In 1999, several surveys indicated that only 30 percent of community-based HIV organizations were implementing risk reduction skills interventions. In response, the Division of HIV/AIDS Prevention of the Centers for Disease Control and Prevention (CDC) sought to make effective HIV prevention interventions accessible to frontline prevention programs. The result has been a division-wide process, made up of three CDC projects focusing on identifying, packaging, and disseminating evidence-based behavioral interventions (EBIs).

Over the past four years, there has been tremendous demand for these proven interventions, known in the field as DEBIs (named for the CDC's Diffusion of Evidence-Based Interventions Project). At the same time, the CDC recognizes that community-based organizations may need to adapt standardized evidence-based interventions to meet local needs. In some cases, community-based organizations develop their own interventions "organically" out of their own frontline experiences and unique local circumstances.

This article reviews the CDC’s systematic process for translating scientific evidence into broadly applicable practice and describes its programs for identifying, packaging, and disseminating evidence-based interventions. It also highlights considerations and key practices that should guide both the adaptation and organic intervention process to ensure the greatest likelihood that interventions are achieving their stated goals.
Editorial: Marrying Intuition to Evidence

Robert Marks, Editor

When a crisis unfolds, there is a great tolerance for intuitive, immediate solutions. One of the qualities used to define leadership, in fact, is the capacity to make split-second decisions in response to emergencies. In the 1980s, HIV prevention organizations relied on intuition to improvise and adapt approaches that had been used for other diseases to combat HIV.

In the 1990s, with an exploding epidemic and, perhaps more significantly, mounting expenditures, there was diminished tolerance for intuition. We entered the era of program evaluation, when every contract or grant included a requirement for agencies to apply research methods to prove the value of their efforts—perhaps to a fault. At the same time, researchers were creating a growing library of peer-reviewed published studies demonstrating the efficacy of particular prevention interventions.

This all culminated with initiatives by the Centers for Disease Control and Prevention, including the Diffusion of Evidence-Based Interventions (DEBI) Project, that identify and fund replication, adaptation, and dissemination of rigorously tested approaches. Most frontline providers agree these developments are good.

As Charles Collins, Wayne Johnson, and Cynthia Lyles, all from the CDC, point out in this issue of FOCUS, DEBI and its sister projects make good science accessible to thousands of frontline providers in hundreds of communities, magnifying research efforts and sharing the wealth of experience.

Some have gone so far to imply, however, that we have made a fetish of the evidence and overblown the capacity of research methods such as randomized controlled trials to lead to broadly applicable interventions. The outcomes that these studies follow are often hard to measure, the factors that lead to improvements in these outcomes can be hard to identify and quantify, and the methods—the heart of the intervention—are usually nuanced, reliant on different subgroups of participants—men versus women, Latino men versus White men, or people over 50 years old versus people under 50 years old, for example.

The results of an efficacy trial offer initial evidence that the intervention either worked or did not work within the context of a single study. Additional studies may demonstrate that the intervention might or might not work with other populations, in other venues, and even in other countries. For example, many studies have demonstrated that the Popular Opinion Leader intervention can work under different conditions (but not all other conditions), and the intervention is now used in several countries.

To identify key interventions that have proven themselves, the CDC’s Prevention Research Synthesis team systematically reviews the research literature—studies published in peer-reviewed journals—and applies objective criteria to identify behavioral interventions that have been rigorously tested and have demonstrated efficacy in reducing HIV risk. This review is crucial, because the quality of the study’s design, implementation, and analysis, and the strength of its findings all may support or undermine its results. In particular, applying these criteria can rule out plausible alternative explanations for the study results. The team considers key elements such as the type of comparison group, the number of participants, the ways participants are recruited or assigned to groups, the outcomes measured, the follow-up time, the participant retention rate, and the degree to which the groups are equivalent in terms of characteristics such as age, race and ethnicity, and history of sexually transmitted diseases, among others.

To date, the Prevention Research Synthesis Project’s coders have reviewed more than 25,000 HIV publications. Using a consensus process, the project has identified 49 interven-

References
tions that the CDC believes induced behavior change in clients. (For more information, see the Prevention Research Synthesis web site.  

To address the small number of interventions for men who have sex with men, particularly for African American and Latino men, the CDC has funded several recent intervention studies looking specifically at culturally appropriate interventions for racial and ethnic minority men who have sex with men. One notable success is the D-Up intervention, which is an adaptation of the Popular Opinion Leader model specifically for young African American men who have sex with men.

