

The influence of social determinants on evidence-based behavioral interventions—considerations for implementation in community settings

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Cite this as: *TBM* 2012;2:137–148
doi: 10.1007/s13142-011-0102-7

ABSTRACT

Over the last decade, the Centers for Disease Control and Prevention's Diffusion of Effective Behavioral Interventions (DEBI) program funded several hundred community-based organizations (CBOs) and health departments in a wide-scale HIV prevention national diffusion effort. We interviewed six California agencies funded to implement one of three group-level DEBIs to identify facilitators and/or challenges to effective implementation. We identified several social and structural factors affecting community members' participation in DEBIs, including language issues, stigma associated with HIV and sexual orientation, homelessness, and incarceration. Age, class, and socioeconomic status also significantly influenced member participation and CBO implementation success. Although changing individual behaviors is the ultimate measure of behavioral intervention/DEBI success, attention must be given to the larger social and structural factors that significantly affect risk for HIV. In fact, the National HIV/AIDS Strategy recognizes these factors as major barriers to HIV prevention and has developed recommendations that address health disparities. We present short-term, intermediate, and long-term strategies addressing social determinants of health and offer suggestions for adapting DEBIs to meet the broader needs of persons prioritized for DEBIs.

KEYWORDS

Research translation, Evidence-based interventions, Community-based organizations, DEBIs, HIV prevention, Social determinants

BACKGROUND

With the emergence of evidence-based interventions (EBIs) in HIV prevention in the last decade, the Diffusion of Effective Behavioral Interventions (DEBI) program at the Centers for Disease Control and Prevention (CDC) embarked on one of the largest diffusion efforts to date. Several hundred community-based organizations (CBOs) and state and local health departments throughout the country [1, 2] have participated in this effort. The national DEBI initiative is based on the tenet that

Implications

Researchers: Will encourage researchers to broaden their scope of study to include the implications of social and structural HIV risk determinants on individuals and their relation to health disparities.

Practitioners: Provide examples of the social determinants which influence the provision of HIV prevention interventions from practitioners' perspective, as well as potential strategies to address them.

Policy Makers: Addresses limitations of reliance on behavioral determinants alone and provides rationale for combination prevention approaches and implications for policy and funding.

evidence-based approaches are necessary to significantly increase HIV prevention behavior and related outcomes [3–5], and the focus of research has been on translating the science to the field of practice. Less attention has been given to how practice can inform research, which is a goal of the current study.

The adoption and implementation of DEBIs in public health practice represented a paradigmatic shift in HIV prevention [6–9], which resulted in new funding mandates requiring agencies to conduct evidence-based approaches [10–12]. Consequently, most initial adoption was not voluntary. As DEBIs continue to be diffused, questions have arisen concerning whether these interventions are responsive to community needs and to their respective social and environmental contexts [13].

Why consider social determinants of health? DEBIs focus primarily on identifying and modifying behavioral determinants that contribute to HIV risk, such as increasing knowledge about and personal perception of risk for HIV, increasing self-efficacy and developing skills for condom use and negotiation or disclosure of serostatus, or changing group norms to promote safer sex or safer practices for drug use [14–20]. While these factors are important and have been shown to lead to behavior change,

they do not address the larger social, environmental, and structural factors that also impact risk for acquisition and transmission of HIV. Broader factors—such as laws that prevent risk-reduction practices; economic conditions, such as poverty, that prevent persons from accessing services that are important for their personal health; or societal attitudes and beliefs including racism and homophobia that increase social isolation—must also be addressed if prevention efforts are to have their full effect [21–25].

Social determinants are comprised of complex, inter-related factors, that often include overlapping social structures and economic systems. These include the social environment, physical environment, and health services—structural and societal factors that are responsible for most health inequities. Social determinants of health are shaped by the distribution of power and resources at global, national, and local levels [21]. In fact, the social conditions in which people are born, live, and work critically influence their individual behaviors [26, 27]. There is increasing recognition of the need to address social and structural conditions that impact an individual's health status but which are difficult to overcome [28, 29].

Structural interventions that address broader societal factors are complex, expensive, and typically come to fruition over an extended period of time [30–34]. Beginning with advocacy at the community level, these interventions often require policy and/or legislative action. Moreover, it may be necessary for social norms to change before structural interventions can be effectively implemented; normative change on a broad scale typically takes years to achieve [12, 30, 31]. Needle and syringe exchange programs provide an example of a structural intervention that required both policy and normative change prior to effective implementation. Only recently did federal law allow the enactment of these programs, decades into the HIV epidemic and long after their value had been demonstrated [35, 36].

