Project Synthesis:

A Synthesis Review of Effective Drug Abuse Prevention Programs in the United States

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Summary

Conclusions drawn from this report should be viewed in the context of limitations of our review. Whereas comprehensive and relatively recent articles and reports were favored, our report is not an exhaustive review of the literature. The five core reports on effective programs varied in important ways. The NIDA and CSAP reports only considered programs funded by the respective institutes, and the Drug Strategy report limited its search to school-based prevention programs. Also, these reports varied in terms of the rigor of their inclusion or selection criteria. The NIDA report required that a program had reported empirically-based effectiveness data, and for the most part, were published in peer-reviewed journals. Drug Strategies relied on an expert panel to select effective programs, which most certainly led to great variability of the proven effectiveness of identified programs. The two CSAP reports included programs that had already published outcome results ("model") and those that were too new to have completed outcome evaluations ("promising").

Furthermore, none of the reviews either discussed programs that failed. Naturally, by implication, an assumption of the synthesis review is that program effectiveness is weakened to the extent that elements of effectiveness are absent or under-valued. An analysis of programs that have failed would provide evidence of discriminant validity for our identified elements of effective prevention.

Nonetheless, several general summary points can be made despite the limitations of the synthesis method. The review affirms that some basic elements are common to effective drug abuse prevention. Such programs target well-defined populations, their structures are carefully designed and administered by highly competent staff, and they are implemented in ways to promote its relevance and sustainability. Indeed, these basic principles appear to be essential to preventing many other problems faced by children and adolescents, such as school failure, teenage pregnancy, and juvenile delinquency (Dryfoos, 1998; Nation et al., 2003).

In light of this convergent body of work, the ten common elements offer a conceptual starting point for international scientists and practitioners involved in designing and implementing prevention programs. These elements represent contemporary standards as to what works in prevention across diverse socioeconomic and cultural communities, and they may serve as an efficient and useful guide for building new prevention programs or for expanding existing ones.

It is relevant to consider the implementation of the identified elements in countries with minimal resources. It is our position that all of the identified elements of effective prevention are inherently cost-effective and that they can be adhered to and implemented without extensive financial resources. Clearly, well-qualified practitioners and administrators and the support of community leaders are essential human resources. But the hallmarks of effective prevention -- comprehension, coordination and responsiveness -- are neither guaranteed by vast financial resources nor precluded by minimal resources.

The review also raises questions about future directions of preventive interventions. Clearly, there is a need for more empirical-based outcome research. It was not the norm that the programs in our review had received highly rigorous scientific evaluations. When evaluation data were reported, random assignment, comparison to control or contrast groups, and long-term follow-up evaluation were rare. Also, gender specific content was not typical of programs we reviewed. Gender specialization may be needed for self-esteem building, assertiveness skills, sexuality, and health education. Finally, whereas developmental adjustments were an identified element, the latest research on neurodevelopment (Spear, 2002), has not been integrated into prevention planning. For example, older adolescents can engage in more complex cognitive tasks, such as weighing the pros and cons of unhealthy behaviors, and they can learn more sophisticated approaches for drug use resistance. But younger teenagers will need to be taught simpler, more concrete strategies.
7. **Youth component focuses on social skills.** Social skills training, which was the focus for prevention programs targeting older youth, encompassed two distinct but complimentary models – the problem solving model and the strength-based approach (Clark, 1999). Within these models, we identified three specific curriculum: developing general interpersonal social skills in order to increase positive and pro-social experiences in social settings; building coping skills to address peer pressures to use drugs; and socializing the young person to engage in social activities not involving drug use and related delinquent activities. Effective programs included verbal or written practice when teaching coping skills, such as assertion and negotiation skills.