### Packaging and Disseminating Effective Programs

Once researchers have identified effective HIV behavioral interventions, it is critical to move these proven interventions into practice. This transfer of research into the prevention field requires a multi-step process involving translation of scientific information into a product that is understandable to frontline providers, product marketing, training and technical assistance to adopt and implement the intervention, and ongoing support to sustain the intervention.

The CDC has systematized this process in two programs: the Replicating Effective Programs (REP) Project and the Diffusion of Evidence-Based Interventions (DEBI) Project. The Replicating Effective Programs Project works with researchers to package original interventions into practical and user-friendly materials—including manuals, marketing materials, evaluation materials, and training curricula—to enable broader accessibility to prevention agencies. To date, the Replicating Effective Programs Project—which does not actually fund retesting of an intervention for efficacy or effectiveness—has packaged 11 evidence-based interventions, with 10 more currently being packaged.

The Diffusion of Evidence-Based Interventions Project was designed to move behavioral intervention packages into full-scale practice. Using the intervention materials developed at the end of the Replicating Effective Programs process, this dissemination is done through marketing, training, and support activities in partnership with a broad range of funders, trainers, capacity builders, and implementers. Over the past four years, the CDC and its partners have trained more than 8,000 individuals working at 1,800 community organizations and 1,200 employees at 600 city, county, and state health departments.

Through this large effort to translate sci-

<table>
<thead>
<tr>
<th>Select Interventions Diffused Through DEBI</th>
<th>Audience</th>
<th>CBOs Trained 2003–2007</th>
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<tbody>
<tr>
<td>Community PROMISE</td>
<td>All populations</td>
<td>123</td>
</tr>
<tr>
<td>Healthy Relationships</td>
<td>HIV-positive MSM and heterosexual men and women</td>
<td>210</td>
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<tr>
<td>Many Men Many Voices</td>
<td>African American MSM; adapted for other MSM of color</td>
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<td>Mpowerment</td>
<td>Young MSM 18 to 24 years old</td>
<td>183</td>
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<tr>
<td>Popular Opinion Leader</td>
<td>MSM in midsized cities; adapted for many populations</td>
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<tr>
<td>SISTA</td>
<td>African American women between 18 to 24 years old; adapted for other women</td>
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<tr>
<td>Street Smart</td>
<td>Homeless and runaway adolescents</td>
<td>109</td>
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<tr>
<td>VOICES/VOICES</td>
<td>Heterosexual African American and Latino men and women</td>
<td>389</td>
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</table>


ence into practice, the CDC hopes to help communities answer the following questions about their local prevention goals: What is good practice with the target group or groups we are serving? Which elements of this standardized intervention are central to its effectiveness and which ones are more flexible or expendable? Who should conduct this intervention? What outcomes can we expect? How do we define success? Is the intervention achievable? How long do results last? The answers to these questions vary because each of the 14 current DEBIs is different and meets different prevention needs.

The CDC currently disseminates a broad range of individual-level, small group, and community-level interventions, all of which are described on the Diffusion of Evidence-Based Interventions Project web site. The chart on page 3, “Select Interventions Diffused Through DEBI,” lists the interventions and the risk populations for which the interventions were found to work.

Implementing Evidence-Based Interventions

Before implementing an intervention, an agency should clearly define its program objectives and develop an appropriate plan for evaluating the program and its objectives over time. Once implementation begins, monitoring and evaluating the program’s process can determine whether the program serves appropriate types and numbers of clients, and can assess whether clients receive quality services and are satisfied with them.

Outcome monitoring can also be incorporated as part of the program evaluation plan to determine whether the intervention is changing behavior. For example, for an intervention that seeks to increase condom use, program staff may wish to ask clients if they consistently used condoms during the 30-day period before they entered the intervention. Then 30 days after completion of the program, staff would ask these same clients if they consistently used condoms since the intervention. Obtaining both process and outcome data on each client can help determine if the agency is meeting its program objectives and can help inform program improvements regarding recruitment, retention, and the quality and impact of prevention services.

Harnessing the Desire to Adapt

The process of linking research to practice—the goal of all of the CDC’s evidence-based intervention projects—is to make available a menu of robust, generalizable, and scientifically supported interventions, that is, interventions that may be appropriate for many populations in many situations. Yet in the real world, where diversity of needs is the norm, even these generalizable interventions may benefit from adaptation to local goals, conditions, and populations. For this reason, the CDC supports agencies in adapting evidence-based interventions to make them more appropriate, relevant, or appealing to their clients.