Because most evidence based HIV behavioral interventions do not address broader social factors, service providers are sometimes conflicted because their clients' needs frequently fall outside of those required of the DEBI [37–40]. It is important, therefore, that we develop an understanding of how, in the context of DEBI implementation, CBOs identify and address the social determinants that affect their clients. It is equally important to identify the barriers to addressing social determinants. The present study examines these issues by focusing on the experiences of agencies funded to deliver three group-level EBIs during the initial cycle of funding for DEBIs by the CDC. We chose to focus on group-level EBIs because these interventions have been widely disseminated through the DEBI program. We used qualitative methods in order to address prior limitations in implementation research [6, 12].

METHODS

The present study grew out of a broader investigation that aimed to improve our understanding of the adoption, adaptation, and implementation of HIV behavioral interventions [41]. The broader study focused on concepts in the innovative-decision process in Rogers's diffusion of innovations theory [12], which are also reflected in the ADAPT framework [41, 42].

During the original study, the authors asked participants (agency directors and implementers) about the barriers and facilitators to implementing DEBIs, and numerous barriers outside of those reflected in the ADAPT model were identified, namely the array of non-behavioral determinants. The present paper focuses on those social determinants and how agencies addressed them.

Agency selection

Six California agencies directly funded by the CDC to implement one of three group-level DEBIs were invited to participate in this qualitative study. At the time we initiated the study (2006), the CDC was directly funding approximately 25 agencies in the state to implement group-level interventions (GLIs). The selected agencies were similar to the types of CBOs delivering GLIs, were geographically dispersed in the state (i.e., three in Northern California and three in Southern California), and included those delivering at least one of the three GLIs.

The six agencies selected were implementing at least one of the following EBIs: *Healthy Relationships* [14], *Safety Counts* [15, 43], or *Many Men, Many Voices* [16, 17]; two agencies were delivering all three. These EBIs are multi-session GLIs that focus on high-risk populations. *Healthy Relationships* is a five-session small-group intervention focused on men and women living with HIV/AIDS. *Safety Counts* targets out-of-treatment injection and non-injection drug users and has seven sessions that include both group and individual components. *Many Men, Many Voices (3MV)* is a seven-session group intervention that targets gay and non-gay-identified men of color.

Recruitment and procedures

With institutional IRB approval, we contacted the Executive Directors or Program Directors (ED/PDs) at the six agencies chosen for this study. Once all six agreed to participate, we familiarized ED/PDs with the overall goals of the study and scheduled interviews. Interviews were held at a mutually agreeable time and conducted first with ED/PDs and then with staff implementing the intervention. We conducted separate in-depth semi-structured interviews with ED/PDs—those who were responsible for the program outcomes and completion of funding objectives—and with implementers—persons responsible for implementing a majority of the EBI sessions. No ED/PD declined to participate. Only one implementer

declined to participate, and a different implementer at this agency was interviewed. Each participant provided written informed consent prior to participation. Interviews were conducted between June 2006 and November 2007. Agencies received a stipend of \$1,500 for participating in the project to compensate for time and inconvenience. Interviews averaged 60 to 90 min in length and were audiotape recorded and transcribed, with transcripts checked by staff for accuracy.

Interview content

Interviews were developed by the study team and covered a wide range of issues related to selection, adoption, adaptation, and implementation of DEBIs. Data on social determinants were extracted from all sections of the interview; participants' discussions of the factors that facilitated or impeded implementation provided especially rich data on this topic. In the present analyses, we focused on factors affecting the populations at increased risk for HIV who were prioritized to receive the selected DEBI, agency personnel's understanding of intervention requirements, and their assessment of their agency's capacity to effectively carry out the intervention. In addition to discussing implementation of a DEBI, the interviews illuminated broader community issues that are discussed in detail below.

The ED/PD and implementer interviews differed somewhat in emphasis. The ED interview focused more on funding decisions, application procedures, and administrative issues, and the implementer interview focused more on delivery of the intervention (see Table 1 for sample questions from the implementer interview; the full interview is available from the authors). All data analyzed for this study were derived from the interviews we conducted with ED/PDs and implementers at each agency.

Coding

Drawing on the extant literature on social determinants, the investigators identified emerging themes

in the data. Transcripts were read in their entirety in order to develop an initial coding scheme. The transcripts were coded to identify information pertaining to social determinants and barriers to addressing social determinants. As coding unfolded, we recorded and identified recurring themes (i.e., three or more agencies noted the issue) addressing social determinants. Barriers encountered by agencies, as well as strategies they used to improve successful implementation of their intervention, were also documented and are described in the results (i.e., *Addressing challenges to implementation*). Respondents' own words were used to further highlight themes described in detail below. Both authors reviewed and discussed themes and interpretations throughout the analytic process.

