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Background Paper

SUBSTANCE ABUSE PREVENTION:
REVIEWING THE BASIC ELEMENTS OF PREVENTION INTERVENTION
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Introduction

With the proliferation of “books on principles,”1,2,3 evidenced-based program (EBP) systems,4 and prestigious reports from many countries and institutions5,6,7 since the late 1990s, one might conclude that the question—“what works in prevention”—has long been answered. But, while these resources represent impressive progress in prevention science and practice, much more is needed to identify how best to install preventive policies, interventions and services in communities to foster healthy children and families worldwide.

In this guide, we looked for the most recent reviews and meta-analyses of the literature to summarize some of the basic elements of prevention from substance use (SU) intervention research. Our review underscores the need for consistent research designs, measurements, and fidelity of analyses across studies. In most instances, there were no analyses to determine critical elements associated with effective interventions. The use of mediational analyses along with simulation modeling would also point out key elements or mediators that are strongly associated with positive outcomes.
Translating the Research into the Basic Elements

The goal of prevention is to foster successful, healthy and functional behaviors in complex societies across the lifespan. Prevention interventions are viewed then as preparing individuals by establishing or reinforcing prosocial attitudes, beliefs, and goals. In addition they provide the skills necessary for the appropriate responses to challenging situations based on the interpretation and evaluation of situational cues such as the availability of tobacco, alcohol and marijuana or other substances. These aspects of prevention intervention are informed by a variety of available theoretical perspectives representing social control, as well as, social learning, the fundamental mechanisms of socialization. Effective prevention interventions are evidence-based, drawing on the accumulated findings of studies regarding effective techniques for achieving positive behaviors and outcomes, e.g., parenting and educating. This process entails the internalization of societal goals, norms, and values associated with acceptable behaviors, and roles and responsibilities as a member of a society.

There is agreement in the prevention field that prevention is a developmental process with exposure to risk changing at each stage, i.e., infancy, early childhood, childhood, preadolescence, adolescence, adulthood into old age. Interventions are designed to take place in the domains where individuals encounter risks as they grow: The family, the school, the community, and, later on, the workplace and their own families. Most interventions target these risks by strengthening the protective factors that reduce the risks and prevent the onset of problem behaviors before they fully emerge.

In 1994, a new risk-based model of prevention was adapted as “the mental health intervention spectrum” by the Institute of Medicine Committee on Prevention of Mental Disorders and published in the Committee’s report, Reducing Risks for Mental Disorders. Three levels of prevention were defined: Universal, selective, and indicated, which represent the level of potential risk experienced by the targeted population. In turn, the prevention programs, designed to address those risks, can be described by the target audience or intervention level as in the following:

- **Universal** programs are designed for the general population, such as all students in a school.
- **Selective** programs target groups at risk, or subsets of the general population, such as children of drug abusers or poor school achievers.
- **Indicated** programs are designed for people who are already experimenting with drugs.

This draft document summarizes a review of the literature as to what components or elements that were found in evidence-based or effective prevention practices. The material presented here is not exhaustive but is designed to stimulate discussions among researchers, practitioners, and policy makers toward the development of comprehensive, comprehensible, and practical guide to establish prevention programming in communities.

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*a Social norms are the behaviors and cues within a society or group. This sociological term has been defined as “the rules that a group uses for appropriate and inappropriate values, beliefs, attitudes and behaviors”.*
Critical Family-Based Prevention Elements

The family (particularly parents or caregivers) is, perhaps, the key socialization agent for individuals becoming a part of the society into which they are born. Without entering into a long historical account of perspectives on the relationship between parents/caregivers and the children they care for, recent writings suggest that this relationship is shaped by its cultural or societal context and by the interaction between child and caregiver. There are several dimensions or domains of the parent/caregiver-child that make the socialization process successful. Among these are the following:

- Forming an attachment to the caregiver and, thus, the family;
- Engaging in sharing or reciprocity relationships;
- Acquiring behavioral self-control; and
- Learning and internalizing accepted norms, values and age- and gender-specific behaviors of the community/society.

