alternatives to prostitution; youth; mobile populations; involvement of people living with HIV; palliative care programs; care of orphans and vulnerable children; targeting treatment; antiretroviral prophylaxis for pregnant women; and expanding efforts to treat people co-infected with tuberculosis and HIV. Links to nine key articles and documents are provided.

View Full Text (PDF, 4.5 MB)
Preventing Mother-to-Child Transmission of HIV in Resource-limited Settings: The Elizabeth Glaser Pediatric AIDS Foundation Experience

Spensley, A., Sripipatana, T., Turner, A. N., et al. *American Journal of Public Health* (2009), Vol. 99 No. 4, pp. 631-637. Epub 2008 Aug 13.

The Elizabeth Glaser Pediatric AIDS Foundation has one of the world's largest PMTCT program datasets. The authors reviewed more than six years of program data from several countries, covering 2.6 million pregnant women through June 2006. They review the number of women who received counseling and testing services, and the number of women and infants receiving antiretroviral prophylaxis. The authors describe a dramatic increase in HIV testing after a policy change from "opt-in" testing to "opt-out" testing, in which the test is presented as a routine part of pregnancy testing that women can decline if they desire. They discuss their wide promotion of single-dose nevirapine for prophylaxis and some of the controversy surrounding this approach.

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Tools and Curricula

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AIDS Indicator Survey (AIS)

MEASURE Demographic and Health Surveys (2009).

The AIS provides survey protocols that meet the reporting requirements of the President's Emergency Plan For AIDS Relief (PEPFAR), the United Nations General Assembly Special Session on HIV/AIDS (UNGASS), and most other funding agencies. This website provides links to standardized questionnaires, instruction manuals, survey data, and other information that can assist with the effective monitoring of national HIV programs and allow for comparison of data over time and between countries.

Webpage tabs provide links to an overview of the AIS; its methodology; and to household and individual questionnaires and manuals that can be downloaded. Guidance on survey instruments, sampling design, data tabulation, and a timeline for implementing the surveys are provided.

Other links provide access to survey results and databases that can be queried to provide information on a national basis. Data can be organized by various topics and individual countries.

View Website

HIV Triangulation Resource Guide: Synthesis of Results from Multiple Data Sources for Evaluation and Decision-Making

The World Health Organization (2009).

This 12-step guide provides detailed information on how to conduct data triangulation analysis, a dynamic and iterative process, in which each step informs and shapes subsequent and earlier steps as new data become available. Examples of how to conduct the analysis are drawn from experiences with HIV. Case reports and exercise questions and answers provide practical insights into the process of HIV triangulation.

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Epidemiological Software and Tools

UNAIDS (2009).

This UNAIDS website provides the most up-to-date guidance and versions of free software to estimate and project adult HIV prevalence and incidence from surveillance data. Components include:

? Estimation and Projection Package (EPP) software and manuals on generalized and concentrated epidemics
? Workbook Method spreadsheet and manual - useful when there is a lack of HIV prevalence data from consistent sites over time
? Spectrum software suite of tools
? Modes of Transmission spreadsheets (Excel) and manuals

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Behavioral Surveillance Surveys: Guidelines for Repeated Behavioral Surveys in Populations at Risk of HIV

Family Health International (2003).

This comprehensive, 358-page collection of surveys allows programs to track risk behavior over time as part of an integrated surveillance system for HIV. These tools are helpful in understanding the behaviors of high-risk and hard-to-reach populations such as sex workers and their clients, men who have sex with men, and injecting drug users.

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Learn more

UNAIDS HIV Prevention Toolkit

UNAIDS (2009)

Designed for program managers ramping up efforts to understand and address HIV epidemics at the national or sub-national level, the UNAIDS HIV Prevention Toolkit uses interactive modules to walk prevention program managers through key steps to implementation. It includes the section "Know Your Epidemic," exercises to help planners tailor the appropriate service mix.

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Practical Guidelines for Intensifying HIV Prevention

UNAIDS (2007)

These guidelines provide a "synthesis of essential prevention measures required for countries to 'tailor your prevention plans' in relation to the epidemic scenarios." Topics include Prevention; Leadership; Know Your Epidemic; Match Your Response to the Epidemic; Prioritizing According to Epidemiological Scenario; Set Ambitious, Realistic, and Measurable Prevention Targets; Tailor Youth Prevention Plans; and Use Strategic Information to Stay on Course. Fifty-four references are provided and links to 21 Tools for HIV Prevention Planning are offered.

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