RESULTS

We completed interviews with 15 staff members across the six agencies, including one ED/PD from each agency ($n=6$) and nine implementers. The EDs were fairly experienced, having worked in public health and/or HIV prevention for at least 6 years, and some had over 20 years of experience. EDs had been in their current positions from 3 to 10 years. In contrast, some implementers had worked at their respective agencies less than a year, with the longest service being 7 years. Implementers had between 5 and 10 years of experience working in their field. Many of those interviewed were also members of the community that their agency served, and some had been clients prior to their employment.

While there are few published data on characteristics of agency personnel in community-based organizations that deliver HIV prevention, the respondents in our study share similarities with staff we have had contact with in over two decades of conducting HIV-prevention training. Furthermore, while the agencies were purposively selected to meet the study goals, they include an equal number from Northern and Southern California and include

Table 1 | Interview questions concerning implementation

How is [the group-level DEBI that the agency is implementing] going?

What is working well or presenting challenges in implementing the intervention?

- Recruitment for participants?
- Retention of participants for duration of the intervention?
- The project staff (e.g., turnover, skills, buy in, supervision)?
- Structure of the intervention?
- Number of sessions?
- Resources or materials used for the intervention?

We know there may have been a variety of people involved in putting this intervention together and have participated in this intervention. We are curious as to what has come up working across differences regarding culture, HIV status, sexual orientation, gender, race, age, etc.? Can you describe what issues you have experienced?

What surprises have you encountered?

What recommendations would you make to others?

agencies conducting three different group-level EBIs. All agencies received both federal and non-federal funding, and most applied for DEBI funds for financial reasons, regardless of agency size or number of clients served. Specific DEBIs were selected that best met the needs of their priority population.

In the sections that follow, we present (1) data on the social and structural factors identified by respondents as contributing to challenges for DEBI implementation, (2) how agencies attempted to address these social and structural issues in the context of DEBI implementation, and (3) the adaptations made to address these issues and enhance program delivery.

Social and structural factors affecting DEBI implementation

Several factors affected community members' participation in the DEBI, including: language and literacy issues, eligibility requirements for participating in the intervention, legal status, incarceration, and drug use. Factors related to group composition, such as affiliation or identity (e.g., gay-identified or non-gay-identified), large variations in age and socioeconomic status, and differences in sexual practices (e.g., exchanging sex for money or drugs) also affected implementation.

Language—Early on, language posed challenges for some CBOs, particularly when training materials were only available in English. In these situations, many agencies took it upon themselves to translate intervention materials (i.e., into Spanish):

Well, the first change was to change the language, to translate the curriculum. . . . So all the curriculum had to be translated.

Language used on enrollment forms to determine eligibility presented challenges for some agencies due to the complexity and content of the enrollment criteria. In order to recruit potential members into one DEBI, CBO staff members were required to ask detailed questions of drug users. Staff and clients perceived the questions to be sensitive and invasive, thus creating discomfort and eroding trust. Further, the formal style of the questions also evoked suspicion among clients.

...one particular challenge that we're dealing with is the enrollment form. You have to ask them 15 questions which have six parts to each question roughly....So it's more of a clash between the research and the practical. We have a population that's um, hesitant to give out personal information, who if it seems anything formal or government driven or whatever, they're just very suspicious and unlikely to respond....our work...is based on building rapport and having trust,...relationship building is THE most important thing and right now we're

coming in and having an interview, a formal research interview at the beginning.

Identity issues: sexual and ethnic identity—Many DEBIs are developed for specific communities based on risk factors, such as race/ethnicity, gender, and/or sexual orientation, and some interventions combine a number of characteristics in their design and are best suited (and sometimes required) for those who fit all characteristics. For example, *3MV*, which was examined in the present study, was originally designed for African American gay-identified men; *SISTA* is a group-level DEBI for heterosexual African American women, and *VOICES/VOCES* was developed for heterosexual Latino and African American men and women who visit STD clinics [44, 45].

While DEBI interventions are ideally intended for persons at risk for HIV that share all characteristics of the target audience (i.e., being African American or Latino *and* a gay-identified man), some individuals in a given group session may share only one characteristic. One agency director identified group affiliation and related group dynamic challenges among members during implementation of *3MV* when black gay men were recruited from different geographic areas of town and had different levels of education and socioeconomic status. Some lived predominantly in a gay-identified area, and others lived in a part of town that was predominantly African American. During intervention sessions, not all members felt comfortable discussing their experiences as black gay men. In addition, some members from higher socioeconomic (SEC) backgrounds did not share the same attitudes and experiences of their lower SEC members. As the director noted:

...class had to do with even the conversations they wanted to have...regarding relationships....The folks with the higher socioeconomic backgrounds were having different discussions around dating versus folks who were at the lower spectrum that might have been doing things for money....