Positive parenting has been found to reduce early childhood oppositional problems and middle childhood antisocial behaviors, including adolescent delinquency and adolescent drug use. Much of the research that forms the foundation for family preventive interventions draws on studies of effective parenting. Family-based preventive programming can be viewed as including programs that focus on family dynamics and those that emphasize parenting skills and practices. The former types of programming address family dysfunction while the latter support parenting competencies. Various environmental stressors disrupt effective parenting. These include parental substance use; economic hardships; cultural stress due to immigration and clashes between cultural worlds; divorce, parental death, or remarriage; as well as, community disintegration. These stressors impact how family members interact with one another and challenge parental skills.

This review focuses primarily on the latter types of interventions and not on family therapy. Essential to helping families, then, is to determine what is needed. Several diagnostic and screening instruments are available for assessing what intervention strategy is needed. Quality family therapy also addresses parenting competencies in the context of improving family dynamics and functioning.

Prenatal, Infancy and Early Childhood
Sufficient evidence is available showing that the consequences of mothers’ intake of alcohol, nicotine, and drugs during pregnancy negatively affect developing fetuses. Therefore, successful cessation and treatment services should be accompanied with early parenting training that emphasizes the importance of good nutrition and the avoidance of these substances during pregnancy, as well as, education about infant care and infant development, particularly, appropriate infant stimulation exercises.

Women who themselves have a history of problems or who come from disruptive families benefit from programs, such as, the Nurse-Family Partnership (NFP) developed by David Olds. This program was designed to help women improve their prenatal health and birth outcomes, parenting skills, and personal development. The NFP program has undergone multiple evaluations with consistently positive outcomes. NFP components include:
• **Content**
  o Improve the outcome of pregnancy by enhancing maternal healthy behaviors during pregnancy (e.g., nutrition, abstention from use of substances, prenatal care).
  o Improve the child’s health and development (e.g., training in early parenting skills, appropriate nutrition, and stimulation exercises).
  o Improve the mothers’ own personal development (e.g., family planning, educational achievement, and participation in the workforce).

• **Structure**
  o Visitation by trained nurses
    ▪ Once a week for first month after registration
    ▪ Every other week through delivery
    ▪ After delivery, once a week for first six weeks, then every other week until the 21st month postpartum
    ▪ From month 21 through 24 postpartum, once a month
  o Nurses are part of a team with a supervisor associated with a community agency
  o Limits on number of mothers per nurse (generally no more than 25)

• **Delivery**
  o Visits range from 60-90 minutes
  o More visits during periods of crisis
  o Link to health and human services
  o Records are kept on each family, their needs, services provided, progress made, and outcomes attained.

**Ages 2 to 8 Years**
Children’s earliest interactions occur in the family before they reach school. They may encounter risk when they experience interaction with parents or caregivers who fail to nurture; have ineffective parenting skills in a chaotic family setting; and the caregiver is a substance abuser or a person with mental illness. Such deficiencies impede reaching significant developmental competencies and makes a child vulnerable and at risk for negative behaviors later on. By age 2 or 3 years, children begin manifesting disruptive behaviors, temper tantrums, are disobedient or demonstrate destructive behaviors. Effective family interventions at this stage assist parents to cope with these issues, depending on the level of severity. Less severe behaviors warrant parent training activities that help parents learn and implement strategies to handle these behaviors in a positive manner. More severe behaviors require family therapy aimed at modifying both family roles and structures. For this age group, as well as, for the others, the intensity of the intervention should be based on an assessment of what is needed.

**Middle Childhood**
During middle childhood increasingly more time is spent away from the family most often in school and with same age peers. Therefore, competencies developed during infancy and early childhood will greatly impact the extent to which the school-aged child will cope and bond with school and prosocial attitudes and their involvement in prosocial activities. Mental disorders that have their onset during this time period, such as, anxiety disorders, impulse control disorder and conduct disorders, may also impede the development of healthy attachment to school, cooperative play with peers, adaptive learning, and self-
regulation. Children of dysfunctional families often affiliate at this time with deviant peers, thus putting themselves at risk for negative life choices, including drug use, alcohol misuse and involvement in illegal activities. Parents and adults play a significant role in their child’s development in the following ways.