For example, a Chicago community-based organization adapted the SISTA intervention for African American male-to-female transgender people. Renamed “Twista,” the new intervention maintained the essential risk reduction skills-building activities integral to the original intervention, which, based on the reality that the male partner in many heterosexual couples has more sexual decision-making power than the female partner, focused on helping women negotiate condom use.

The adaptation process should be systematic and thoughtful and be based on credible evidence such as focus groups, ethnographic reports, and interviews with key community members. The process should also include pretesting intervention materials and pilot testing intervention activities. All adaptations should remain faithful to the core elements of the original intervention. The core elements are those activities that are believed to be central to the intervention’s mechanism of behavior change. Since core elements have been designed to work together to support protective behavior change, the intervention may lose its ability to promote behavior change when an adapter removes one element. All agencies that are implementing the DEBIs can obtain technical assistance on adaptation through their federal or health department project officers.

Locally Developed Interventions

While the Prevention Research Synthesis Project recommends using the broad variety of evidence-based interventions it has identified, the CDC recognizes that many prevention agencies have locally developed or “organic” interventions. Although these interventions may be informed by sound theory and practice, these locally developed interventions can be hampered in several ways. First, many locally developed interventions are not based on behavior change theory. Such interventions are more likely


Elements of Successful HIV Prevention Interventions

<table>
<thead>
<tr>
<th>Intervention Elements</th>
<th>Implementation Elements</th>
<th>Organization Elements</th>
<th>Consumer/Community Elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has a clearly defined audience</td>
<td>Has realistic schedule for implementation</td>
<td>Has support at highest levels in agency</td>
<td>Is acceptable to participants</td>
</tr>
<tr>
<td>Has clearly defined goals and objectives</td>
<td>Adequately trains staff to be sensitive to the target population</td>
<td>Has sufficient resources for current implementation</td>
<td>Meets specified community priorities and needs</td>
</tr>
<tr>
<td>Is based on sound behavioral and social science theory</td>
<td>Adequately trains staff to deliver core intervention elements</td>
<td>Has sufficient resources for sustainability</td>
<td>Is developmentally appropriate for target population</td>
</tr>
<tr>
<td>Focuses on reducing specific risk behaviors</td>
<td>Clearly defines and maintains core intervention elements</td>
<td>Is flexible and open to program changes</td>
<td>Is culturally competent for target population</td>
</tr>
<tr>
<td>Provides opportunities to practice relevant skills</td>
<td>Uses variety of teaching methods, strategies, and modalities to convey information, personalize the training, and repeat essential prevention messages</td>
<td>Embeds intervention in a broader context relevant to target population</td>
<td>Is gender, race, ethnicity, language, and sexual orientation–specific for target population</td>
</tr>
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</table>

for a population, the intervention activities required to change the risk behaviors, and the expected outcomes of the intervention.)

Second, many locally developed interventions lack a standard protocol that can ensure the intervention is delivered by all staff in the same way every time. One agency reported that it changed an intervention on a daily basis to meet new and emerging needs of their community. This creative approach toward a laudable goal makes it difficult to evaluate, as well as replicate and package, such an intervention.

Third, many locally developed interventions do not have the intensity or dosage of established evidence-based interventions. Changing HIV risk behavior generally seems to require frequent contact with clients over time including multiple skills-building exercises. Fourth, while agency staff may feel strongly that their locally developed intervention works to reduce HIV transmission, they are often without formal outcome data to support this belief.

To foster the greatest likelihood of success, the CDC has identified key practices for locally developed interventions. In its Compendium of Effective Behavioral Interventions, the CDC published a list of 20 common practices used by peer-nominated reputable programs. (See “Elements of Successful HIV Prevention Interventions” at left.)

There are opportunities and dangers inherent in the process of developing a new local program. The key opportunity is developing a new creative intervention that can undergo a program evaluation to determine if it has an effect on behavior. The key danger, however, is that a locally developed intervention will not work and will not control or decrease the burden of HIV disease. Adhering to these 20 recommended practices when designing local interventions will increase the likelihood of success. In addition, it is crucial to plan, monitor, and evaluate program objectives: these processes can both determine that an intervention works and identify why an intervention does not work so that it can be stopped or modified. Eventually, organic, locally developed interventions need to be subjected to progressively more rigorous scientific evaluation: advancing to a randomized controlled trial occurs if early monitoring and evaluation detects positive effects.