Additional challenges based on group affiliation were identified by another CBO director who noted difficulties in building group cohesiveness for the DEBI their agency was funded to implement. A variety of factors, including age, social class, and sexual identity, were seen as interfering with group cohesion.

...if you have a 20-year-old sitting with a 40-year-old, it's very different, and we have class differences. We do have people who identify as gay or bi, and some who do not identify...and that's a challenge in having two different groups of individuals in the room. And we also have people who are not a person of color and would say they are...and they're really interested in the material and that's really hard.

Stigma—Stigma can significantly affect persons living with HIV [46, 47] and may also influence recruitment and participation in group-level intervention programs. Many DEBI researchers recognize that social determinants, such as stigma, can influence health behaviors [14, 17, 22, 23, 48]. However, the primary emphasis that current interventions place on individual behavioral determinants may make it difficult to address stigma effectively and can impact DEBI participation among disenfranchised community members. These concerns were mentioned by respondents from several agencies.

A program director who oversaw implementation of *Healthy Relationships*, a group-level intervention for persons living with HIV, described his agency's success with this DEBI but also acknowledged the challenges that many positive transgender members experienced as a result of stigma. This intervention supports efforts to prevent transmission to others and emphasizes disclosure of HIV status. While group members were all HIV positive, there were significant differences between positive transgender and positive non-transgender clients. The stigma of HIV-positive status for transgender clients created significant barriers to participation:

...because to be realistic, most of these clients [at our agency] do sex work for a living....But for them to accept that they're HIV positive, and the potential ramifications that it might have, legal and economic....Because it's a small community....so we have to open up a completely different day for them to feel safe....we have a more challenging time bringing them into this intervention because of that factor, their sex work. So, it's stigma about being HIV positive (and their ongoing sex work).

Legal status and incarceration—Aside from socioeconomic status, stigma, and homophobia, agencies identified other social and environmental conditions that presented barriers to DEBI implementation. These included education levels, incarceration, and legal status. Adapting DEBIs for correctional settings can be tricky, particularly when the intervention targets persons living with HIV, such as *Healthy Relationships*, since most inmates do not self-identify as being HIV positive while they are incarcerated, as described below:

...we pride ourselves on our efforts to keep confidentiality a priority, so it's a hurdle as far as advertising....it's kind of been a struggle that way, because we know they're out there but finding them in the best manner is what's hard.

Other legal issues, such as immigration or drug use, also influenced client recruitment and retention in an intervention for some communities:

They have to move around quite often. They have been pressured by the police. Some of

them, specially the Latino population, they don't have documents to be in this country, so...[they]have to move and they are more persecuted than any other population. Also this population that you're seeing today, tomorrow you don't.

CBO staff implementing their selected DEBI recognized that they could not separate the individual risk behaviors of their clients from the larger social and structural factors that impacted their ability to participate in the intervention.

Drug use and homelessness—One intervention we studied is focused on active drug users; thus, agencies aimed to recruit active users. Recruitment of drug users and homeless persons into interventions proved to be a challenge. While this may not have surprised agency staff, it led them to wonder how intervention participants were successfully recruited and retained in the original research:

...this population is SO challenging...I don't really understand how other sites or how the original research group was able to get people to come in and come in again and come in again...the same group....it's like the most unstable population. These are people who, you see them in the street, you tell them about it, they say, yeah I'll come. You see them an hour before, they say yeah, I'll come, 15 min maybe you see them; we've actually...sent people out like the hour before to round people up, and they don't show up.

Addressing challenges to implementation of group-level DEBIs

Many CBOs made adaptations to address challenges stemming from social and structural factors that were encountered in the implementation of DEBIs, such as recruitment and retention, addressing specific client needs, and integrating the DEBI into other agency services.

Recruitment—Recruitment of appropriate participants into the CBO's selected DEBI was a major challenge experienced by five of the six agencies in our study. Recruitment into a DEBI frequently requires the enrollment of clients that meet specific characteristics for the intervention (see <http://www.effectiveinterventions.org/en/AboutDebi.aspx>). Some agencies used effective strategies for recruitment. For example, in addition to being recruited into an intervention through outreach, some community members were also recruited via “in-reach”—that is, they were currently receiving services or waiting for other services at the agency, such as case management or drug treatment services. In our study, we found that agencies that offered ongoing services for the target community had greater success at DEBI recruitment than agencies that did not. Not surprisingly, these tended to be the CBOs that experienced fewer

challenges overall with their interventions, suggesting that they had more options when faced with recruitment challenges.