- Setting rules for acceptable behaviors;
- Close monitoring of free time and friendship patterns;
- Helping to acquire skills to make informed decisions; and
- Being role models for their children.

**Adolescence**

Adolescence is a developmental period when youth are exposed to new ideas and behaviors through increased associations with people and organizations beyond those experienced in childhood and is a time to “try out” adult roles and responsibilities. Adults, other than parents, such as teachers, family friends, coaches, employers and co-workers expose adolescents to other perspectives, beliefs and behaviors. In addition, during adolescence, peers, dating, and engaging in activities away from home, such as field trips, sports events, or camp also strongly influence the development of new ideas, skills, and competencies. This is a time when individuals assume more adult roles and behaviors. It is also a time when the “plasticity” and malleability of the adolescent brain suggests that, like infancy, this period of development is a time when interventions can reinforce or alter earlier experiences. The desire to assume adult roles and more independence at a time when significant changes are occurring in the adolescent brain also creates a potentially opportune time for poorly thought out decisions and involvement in potentially harmful behaviors, such as risky sexual behaviors, smoking and drinking, risky driving behaviors and illicit drug use.

Positive parenting is at the heart of parenting programs. Sanders summarizes this concept in his “five core principles” of positive parenting:

- Safe and engaging environment with safe, supervised, and protective environments that provide opportunities for exploration, experimentation, and play.

- Positive learning environment in which parents respond positively and constructively to child-initiated interactions through incidental teaching and use of other techniques that assist children to learn to solve problems for themselves.

- Assertive discipline, as opposed to coercive and ineffective discipline, practices including selection of ground rules for specific situation; discussing rules with children; giving clear, calm, age-appropriate instructions and requests; presenting logical consequences; using quiet time and time out; and using planned ignoring.

- Realistic expectations as to what is developmentally appropriate for the child and realistic for the parents.

- Parental self-control whereby parents view parenting as part of a large context of person self-care, resourcefulness, and well-being to encourage their children’s social and language skills, emotional self-regulation, independence, and problem-solving abilities.
Parenting Programs
Parenting programs should enhance family bonding and strengthen relationships within the family. They should include parenting skills; practice in developing, discussing, and enforcing family policies on substance abuse; and training in drug education and information. Effective parenting programs help parents to strengthen protective factors in their children by teaching them:

- Better family communication skills, developmentally appropriate discipline styles, firm and consistent rule enforcement, and other family management skills.
- More emotional, social, cognitive, and material support for their child, which can include help with homework, meeting their children’s financial needs.

Benefits of taking a more active role in their children’s lives, e.g., monitoring their activities, providing consistent rules and discipline, and being involved in their learning and education.

It is recommended that in addition to enhancing the above, parenting programs that have a focus on substance use should include:

- Information and education for parents on drugs and their effects.
- Skills for developing, discussing, and enforcing family policies on substance abuse.
- Emphasis on parental monitoring and supervision and include skills, such as, rule-setting; techniques for monitoring activities; praise for appropriate behavior; and moderate, consistent discipline that enforces defined family rules.

Parental Engagement
The greatest challenge is to engage parents in the interventions. Several researchers offer their experiences to enhance parental engagement, including making home visits prior to family therapy, using ‘soft clinical skills that are supportive and emphatic, that minimize confrontation by reframing what are viewed as the problem and the cause, and the involvement of both parents and the child in the process. Spoth and Redmond suggest flexibility in the delivery of the intervention and use of social marketing strategies to better understand ways to engage and retain parents. Oftentimes, offering a menu of interventions is more motivating to parents. The Triple P program has been structured to offer a tiered continuum of services to parents in order to create a family-friendly environment that supports parents and offers programs that are tailored to the self-defined need of parents ranging from those that are universal to those that are more targeted. In addition, Triple P programs offer flexible delivery formats ranging from individual and group interventions to self-directed interventions and utilize the media, as well as, networks of existing professionals who are trained to deliver the programs.

What Doesn’t Work in Family-Based Prevention
- Undermining parents’ authority.
- Lecturing or using other primarily didactic strategies.
- Focusing exclusively on the child.
- Using poorly trained staff.