8. **Parent component focuses on discipline and support.** Programs that included a parent component routinely centered on activities toward improving the two parenting practices at the core of effective parenting: discipline and support (Kumpfer & Alvarado, 1998). **Discipline** behaviors included improving adaptive parental coping strategies, strengthening parental involvement and appropriate monitoring and supervision, establishing concrete and realistic expectations of the child's behavior, and applying appropriate and consistent consequences when expectations are not met (Dishion et al., 1998). **Support** behaviors and values included promoting family togetherness and solidarity (e.g., eating meals together, family-based recreational activities), spending quality time with the child, expressing sincere interest in the child’s hobbies and school work, displaying child advocacy behaviors and attitudes, and incorporating positive reinforcements, such as increasing responsibilities and privileges.

9. **Program structure enlists broad-based involvement in decision making, including ongoing opportunities by stakeholders to refine and shape the program.** Organizational structure of prevention programs received meaningful attention by effective programs. It was common for programs to have a centralized, broad-based decision-making team consisting of administrative staff of the program, affiliated community service providers (e.g., mental health providers, school officials, law enforcement), and an advisory board of funders and youth and parents from the community. All key members of the program had a voice in program design. Thus, the administrative management team was not at the center of the organizational structure. Rather, a bottom-up, consensus-oriented decision making process was in place that involved all major staff and officials of the program.

10. **Several aspects of the program are infused with features that promote its sustainability.** As a general principle, the sustainability of any intervention or prevention program is maximized when it can demonstrate its effectiveness (NI DA, 1997). Thus, the evaluation of a program is vital to sustainability. However, we were struck that many effective programs did not conduct their own formal evaluations. It was common for programs to provide anecdotal or case study evidence, to record only process evaluation data (e.g., how many youth and parents were served; examples of community outreach activities), or to refer to the empirical literature. Yet programs cited several examples beyond outcome evaluation that promoted program sustainability. These features included:
   • adhering to a cost-efficient budget;
   • hiring and retaining high-quality staff;
   • building and maintaining relationships with stakeholders (e.g., formal agreements with community agencies to integrate their services with the prevention program; providing training resources to youth-serving professionals in the community who have the basic skills to carry-forward the prevention program’s agenda); and
   • enhancing the visibility of the program (e.g., hosting events that celebrate program milestones; participating in high-profile or traditional community events such as the county fair or neighborhood walkathon; enlisting the local media to promote the program).
Introduction

Significant progress has been made over the past two decades regarding the identification and dissemination of effective drug prevention strategies (National Institute on Drug Abuse, 1997). In the United States, the drug prevention arena has seen an increase in implementation and evaluation of science-based prevention programs. This movement has been aided by over twenty-five years of prevention research funded by the U.S. federal government, private foundations, and state organizations.

Since 1990, various articles have been published that focus on evidence-based research and evaluation literature, resulting in the identification of “promising” and “effective” prevention programs. These reports include works by the National Institutes of Health (e.g., National Institute on Drug Abuse, 1997, 2004), private foundations (e.g., The Robert Wood Johnson Foundation, 2000), and international agencies (e.g., United Nations, 2002). Also, a handful of academic reviews have been published in refereed journals (e.g., Nation et al., 2003). These publications hold great promise to narrow the gap between science-based effective prevention principles and what is commonly practiced in the community for families and young people. As the standards for accountability become more rigorous for funders and as demands for effective prevention become the norm among practitioners, the importance of identifying the ingredients of effective prevention strategies is heightened. What are the necessary and sufficient components of effective prevention? What evidence-based programs are affordable? How can programs be adjusted and adapted to work in diverse communities and cultures?

Project Synthesis is based on the premise that this body of recent literature provides a unique opportunity to identify core elements of effective prevention. Using a synthesis review method, this report describes key elements of effective prevention. Its audiences are public health officials, policy makers, and funding organizations who desire a greater understanding of basic, necessary features that characterize effective prevention programs. Also, findings from a synthesis review provide a context for further research, including the transportability of these elements to widely diverse cultures, settings and communities.