We do outreach, but we also do ‘inreach’. So inside the agency we get referrals from case managers, we get referrals from mental health, we get referrals from clinics and educators. So we have both outreach and inreach.

While “inreach” facilitated recruitment of participants at more than one agency, more often than not, recruitment was a challenge. Sometimes there were insufficient numbers of individuals recruited for the intervention, and other times, those recruited did not match the characteristics of the priority population.

...the first few months was real frustrating. It was hard to build a client base. I have to remember the first few social events with one or two people. The team...were pretty upset and devastated...I don't think that they understood the system or process. I mean it just takes time.

...what had happened is that the target population we were looking for, people that weren't the target population were coming in and saying they were.

Retention—While many agencies faced significant challenges in recruiting appropriate clients into DEBI interventions, it was equally difficult to retain participants once enrolled. And most agencies struggled to maintain enough participants to complete the minimum number of sessions required for the group-level DEBIs they were funded to conduct. When asked about the biggest challenges in conducting their intervention, implementers responded:

I think it's more the retention...if we don't do it in a retreat format, the 2–3 day format, getting people to come back consistently at the time they're supposed to is hard. And if they don't come back then obviously they don't go through the whole process.

We first started out six sessions. Have people come back six times. And that actually didn't work out because we lose people by the fourth time. So now we're implementing it three times. In um 2 weeks. But the problem is long hours. However, because we have it 1 week after another, a lot of the people can't come back the next week. So we're dealing with a lot of challenges.

Most clients received some sort of incentive, such as food vouchers, which helped somewhat, but nearly every agency faced problems in attaining the overarching goal of having clients complete all intervention sessions. CBOs that did not experience recruitment and retention as a major barrier went

above and beyond the requirements of the intervention to ensure that sufficient numbers of participants attended their interventions. As one implementer noted:

One thing we've been doing that works is to call the clients. So at least once or twice during the week, the staff call the client. ‘How are you doing? What do you think about the intervention? Are you gonna come next week? We're hoping you'll be able to come. We really like your presence.’...we have dinner for them. So we've asked them; ‘well, what would you like to have for dinner next week?’ Simple things like that. They feel special. Once somebody said: ‘Oh my God, I have not been asked what I like to have for dinner in years!’ So the little things that for us mean nothing, for that client really make a difference.

One agency, after struggling to get their clients to attend sessions, began providing transportation to and from intervention sessions. They had become increasingly frustrated in their previous client recruitment and retention activities, as noted below:

Um, we went through the whole transportation issues, started providing transportation, um, going out to them was a lot easier than having them come to us.

Addition of sessions—Adding sessions may present an additional barrier for some community members and may seem contraindicated, given the problems noted in the prior section. Nevertheless, a few CBOs decided to add a session after completing required DEBI sessions to better address specific client needs or community issues that the intervention did not address:

We've actually added on usually a sixth session... we follow the curriculum for the five sessions and then we hold a sixth [session] and they have time to just ask questions or bond and talk and share.

We talked more about stigma. Homophobia. Internalized homophobia, discrimination. All the Latino cultural factors.

Integration into ongoing services at the agency—Respondents who perceived fewer DEBI implementation challenges tended to incorporate the intervention into existing services at their agency. One agency determined that the DEBI was not strong enough to stand on its own and combined it with other services previously offered to clients. As one implementer said:

The reason that I think we work well is that we have other supportive services in-house. And I don't know if all the [other funded] agencies have

other supportive services as well. If they're not, then it will be a big challenge. [Intervention name] is not a stand-alone program. You need to have other things in place.

In fact, four of the six agencies interviewed incorporated their selected DEBI into ongoing services. CBOs that did not implement their respective DEBI in combination with other services used it as a place holder for pre-existing services provided at the agency:

Yeah—I think we were looking for another intervention that would um, just buy us time and keep us engaged with the clients until they were ready to make a bigger commitment to possibly sobriety, even though that may never happen, and it doesn't have to happen. But it keeps us engaged at least.

Folks that are interested in coming to our housing program, um, I think that's been a fair number of folks. They'll come in for something else and they gotta wait, so in the meantime while you're waiting for that, know about this program, etc.

And for others, incorporating a particular DEBI into existing services allowed for a more comprehensive program overall, which may have helped with recruitment and retention as well:

We have been opening support groups in addition to [DEBI], and the support groups serve in two ways: we can recruit clients from the support groups and then we can offer them out to a support group as they complete the intervention.