Critical School-Based Prevention Elements
For most of these effective interventions in more industrialized and complex societies, the school is the obvious and appropriate setting to reach children. School and education-related groups that provide the needed skills to transition from childhood into the expected
adult roles are important to any society. In addition to the family, educational settings are major socialization institutions that reinforce societal values, norms, and acceptable behaviors. Furthermore, in general, these institutions also provide protective environments for children where they should feel safe.

Before children enter school, however, their interactions with family, especially parents, can present serious risks. Most of the intervention research in schools has involved long-term follow-up field trials, which have been able to follow youth from childhood through high school, if not longer. Thus, the research takes children from elementary age before they are exposed to substance use through junior and senior high school when they are most at risk. So the results of prevention can be measured once they are through the primary drug using years.

Sloboda in 2009, summarizes some of the “elements of prevention” from meta-analyses and other reviews of school-based programs to prevent substance use dating from the 1980’s through 2007, which focused on identifying the common elements in programs with positive outcomes. These, which used data from large numbers of studies, were supplemented by more qualitative analyses comparing components of effects programs against each other. Both approaches identified critical elements:

- Addressing normative beliefs of adolescents about the prevalence of substance use (SU) by peers;
- Reinforcing perceived negative consequences of SU, especially related to adolescence;
- Providing life skills such as communication, decision making, and resistance and opportunities to practice these skills around real-life situations;
- Also, active engagement of students in the education process.

While these elements are supported by extensive research, caution is suggested because of recent findings, which have shown more limited effect sizes. These suggest that other factors may be at work to effectively impact substance using behaviors or those factors found successful among adolescents of the 1980s and 1990s may not achieve the same outcomes for adolescents of the 21st century. Also, in randomized trials, when comparisons are drawn with control groups, often the widespread availability of prevention programs means that the controls may have been exposed to some drug prevention efforts. Thus, the comparisons are not as dramatic with far smaller differences found.

There are three aspects of the school environment that provide intervention opportunities:

1. School culture, that is, norms, beliefs, and expectancies, and school bonding, which connects the individual to the school experience and community;
2. School policy or social control, the most common approach to disciplinary policies and procedures; and
3. Classroom curriculum or packaged programs.

**School Culture and School Bonding**

Derived from studies that suggest an individual-environmental interaction, these interventions are designed to create a positive normative environment. The common elements include the following:

- Creating antisubstance/nonsubstance using settings;
- Dispelling misconceptions regarding expectancies (positive experiences) associated
with the use of tobacco, alcohol, and other drugs;
• Establishing comprehensive programs that involve students, school administrators, and, when appropriate, parents/caregivers.

Such interventions are designed to promote school bonding, enhance students’ interpersonal skills, and commitment to positive values, and develop a classroom and schoolwide atmosphere of caring (safety, respect, and helpfulness). In one such program, the findings showed statistically significant lower rates of alcohol and marijuana use and marginally lower involvement in delinquent behaviors for students who attended schools where the program was properly implemented.

Some programs specifically target school bonding, which involves some of the following elements:
• Focusing on early years; that is, preschool to middle school;
• Enhancing competency in reading and math;
• Providing interpersonal skills to enable students to relate positively with peers and adults;
• Involving parents in communication and parenting skills and in school activities.

In a meta-analysis that compares outcomes of interventions on three risk factors for problem behavior—academic performance, bonding to school, and social competency skills—the most convincing evidence of the relationship was found for school bonding. Positive changes in attachment and commitment to school resulting from the preventive interventions were consistently accompanied by positive changes in problem behavior. Improvements in academic performance produced moderate changes; while social competency produced improvements, but only when measured by outside observers, not self-report.

School Policy
While there have been limited studies looking at policies within schools, Pentz (2003) suggests there are four types of formal regulations often found in schools: (1) Those that focus on the production or distribution of substances and those that regulate price and the conditions of use; (2) Those that control the “flow of information” regarding substance use such as warning labels; (3) Those that directly regulate consumption (e.g., use of prescriptions and monitoring use by physicians); and (4) Those that declare use as illegal (e.g., minimum drinking age, sanctions against possession of illicit drugs.)