Review Procedures

General issues. We began the search by using PsycLIT and MEDLINE online indices, and consulting key informants. Three main bodies of the recent prevention literature published since 1990 were identified and considered for integration into the review. The first group comprised of the following academic reviews of relevant prevention literature: Dryfoos’ (1990) review of over 100 prevention programs related to substance abuse, school drop-out, juvenile delinquency, and teen pregnancy; a review of school-based curricula for drug prevention (Elias, Gager, & Leon, 1997); the overview of effective interventions for juvenile offenders by Lipsey and Wilson (1998); the review by Weissberg strengthened the child-parent relationship, and improved parenting skills. Regarding the latter two topics, curricula focused on effective parenting practices (discipline and support) and encouraging pro-social family activities. Programs for older youth (grades 6 and higher) placed great emphasis on building and maintaining relationship with non-delinquent peers, and teaching assertive and resistance skills concerning issues of drug use. Curricula for 6th-8th graders routinely addressed the prevention of the onset of use, owing to the finding that the delaying of the age of onset is associated with a reduced likelihood of a young person developing later a substance use disorder (SAMHSA, 2004).

Effective programs also commonly integrated cultural and community norms, values, and practices into their curriculum. This feature involved more than language translation and staff selection considerations. Rather, it also included more profound adjustments relevant to community and cultural factors that influence receptiveness to the prevention effort by its participants. This distinction has been discussed in the literature in terms of surface structure versus deep structure modifications (Resnicow et al., 2000).

5. Programs expend a meaningful degree of resources on engaging the target population. As in treatment, effectiveness of prevention programs requires high-level engagement by its participants. Effective programs placed a high priority on developing strategies to promote youth and family engagement. This included an appreciation that engagement is enhanced when the program is perceived by the participants as accessible, challenging and entertaining. Specific engagement strategies consisted of use of group- and peer-lead activities, homework assignments involving active participation by both the child and parents, personalizing the program when possible (e.g., holding anniversary events to celebrate and reward accomplishments), and reducing “external” barriers to involvement (e.g., providing transportation; scheduling activities to accommodate participants).

6. Program curriculum spans multiple grades and extends several developmental periods. The elite programs understood the importance of providing enough dosage or program intensity in order for the prevention to have an effect. In many instances, providing some type of follow-up or booster sessions bolstered the program’s impact. Indicated and selected programs adhered to the principle that their intensity was intended to match the risks and problems characteristic of the target youth. Most programs targeted for school-aged youth consisted of curriculum that spanned either the early (grades 1-5) or middle (grades 6-8) school years, or both. Programs limited to the high school students were rare.
Elements of Effective Programs

1. **Prevention curriculum and activities are aimed at altering psychosocial risk factors believed to initiate or maintain substance use.** The prevention field has greatly benefited from the vast empirical literature on the association of psychosocial factors and the onset and maintenance of substance abuse (Hawkins & Catalano, 1992). Indeed, a hallmark of effective programs was to base their curriculum on reducing risk factors and increasing protective factors. Thus, programs were routinely organized around the prevailing psychosocial etiological theories of drug use onset and the development of a substance use disorder. Integrated into program goals and activities were core risk factors (e.g., reducing aggression, delinquency, influences from delinquent peers, and impulsive-like behaviors) and core protective factors (e.g., enhancing parent relationships, relationships with other adult role models, self-esteem, school affiliation, and pro-social recreational activities). Many programs conducted their own needs assessment survey in order to identify the psychosocial risk factors and characteristics most relevant to their community. Other programs capitalized on the rich psychosocial literature in order to identify relevant psychosocial factors.

2. **Programs assume the validity of the gateway hypothesis and, thus, focus on alcohol and/or tobacco prevention.** Nearly all programs that addressed children or young adolescents organized their curriculum around the prevention of the use of gateway drugs (e.g., tobacco and alcohol). While there is some debate as to the validity of the gateway hypothesis, there is supporting evidence (Pentz & Li, 2002). The exception to this element occurred during college-based prevention programs. They tended to focus on the risk and harm reduction associated with binge-drinking.