[The agency] has a lot of different programs working with people who are [from the target population] so we have our own curriculums [sic] and our own sort of activities, and so I, I would eventually sort-of adapt some of those into the [DEBI] curriculum. That ...it seemed... more, I don't know, relevant, so that the guys actually responded better....

DISCUSSION

Evidence-based behavioral interventions, particularly those promoted via the DEBI program, are required or recommended by funders (e.g., CDC, state and local health departments) because there is evidence that they are efficacious in promoting HIV-prevention behavior. In general, these interventions emphasize personal factors (e.g., perception of risk for HIV, negotiation skills, self-efficacy) and/or changing group or community norms related to high-risk behaviors. In the present study, we identi-

fied a number of social determinants that impacted implementation of DEBIs and chronicle agency attempts to circumvent these challenges. Agencies dealt with the impact of social determinants in a variety of ways, frequently adapting programs to meet client needs. Agencies that were well established in the community tended to employ strategies that enhanced recruitment and retention into the DEBI. Familiarity with their client base and ability to be creative and resourceful facilitated implementation for these agencies.

Most DEBI researchers recognize that social as well as behavioral determinants affect risk for HIV and access to services, and some interventions address these issues [16, 17, 48–50]. Given that behavior is the ultimate measure of whether an individual is at risk or not at risk for HIV transmission, the efficacy of most DEBIs is measured by changes in individual behaviors. At the same time, there is also a need to address the larger social and structural factors, such as homophobia, stigma, discrimination, and poverty, that greatly impact one's risk for acquisition and transmission of HIV and access to prevention and care services [21, 23, 24, 27, 51]. The broader contexts also affect the practicalities of implementing DEBIs because they influence group affiliation as well as recruitment and retention in interventions, particularly for GLIs, where affiliation is key [17, 45, 49, 52]. During the early stages of DEBI dissemination, a lack of attention to the broader social issues in evidence-based interventions may have contributed to an initial lack of “buy in” at the community level and the belief that “interventions in a box” lacked relevance [12, 38, 40, 42].

We found that many agencies were innovative in addressing some of the social and structural barriers they encountered and made adaptations to retain clients by offering meals, providing transportation to and from sessions, or altering the sessions to increase retention. It is likely that the innovations facilitated successful DEBI retention and contributed to implementation success.

Increasing emphasis on social determinants of health

In the following sections, we present strategies for how social determinants, identified in this study as important to program implementation, may be addressed in the context of the current DEBI effort or in future HIV prevention efforts. In this regard, we focus on: (a) strategies that can be—or may already be—applied quickly and fairly efficiently, (b) strategies that will take more time but could be implemented in a 2- to 3-year period, and (c) longer-term strategies that require much greater social change (See Table 2).

Shorter-term strategies—We identified several strategies that could be implemented immediately, including changes in recruitment approaches, efforts to

Table 2 | Strategies to address social determinants of health in DEBI implementation

Short-term strategies (requiring less than 2 years to implement)	
Strategy	Activities or methods
Language revisions	
Translation ^a	<ul style="list-style-type: none"> • Translate intervention into preferred language for intervention participants
Lay terminology	<ul style="list-style-type: none"> • Communicate intervention components in lay or street-friendly terms
Recruitment adjustments	
Modifications to eligibility and enrollment criteria to increase recruitment	<ul style="list-style-type: none"> • Modify protocols to collect risk-related information during later phases of implementation after confidentiality has been established
Formal or informal collaboration with other agencies working with similar communities	<ul style="list-style-type: none"> • Reduce amount of information required for recruitment or utilizing phased-in enrollment to minimize degree of personal information (e.g., legal status, drug use, etc.) collected prior to participation • Increase networking opportunities among agencies delivering same DEBIs or working with similar communities to identify successful strategies
Retention approaches	
Incentives for continued participation	<ul style="list-style-type: none"> • Offer allowable incentives (may vary by funder) based on participation in each session; delivered at each session or cumulative distribution at DEBI completion
Food	<ul style="list-style-type: none"> • Provide food or meals at intervention sessions
Transportation to and from session	<ul style="list-style-type: none"> • Provide transportation to and from session (e.g., bus or other transportation voucher)
Group composition characteristics	<ul style="list-style-type: none"> • Construct group sessions to include participants of similar backgrounds
EBI modifications or adaptations	
Addition of intervention session of interest to, or requested by, participants	<ul style="list-style-type: none"> • Add sessions based on special interests or needs of group members (e.g., pre-release issues for incarcerated, referrals for drug treatment or housing services)
Modification of group composition	<ul style="list-style-type: none"> • Decrease the number of sessions to facilitate group participation • Make other modifications in structure (e.g., reconfigure group sessions to retreat)
Intermediate-term strategies (requiring 2–3 years to fully implement)^b	
Targeted social marketing campaigns	
To address cultural, societal, or religious attitudes	<ul style="list-style-type: none"> • Assess and pilot targeted campaigns to address homophobia, racism, or stigma for men who have sex with men and/or persons living with HIV
Piloting of new programs or services	<ul style="list-style-type: none"> • Implement demonstration programs to assess feasibility of new services (e.g., condom distribution in school-based clinics or correctional facilities, HIV/STD testing, syringe exchange programs, job skill workshops to provide alternative income options for sex workers, etc.)
Formalized faith-based strategies	
Educational in-services for congregation	<ul style="list-style-type: none"> • Conduct HIV in-services by congregation members who are knowledgeable medical providers or educators
Volunteer service initiatives	<ul style="list-style-type: none"> • Deliver prevention updates for specified members, such as adolescents and young adults • Initiate activities to support local HIV organizations (e.g., food bank, clothing, funds) • Coordinate volunteer services for HIV-affected congregation members (e.g., assist with driving patients to medical appointments, delivering meals)
Long-term strategies (requiring more than 5 years to implement)^b	
Increased educational opportunities (e.g., GED programs)	<ul style="list-style-type: none"> • Formalize referral mechanisms to link out-of-school youth to educational tutoring, GED programs • Offer client educational programs, such as reading, writing, ESL, resume writing, and/or other job development skills
Poverty reduction via micro loan or similar programs	<ul style="list-style-type: none"> • Provide job development workshops to increase skills for future employment