Common elements or principles of effective school policy approaches to impact substance use include the following:
• Reducing or eliminating access to and availability of tobacco, alcohol, or other drugs;
• Addressing infractions of policies with positive sanctions by providing counseling or treatment and special services to the students rather than punishing them through suspension or expulsion;
• Policies should not disrupt normal school functioning;
• Policies should address the full range of drug-using behaviors from initiation to progression to abuse and dependence and relapse;
• Policies should have a small number of focused goals;
• Policies specify the substances that are targeted;
• Policies should reflect and be reflected in other community prevention efforts;
• The student body, faculty, and students should be involved in developing the policy;
• Policies should provide positive reinforcement for policy compliance;
• Policies should provide systematic training for policy administrators and educate the target population about participation in policy aims.

Other policy initiatives outside of school, most often directed at tobacco and alcohol use prevention, will be addressed under Community below.

**Classroom Curriculum**

Several researchers have conducted meta-analyses of the data from studies of both universal and indicated programs\(^{44,45,46,47}\) while others conducted program content analyses and surveys of prevention researchers\(^{48}\) to determine common elements of effective interventions. There have been consistent findings across all of these approaches.

Results of one meta-analysis\(^{49}\) suggest that targeting middle school aged children and designing programs that can be delivered primarily by peer leaders will increase the effectiveness of school-based SU prevention interventions. The evidence also suggests that such programs need not be lengthy; and programs teaching social competency skills targeting higher risk youth may yield stronger effects than targeting the general population. In contrast, some research has suggested that targeting nonusers with competency skills before they are exposed to such substance use might produce iatrogenic effects.\(^{50}\)

Common elements of universal/indicated curriculum include the following:

• Dispelling misconceptions regarding the normative nature and expectancies of substance use (i.e., the prevalence and positive/negative effects of use);
• Impacting perceptions of risks associated with substance use for children and adolescents (i.e., emphasizing immediate consequences, usually social, not long-term);
• Providing and practicing life skills, including making decisions, especially about substance use; communicating these decisions; and resistance skills to refuse the use of tobacco, alcohol, and illicit drugs using authentic scenarios;
• Providing interventions and boosters over multiple years into middle and high school when students are most at risk.

In a recent “review of reviews,” Peters et al (2011)\(^{51}\) identified five effective elements of school health promotion, which were found to be similar across three behavioral domains: substance abuse, sexual behavior, and nutrition. These include the following:

• Use of theory with specific reference to social cognitive theory;
• Addressing social influences, especially social norms;
• Addressing cognitive-behavioral skills;
• Training of facilitators;
• Including multiple components.

The conclusion was that curricula with these features can be integrated across these topics to provide students a more comprehensive health promotion intervention addressing three important public health risks.

Another meta-analysis\(^{52}\) focused on universal school-based social-emotional development programs and evaluated their impact on positive social behavior, problem behaviors, and academic performance. Compared to controls, SEL participants demonstrated significantly
improved social and emotional skills, attitudes, behavior, and academic performance that reflected an 11-percentile-point gain in achievement. Classroom teachers were able to conduct these interventions. Others have suggested that these type of interventions, which do not involve specific drug information or peer resistance strategies, can avoid the possibility of iatrogenic effects when used with young children.

**What Doesn’t Work in School-Based Prevention**

In her 2000 article, Tobler summarized what does and does not work in interventions. She found the following content and delivery features that do not work.

**Content**
- Failure to include short-term consequences
- Failure to address perceptions of peer drug use
- Failure to address media influences on prodrug attitudes
- Addressing only ethical/moral decision making
- Teaching values
- Failure to provide interpersonal skills, particularly drug refusal skills
- Having only an intrapersonal focus
- Focusing only on self-esteem building

Others have identified “drug information only” interventions without immediate consequences to be ineffective. A recent “review of reviews” identified fear arousal as non-effective as well. The infamous “scare tactics” of the 1970s are no longer incorporated into education.