3. **Multiple influences and settings are targeted.** It was typical for effective programs to build their prevention goals and activities around a multidimensional approach with respect to influences and settings. Multiple influences refer to the principle of not limiting prevention activities to just the youth's behavior, but rather extending the prevention to address two domains that have a major influence on the youth - peers and parents. The characteristic of multiple settings refers to addressing the risk and protective factors in the school, at home, and in the local neighborhood (Kumpfer, 1997). This approach contrasts the once favored “drug education only” prevention practice of the 1970’s which targeted youth and largely focused on psychosocial factors in only the school setting (NIDA, 1997).

4. **Activities and curricula are developmentally and socioculturally sensitive.** Effective programs appreciated the importance that prevention have to be adjusted to maximize their relevance for the target populations. Program recruitment, retention, participation, and impact all suffer when a prevention program does not place a high priority on relevance (Tobler & Stratton, 1997). Developmental adjustments included operational ones, such as a consideration of reading level, curricula tailored to the concrete thinking needs of youth rather than abstract thinking, and social and cognitive development. Furthermore, effective programs adapted their goals for age relevance. Programs that focused on younger youth (grades 1-5) highlighted activities that reduced key risk factors, enhanced core psychosocial assets, and Breenburg (1998) of school and community prevention programs that promote youth competence; and the report by Nation and colleagues (Nation et al., 2003) in which nine general characteristics from effective interventions across four similar areas (substance abuse, risky sexual behavior, school failure, and juvenile delinquency and violence) were identified.

The second group consisted of two more general reports on substance abuse prevention prepared by non-profit organizations. These works essentially represented overviews of prevention findings from projects supported by the respective organization. The Robert Wood Johnson's Moving Effective Prevention Programs into Practice (2000) and The United Nations Office for Drug Control and Crime Prevention Lessons Learned in Drug Abuse Prevention (2002) are the publications in this group.

The third, and most important, set of documents provided the core data for the synthesis review. This group consisted of recent reports (since 1997) that identified and described specific prevention programs rated or viewed by the report’s authors as “effective.” The description of the target programs had to be sufficient in order to allow our raters to evaluate and analyze them on core program characteristics (described below). Our search identified the following five reports: Preventing Drug Abuse Among Children and Adolescents (National Institute on Drug Abuse, 1997), Preventing Drug Abuse Among Children and Adolescents (National Institute on Drug Abuse, 2003), Making the Grade: A Guide to School Drug Prevention Programs (Drug Strategies, 1999), Exemplary Substance Abuse Prevention Programs (Center for Substance Abuse Prevention, 2000), and Exemplary Substance Abuse Prevention Programs (Center for Substance Abuse Prevention, 2001).

Both NIDA reports describe NIDA-funded programs that have been evaluated and determined to be evidence-based. Each report highlights ten prevention programs. The Drug Strategies (1999) report summarizes fifty school-based drug prevention programs that were selected as model state-of-the-art programs by six nationally recognized experts. The two reports by the Center for Substance Abuse Prevention (twelve programs in the 2000 report; twenty-eight programs in the 2001 report) summarize promising and proven programs. Promising programs are judged to have positive initial results regarding their effectiveness and proven programs are rated as already demonstrating scientific effectiveness. The entire list of programs was reviewed and redundant ones were eliminated. This resulted in a total of 110 programs, spanning the different categories of prevention that reflect different levels of risk factors - universal, selective, and indicated. Although our search efforts may not have resulted in an exhaustive coverage of the field, our identified list of programs is sizable enough to satisfy the aims of the analysis.
**Implementations**