Table 2 | (continued)

	<ul style="list-style-type: none"> • Provide stipends or loans to clients completing above programs to prepare for job market (e.g., purchase work clothing, loan for self-employment, etc.) • Help clients locate reputable programs for repairing credit and building assets
Community-building strategies	<ul style="list-style-type: none"> • Combine biomedical, behavioral, social and structural strategies to address multiple ongoing issues in specific, affected communities • Create formal collaborations between implementing programs, local, and/or state funding entities • Develop formal collaborations between federal funding entities
Health care access and utilization	<ul style="list-style-type: none"> • Formalize referral mechanisms to increase health coverage for uninsured patients • Link out-of-care HIV-infected patients to health services as health care reform is enacted
Policies and laws	<ul style="list-style-type: none"> • Implement effective evidence-based strategies (i.e., syringe exchange programs) • Enforce anti-discrimination laws • Increase housing assistance for persons living with HIV to maintain treatment adherence and reduce transmission to others

^a Many CBOs are already implementing these strategies

^b May require approval from funders or other funding sources

enhance retention, and modification in the number of sessions in an intervention.

Several factors related to recruitment and retention were identified as presenting challenges, including eligibility and enrollment questions that were perceived as intrusive and inhibited participation. Modification of enrollment criteria or changing the timing of sensitive questions (e.g., legal status) to a later point in the program, when trust has been established, may increase recruitment. It is also possible that some questions deemed important in the research context are not as critical to obtain when programs are translated into practice.

While DEBI interventions are ideally intended for persons at risk for HIV that share all characteristics of the target audience (e.g., being African American *and* a heterosexual woman), we found that in practice, individuals participating in DEBIs are not as homogeneous. It may be beneficial to conduct focused recruitment with the goal of increasing homogeneity of participants in GLIs. Strategies to address this may include more flexible eligibility protocols—such as smaller group size—placing individuals that share greater similarities together.

Other relatively easy to implement strategies that address factors related to social determinants and may help reduce barriers to implementation include offering incentives to reduce attrition (e.g., transportation, participation incentives). Agencies also found that making additions to a DEBI, for example adding a session that addresses population-specific issues (e.g., transgender issues, Latino cultural issues), enhanced the perceived relevance of the program for clients. Alternatively, reformulating the intervention either by conducting a

retreat or by combining sessions also aided in participant retention.

Intermediate-term strategies—A number of additional strategies that could be implemented in a period of 2 to 3 years may offer avenues for addressing social determinants more directly. As reflected in our findings, racism and homophobia were seen as barriers to intervention participation. Not surprisingly, few DEBIs address such issues directly, particularly those included in the early phases of DEBI diffusion, but more have emerged (e.g., *d-up!*, *Mpowerment*, *3MV*). We encourage continued development of interventions that begin to address these underlying issues. Additional approaches are outlined below.