**Delivery**
- Passive participation as primary delivery strategy
- Didactic or lectures only
- Having teacher-centered class discussions
- Having unstructured dialogue sessions
- Depending primarily on effective classroom management techniques without a drug prevention program

Another overview of school-based programs suggests that there be no graphic presentations of use in videos. Also, grouping at-risk youth together in a peer group intervention has been found to be counterproductive.

**Critical Community-Based Elements**

There are several types of community-based preventive interventions that try to reach universal populations with public health warnings, health promotion messages, and information on legal or regulatory sanctions addressing substance use. These include:
- Environmental or policy-related interventions;
- Media-based strategies, including campaigns and outreach approaches;
- Multiple evidence-based (EB) school and family interventions; and
- Multi-component interventions composed of effective combinations of many of the above.

Key to the success of any of these approaches is having a community infrastructure in place to coordinate and sustain prevention programming. Many community settings lack an
infrastructure to plan, implement, and sustain the intervention over time. Success in sustainability generally occurs when the interventions are supported by established community organizations, such as, schools, health centers, or social service agencies. Incorporation of prevention practices into routine agency operations tends to assure the needed manpower and resource allocation for continuity. But, even with an existing infrastructure, it will be important to provide training and other support that can update EB practices and deliver high quality prevention programming. The effectiveness of EB practices depends on implementation fidelity and application to the populations, culture, and environments of communities. Unlike clinical interventions, in most situations there is not a central oversight group for substance use prevention programming that offers credentialing or certification of prevention specialists and assures the delivery of the most effective prevention programming and services possible.

Community Coalitions/Partnerships
One type of organization that has received much attention over the past 25 years has been the community coalition or community partnership. These groups were originally conceived as interventions in and of themselves. Evaluations conducted to determine the effectiveness of community coalitions highlighted the important role of these groups to support ongoing prevention programming. Zakocs and Edwards through their review of the literature found 55 factors associated with community coalition effectiveness around 6 coalition-building factors: Formalization of rules/procedures, leadership style, member participation, membership diversity, agency collaboration, and group cohesion. These factors have been mentioned in several similar reviews.

A recent 2010 review of community coalitions found that those that have been found to be effective served three major functions: They create collaborative capacity across diverse organizations (health, social service, schools, faith-based); they help their communities develop the capacity to build the social capital needed to address community health and social issues; and, they become the agents of change at the local level through strong policies or regulations; influencing health behaviors, and supporting the delivery of services. Most coalitions are formed around one or related issues, such as, substance use. Several reviews have indicated the following:

- **Leadership**: Organizational capacity, commitment, and vision
- **Membership**: Diverse representation of community sectors and gatekeepers and reflecting diverse cultural groups who are committed to the success of the coalition
- **Structure**: Well-defined rules and responsibilities with a governing body and active steering committees
- **Operations and Processes**: Well-defined processes for communications, decision-making, and conflict resolution
- **Strategic Vision**: Well-articulated and embraced reference for all of the coalition’s activities and future direction
- **Contextual Factors**: Being aware of external conditions or situations that may impede or enhance coalition activities and readiness to make appropriate adjustments.

These studies also found that not all communities are ready to build coalitions. Several ‘readiness’ surveys and guides are available for communities who want to establish a coalition. These guides help groups determine where they are in the building process and
what they need to do to go to the next step. Edwards et al.\textsuperscript{62} defined nine stages of readiness. These include:

**Nine States of Readiness**

- **No Awareness:** There is no agreement on the issue being a community problem.
- **Denial/Resistance:** Some community members see that the issue is a concern but there is little acknowledgement that it is a local concern.
- **Vague Awareness:** Many feel there is local concern but there is no motivation to address it.
- **Preplanning:** There is recognition that there is a problem and something needs to be done about it however, what actions are need are vague.
- **Preparation:** Active leaders begin planning in earnest. The community offers modest support of their efforts.
- **Initiation:** Activities begin.
- **Stabilization:** Activities are supported by community decision-makers and staff are trained.
- **Confirmation/Expansion:** Efforts are underway and community members feel comfortable about them and support expansion of the efforts and local data are regularly collected and reviewed.
- **High Level of Community Ownership:** There is a full understanding about the issue, its epidemiology, causes, and consequences, and quality evaluation efforts are in place and guide new activities.