Conclusion

Now, more than ever, with the efforts from researchers and the coordinating efforts of the CDC, frontline agencies not only have information about what HIV prevention interventions have been shown to work, but also have access to implementation packages developed from proven interventions. As with any system, this process has its limitations. Health departments and community-based organizations are legitimately concerned with how these interventions will fit within their own communities.

The process still has room to grow. The CDC’s Division of HIV/AIDS Prevention is committed to fostering research regarding the intervention adaptation process and to understanding how adaptations work. In addition, studies of the process of implementing evidence-based interventions will help to identify factors critical for intervention success. In the future, findings from these efforts will need to be incorporated into this process of linking research and practice in order to make evidence-based interventions as broadly acceptable, applicable, and effective as possible.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.
Adapting evidence-based HIV prevention interventions and moving them onto the front lines—the process also known as technology transfer—can fill gaps left by the limited number of available prevention interventions. Adaptation can lead to geographically specific and culturally relevant approaches to the prevention needs of local populations. Adaptation works best when community-based providers, public health professionals, and researchers collaborate. Armed with the input of prevention clients (also known as “consumers”), these collaborations seek to assess the capacity of an intervention to meet the needs of target populations and the community-based prevention providers who engage with these populations.

Studies have found that ease and success of community-based organizations to adopt externally developed HIV prevention programs is enhanced by several factors. Among these factors are stronger organizational focus on HIV, access to intervention manuals, staff training workshops, and telephone consultation; access to a “linking agent,” typically a consultant or staff member who serves as a “translator” of research. Applying an evidence-based intervention also requires that a community-based organization be able to assess the needs and desires of its consumers to make any necessary adaptations.

While technology transfer is generally conceived as the movement from research into practice, the term “technology exchange” may better reflect the mutual benefits that the process conveys to public health professionals and researchers as well as community-based providers. Technology exchange values the input from consumers and other stakeholders (like provider staff) as well as the expertise of researchers. This article discusses the ways in which the technology exchange process can be harnessed to adapt evidence-based behavioral interventions (EBI) to the needs of local populations and conditions.

Adapting Street Smart for Latino Gay Youth

A three-year, multi-method AIDS Project Los Angeles (APLA) study of technology exchange processes confirms the association between some key organizational features and successful integration and adaptation of evidence-based interventions. APLA—and four Latino community-based organizations—took one of the CDC’s proven, evidence-based interventions, Street Smart, and adapted it for use with young Latino gay men. Street Smart is a 10-session, group-level intervention originally developed for homeless and runaway youth. It uses social learning theory to teach cognitive and emotional awareness and offers opportunities to practice problem solving, assertiveness, and harm reduction skills.

APLA conducted focus groups with 42 young Latino gay men, semi-structured interviews with 10 agency staff members, document analysis, and satisfaction surveys of 35 consumers. APLA videotaped intervention sessions in order to assess fidelity to the core elements of the adapted intervention. It also collected behavioral risk data from 54 participants prior to the intervention and 33 participants immediately following it to gauge the intervention’s potential efficacy. The investigative team kept in-depth field notes on other issues related to the delivery of the adapted intervention.

In order to observe how adaptation and implementation unfolded under a variety of organizational conditions, the four partnering organizations differed in terms of size, age, staff characteristics, scope of prevention, and ideological commitment to target population and HIV prevention. The study found that midsized agencies with staffing stability, strong ideological commitments to HIV prevention, historical ties to the target population, active evaluation capacity in the form of dedicated staff, and previously established, strategically targeted, and well-funded prevention services fared better in their efforts to integrate the adapted version of Street Smart. Consumers reported a high level of satisfac-

References

Comments and Submissions

We invite readers to send letters responding to articles published in FOCUS or dealing with current AIDS research and counseling issues. We also encourage readers to submit article proposals. Send correspondence to Rob Marks at rob.marks@ucsf.edu or to Editor, FOCUS, UCSF AIDS Health Project, Box 0884, San Francisco, CA 94143-0884.
A creative approach would foster adaptation using elements common to all effective evidence-based interventions.