Social marketing campaigns addressing racism and homophobia—The effects of racism and homophobia on African American and other men who have sex with men have been documented [48, 51, 53, 54]. Strategies that lay the groundwork for addressing issues such as racism and homophobia could be developed. For example, targeted social marketing campaigns to address cultural or societal attitudes toward gay or non-gay-identified men who have sex with men have the potential to reduce internalized homophobia and isolation, encouraging participation in behavioral and other important interventions and could be conducted as a stand-alone activity or in conjunction with behavioral and/or biomedical interventions [54–56]. These approaches could also be used to address discriminatory attitudes toward other marginalized groups.

Housing assistance and job training—Integration of additional intervention sessions, such as job skills training, may be of considerable benefit for some DEBI participants. Provision of housing assistance

for homeless persons is an approach that has been found to increase anti-retroviral adherence, decrease high-risk behaviors in persons living with HIV, and improve overall health [33, 34, 57], and is a recommended target in the new National HIV/AIDS Strategy [58]. While no current DEBIs include this type of approach, these activities could be integrated into behavioral programs with support from funders or tested through demonstration projects to pilot combination prevention interventions.

Biomedical services—Many CBOs already offer medical services in combination with behavioral interventions, such as provision of HIV or STD testing, and they also play a major role in linking infected persons to care. In our study, agencies that provided drug treatment or other services, such as HIV or STD testing, were more likely to retain clients in their DEBIs and, at minimum, were able to maintain communication with them until client-requested services became available. These intermediate strategies, in combination with DEBIs, could result in longer-lasting biomedical and behavioral client outcomes.

Long-term strategies—Other approaches to addressing social determinants, such as microfinance programs [59, 60], may impact HIV prevention but require greater coordination, more resources, and longer periods of time for outcomes to be achieved [32, 47, 57]. Ultimately, longer-term strategies that increase educational opportunities, provide stable long-term housing, reduce poverty, ensure access to health care services—including routine care and treatment—and diminish negative societal attitudes toward persons living with or at increased risk of HIV are needed. These changes will also impact other areas of health, but they will not occur overnight and, consequently, require persistence and resources.

Our study illustrated the unique relationships and connections many agencies have with underserved populations at increased risk for HIV. Such relationships provide a foundation on which to build more comprehensive HIV prevention services. It is important that these relationships continue to flourish as newer biomedical and other combination prevention approaches are instituted because the estimated 25% of individuals who do not know their HIV status [58, 61] are likely to be those who are not accessing care but may be served by CBOs, such as those in our study. Combination approaches that involve formalized collaborations among CBOs, state and local health departments, and medical facilities may prove to be successful partnerships for reaching those most in need of services. CBOs remain a vital component of the prevention equation and, like other partners, possess unique assets that are needed to reduce HIV acquisition and transmission.

Study limitations

There are several limitations to our study. We chose to examine the experiences of six agencies in

California funded to deliver one of three group-level DEBIs during the early stages of DEBI implementation; thus, our findings may not generalize to other geographical locales or to other types of DEBIs (e.g., individual level, community level). While one goal of our study was to identify barriers and facilitators to effective DEBI implementation, we did not explicitly ask respondents about social determinants to HIV risk. Future studies may benefit from queries about these issues, building on the present findings. We were only able to interview one implementer at most agencies, and it is possible that other frontline staff had alternative views of the DEBI process

CONCLUSIONS

We sought to better understand the processes undertaken by CBOs to implement DEBIs with populations that face social and structural barriers. Agencies used a variety of strategies to meet the requirements of funders, while also trying to meet the larger social and economic needs of target communities in the delivery of GLIs. Our findings contribute to a better understanding of translation from efficacy in research to effectiveness in practice, in the context of group-level DEBIs. While interventions focused primarily on behavioral determinants are important, they have limitations. As additional emphasis continues to be placed on public health and biomedical approaches, newer EBIs, or adaptations to existing DEBIs, we hope that programs begin to directly address the myriad of social and structural factors that significantly contribute to health outcomes, including HIV.

Acknowledgments: This work was supported by an award from the California HIV Prevention Research Program (CHRP) (PI: Dolcini, ID05-SFO4/ID05- PHFE-04A). Manuscript preparation was partially supported by grant R01MH085502 (PI: Dolcini). Portions of this work were presented at the 3rd Annual NIH Conference on the Science of Dissemination and Implementation, March 15–16, 2010, and at the United States Conference on AIDS, held in Orlando, Florida, September 12–15, 2010. We thank the following individuals for their contributions at various stages of this project: Linda DeSantis, MD; AJ King; Carol Kong, MPH; Tia Nicole Leak, MPH; Ann O'Leary, PhD; and Stacy Vogan, MPH, CHES. We thank the staff at participating community-based agencies for sharing their experiences with us.

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