The renewed interest in community coalitions has lead to the development of tools to help community groups conduct needs assessments, match interventions to need, and to conduct ongoing evaluations to monitor progress.\textsuperscript{63,64} These efforts have resulted in the effective delivery of EB practices that are sustained over time.\textsuperscript{65,66}

**Multi-Component Interventions**

Finally, a review by Carson et al.\textsuperscript{67} reports that when compared to no-interventions or single interventions, well-coordinated and widespread multi-component community interventions determined and/or implemented by community members have demonstrated greater effectiveness in influencing smoking behaviors. These components generally include the education of tobacco retailers about age restrictions, mass media campaigns, and school- and family-based programs. The combination of interventions serves to reinforce non-substance use norms. Although, as will be noted below, environmental interventions are effective, generally regulations themselves only limit access while interventions that target intentions to use have longer term impacts.

Many community efforts combine school and/or family with community efforts that generally support the major goals and themes of the more direct programming in the school or family. In a review of the long-term impact of effective school-based prevention programs on tobacco use, Flay (2007) included programs that have 15 or more sessions, and that had both short- and long-term effects. There were two school-plus-community programs here. He also included programs that had large effects and were large enough to suggest medium- and long-term impact. The only school-plus-community program that was in this grouping was Project SixTeen,\textsuperscript{68} which included several community interventions: Media advocacy, youth anti-tobacco activities, materials for families on tobacco use, and reducing youth access to tobacco products. In his meta-analyses of the findings from these studies, Flay concludes that interactive social influences or social competence smoking
prevention programs that provide at least 15 lessons offered in upper elementary or middle school and into high school produced the best medium-term results when students were in high school. The added community dimension increased the expected effect size.

**Policy or Regulations**

Environmental policy or regulatory prevention strategies are particularly effective for use of alcohol and tobacco. Holder (2004)\(^69\) outlines strategies to restrict access to alcohol including:

- Restricting retail access (e.g., underage drinking and purchase laws, responsible beverage serving practices);
- Reducing the convenience of retail alcohol (e.g., density of alcohol outlets, days and hours of sale, lower the alcohol content of beverages);
- Reducing social and third-party involvement (e.g., party patrols, reducing third-party purchases and provision of alcohol);
- Increasing sanctions against sale/service to youth and sanctions against youth from possession (e.g., legal liability concerning sales to minors, zero tolerance laws);
- Altering the environment of drinking (e.g., graduated licenses, administrative license revocation).

Regulations regarding tobacco access are similar to those for alcohol. Increased excise taxes, limiting retail outlets, impeding sales to youth, and imposing smoking restrictions have been found to be effective in preventing the use of tobacco.\(^70\) Toumbourou et al. (2007)\(^71\) have summarized findings from studies on regulatory interventions designed to limit supply of drugs, motivations to ‘conformity’, and controlling access and imposing criminal sanctions on use and sales of illicit drugs. Overall, the findings from these studies have not been consistent. Assessments of approaches, such as, taxation resulting in increased prices for all of these substances, and restricting access, have had the most consistent positive outcomes, but the research for other aspects is complex and measurements not standardized.\(^72,73,74\)

There are two major issues with policy or regulatory interventions. First, all of the research emphasizes that effectiveness is dependent on consistent implementation. So while, for instance, restricting access to alcohol and tobacco may be very effective in reducing the initiation and use of these substances by youth, unless retailers check identification for age, there will be no impact at all. Second, regulations impose social controls on individuals and groups, but are not successful alone in creating a non-use norm, or in providing sufficient information to impact decisions and intentions not to use.

**Mass Media Campaigns**

In their review of 19 longitudinal studies of the impact of smoking advertising on the initiation of smoking by adolescents, Lovato et al. (2011)\(^75\) found consistently that exposure to these advertisements increased the likelihood of adolescents to smoke. Dose-response and the temporal relationship between exposure and smoking onset was a consistent finding across studies. Similar findings by Austin et al. (2006)\(^76\) were found for alcohol advertising.