A detailed description of each element is provided in the next section. This content analysis led to an identification of fourteen elements. Our next step was to analyze these elements and decide which are the most critical. This step produced a list of ten elements that were characteristic of it. Finally, the raters went through the descriptions of each prevention project to identify and tabulate their characteristics to obtain clarifying information. This step produced tabulations of the frequency of the various elements across all of the rated interventions. Our next step was to analyze these raw data and conceptualize them according to the second-order dimensions. The raters went through an iterative process of reviewing the tabulated data and discussing ways in which they could be conceptualized into mutually agreed upon elements. This content analysis led to an identification of fourteen elements. Each program was then discussed individually to determine which elements were characteristic of it. Final inclusion in the list of ten elements was based on the presence of the given principle in at least 75% of the programs. A detailed description of each element is provided in the next section.

**Rating categories.** The determination of the rating categories reflected both practical considerations for prevention specialists intending to develop prevention programs, as well as to identify dimensions that properly captured the theory, goals, and structure of extant interventions.

We began by reviewing the articles and reports in the first two groups of literature in order to identify broad dimensions that characterize prevention programs from which scoring criteria could be developed. For this purpose, we utilized a set of first-order characteristics (targets, implementation, and structure). Next, all programs described in these publications were qualitatively reviewed by a sub-sample of the authors in order to identify second-order characteristics for each first-order dimension. For prevention targets, we identified the following: what substances are the focus of the curriculum; to whom are the program services aimed; what developmental period is addressed; and what skills are taught or promoted. The following second-order features were identified for implementation: what is the intensity of the intervention; and how are the youth, parent, and community components delivered. The second-order characteristics for the structure dimension are these: how is the management structured; how are decisions made; and what is the sustainability plan. The table below provides a list of these second-order characteristics.

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<thead>
<tr>
<th>Academic Reviews</th>
<th>General Reports</th>
<th>Reports on Effective Programs</th>
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<td>Lipsey &amp; Wilson, 1998 (juvenile delinquency)</td>
<td>Exemplary Substance Abuse Prevention Programs (Center for Substance Abuse Prevention, 2000)</td>
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<tr>
<td>Weissberg &amp; Breenburg, 1998 (youth competence)</td>
<td>Exemplary Substance Abuse Prevention Programs (Center for Substance Abuse Prevention, 2001)</td>
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<tr>
<td>Nation et al., 2003 (substance abuse, risky sexual behaviors, school failure, juvenile delinquency)</td>
<td>Preventing Drug Abuse Among Children and Adolescents (National Institute on Drug Abuse, 2003)</td>
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**Second-Order Characteristics for Each of the First-Order Dimensions**

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<tr>
<th>Targets</th>
<th>Implementation</th>
<th>Structure</th>
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<tr>
<td>Which substances are targeted?</td>
<td>How intensive?</td>
<td>What is the management structure?</td>
</tr>
<tr>
<td>To whom are the program's services aimed?</td>
<td>How is the youth component delivered?</td>
<td>How are decisions made?</td>
</tr>
<tr>
<td>What development period is addressed?</td>
<td>How is the parent component delivered?</td>
<td>What steps are taken to promote the program's sustainability?</td>
</tr>
<tr>
<td>What skills are taught?</td>
<td>How is the community component delivered?</td>
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**Rating procedures.** Next, all raters independently reviewed the descriptions of each prevention project to identify and tabulate their characteristics as a function of the second-order dimensions. In some instances, program directors were contacted to obtain clarifying information. This step produced tabulations of the frequency of the various dimensions across all of the rated interventions. Our next step was to analyze these raw data and conceptualize them according to elements of prevention. The raters went through an iterative process of reviewing the tabulated data and discussing ways in which they could be conceptualized into mutually agreed upon elements. This content analysis led to an identification of fourteen elements. Each program was then discussed individually to determine which elements were characteristic of it. Final inclusion in the list of ten elements was based on the presence of the given principle in at least 75% of the programs. A detailed description of each element is provided in the next section.