Authors
George Ayala, PsyD is the Director of Health Promotion, Community Research, and Capacity Building at AIDS Project Los Angeles. Many thanks to the Life Smart/Nuestras Vidas Team, especially Rose Venegas, PhD, Monica Nuno, Fernando Cadavid, Matt Mutchler, PhD, and the intervention’s consumers for their insightful contributions to the study.

Four Steps to Adaptation
APLA adapted Street Smart using a four-stepped staged process. This included consumer focus groups; agency staff program planning discussions about consumer input and the intervention; staff group training and individualized technical assistance; and process evaluation focusing on consumer satisfaction and staff feedback.

During the APLA-facilitated program planning discussions, a lingering question arose: “How far could we go in making changes to the original intervention and its core elements?” In reviewing consumer input, all participating community-based organizations chose to retain the core elements of Street Smart. To increase the breadth of the intervention, however, they also chose to introduce the four core elements of Hermanos de Luna y Sol (Brothers of the Moon and Sun), a prevention intervention developed for older, Spanish-speaking, Latino, immigrant gay men. Hermanos de Luna y Sol provides opportunities for group reflection and critical self-observation about sex, sexuality, and the culturally specific factors that weaken the capacity of individuals to enact their safer sex intentions.

The group made four types of changes to Street Smart during its adaptation. First, they changed factual content by updating information about HIV, sexually transmitted infections, and the process of coming out. Second, they made cultural and linguistic changes—for example, changing role-play scenarios—to better suit the real-life experiences and age range of the target population. Third, they introduced new staff-authored exercises and changed the sequencing of intervention sessions to support group cohesion, interactivity, and discussions about interpersonal and cultural topics. For example, they moved content about HIV and substance abuse to the latter part of the intervention after topics related to identity, family, coming out, and relationships, and they moved the one-on-one individual interview to the beginning of the intervention to give the facilitator an opportunity to more quickly build rapport and assess the individual learning needs of prospective participants. Finally, they shortened the intervention to eight sessions from its original 10. The process resulted in a hybrid intervention, renamed Life Smart/Nuestras Vidas (Our Lives).

Beyond DEBI: Fostering Creativity
During implementation, agency staff wanted flexibility to make on-the-spot changes in response to differences in the needs of each cohort, a process that revealed the iterative nature of “real-time” adaptation. This suggests that prepackaged approaches, while important, may have the unintended effect of limiting the role staff creativity can play in making interventions responsive to consumers. To foster creativity, it would help to shift emphasis from fidelity to the core elements of a specific intervention toward a synthesis of the characteristics associated with effectiveness. Creating a menu of evidence-based intervention elements from which to pick—depending on the needs and desires of specific groups of consumers—would give providers more freedom to innovate. Such an “a la carte” approach recognizes the striking similarity of the principles that underlie all evidence-based interventions and is an alternative to the diffusion of specific interventions.
Related Resources

Journal Articles


Gandelman AA, Desantis LM, Rietmeijer CA. Assessing community needs and agency capacity—An integral part of implementing effective evidence-based interventions. AIDS Education and Prevention. 2006; 18(4 Suppl. A): 32–43. Emphasizes the need for a clear rationale behind decisions to apply a specific HIV prevention intervention, including the need for an agency self-assessment process to determine which interventions are appropriate and feasible. Offers resources to help programs assess their communities and organizations in order to implement the most effective evidence-based interventions.


Rebchook GM, Kegeles SM, Huebner D, et al. Translating research into practice: The dissemination and initial implementation of an evidence-based HIV prevention program. AIDS Education and Prevention. 2006; 18(4 Suppl. A): 119–136. Presents detailed data from the 69 community-based organizations that are implementing the Mpowerment Project, an evidence-based intervention, focusing on the modifications agencies are making to specific intervention components and the implications of these modifications.


Next Issue

The reduction in maternal-child transmission of HIV in developed nations is among the greatest successes of HIV antiviral treatment. Yet, many HIV-positive men and women who want to become parents still face daunting challenges ranging from stigma to legal and financial hurdles to assisted reproductive technologies. In the Winter 2008 issue of FOCUS, Cynthia Feakins, MSN, NP, a nurse practitioner at San Francisco General Hospital’s Bay Area Perinatal AIDS Center (BAPAC), describes medical interventions that can help people with HIV become parents and explores the psychosocial issues faced by HIV-positive people considering parenthood.

Also in the Winter issue, William S. Blum, LCSW, the Assistant Director of HIV Health Services at the San Francisco Department of Public Health, shares his journey to parenthood as an HIV-positive gay man.