Brinn et al (2011)\(^77\) in their evaluation of the effectiveness of mass media interventions to prevent smoking in youth found that when planned properly, these interventions also are
effective. They found that effective prevention programming had the same essential components as Lovato et al.’s review of tobacco advertising; i.e.:

- Long duration or exposure for a minimum of three consecutive years;
- Intensity with a minimum of four week’s duration across multiple media channels (between 167 and 350 TV and radio spots);
- Timing and type of broadcast tailored to the audience’s preference;
- Combining media messages to school-based curricula and other community-based preventive intervention components.

The National Academy of Sciences (2007)\(^7\) in its review of the effectiveness of media campaigns against tobacco use found that although the effect sizes of media evaluations are moderate, on average about 6 percent, and the costs associated with the achievement of these effect sizes is high, when delivered broadly, the impact represents a substantial number of youth. The report, *Ending the Tobacco Problem: A Blueprint for the Nation*, adds the following suggestions for effective campaigns:

- They should be research-based, with rigorous testing of the messages;
- Have periodic evaluation of their effects; and
- Be independent from political pressures that might lead to efforts being driven by political agendas rather than by data.

There is support for these media campaign components for alcohol-related campaigns as well. Elder et al. (2004)\(^7\) further added:

- Message content should involve themes to motivate the desired behavior including consequences of alcohol use and social intolerance of negative alcohol-related behaviors.

An attempt to develop a mass media campaign against the use of marijuana was launched by the U.S. White House Office for National Drug Policy in 2000. This campaign was designed based on the foregoing principles and was evaluated using a rigorous research design that included both cross-national surveys, as well as, surveys of a panel of adolescents and their parents. The impact of the campaign\(^8\) was demonstrated not to be effective overall although recent analyses indicate that it may have had an impact on adolescent girls.\(^8\) McElrath et al. (2011)\(^8\) suggest that more attention should have been paid to age-appropriate and characteristics of youth. They also found that perhaps more emphasis on marijuana was needed.

**What Does Not Work in Community**

- “Scare tactics” or knowledge-only messages have long been debunked in media or other youth-targeted strategies;
- One-time efforts of coalitions or other community organizations that are not sustained do not produce normative change in the environment;
- New regulations or legislation against smoking, drinking, drug-free zones, driving limitations, without accompanying enforcement has little or no effect.

**Critical Elements of Workplace Prevention**

Individuals’ placement in any society is very much related to what contributions they make toward the success of their social group, their community, and to the greater society. This placement may be predetermined by one’s family of origin or by one’s own efforts. In
either case, much of an individual’s life is spent working either alone, as a farmer, or within a group, as in a factory or in a government office. In both situations, working provides many benefits including financial or subsistence resources, social status, a role and identity in society, and a social network. Working, however, can have negative, in addition to positive, effects on physical and mental health and behavioral disorders. Environmental stresses, such as insufficient rainfall or natural disasters, high demands placed on production without either appropriate compensation or under discrimination, job insecurity, and aggression, present greater risks for workers who are vulnerable. On the other hand, under appropriate conditions—good weather, collegial interactions and positive support from supervisors—the workplace becomes a healthy and fulfilling environment for even the most vulnerable.

Researchers examining epidemiologic data on the relationship between job stress and mental and behavioral disorders suggest risk and protective factors that are present in the workplace: psychological demands of work and the amount of control or decision-making authority workers have over their work. Those jobs found to have the highest risks to health were those that were both psychologically demanding and offer little decision latitude and those that are the least demanding and have the least decision latitude. Karasek’s Demand-Control Model posits that those jobs that are highly demanding yet afford the greatest latitude in worker decision-making result in the lowest numbers of health issues. Others have added another dimension to this model, the Demand-Control-Support Model, which adds the role that a supervisor or co-workers play in buffering both demand and control issues. There is some support for this model showing evidence of adverse work environment characteristics and increased risk of emotional and mental disorders.

Other data indicate that the prevalence of substance use varies by occupation. Workers in the services and construction industries have higher rates of use than those in other occupations. Although similar findings have been noted in other countries, many of the studies do not control for confounding factors such as educational level or pre-selection.

Prevention Strategies
Like the family and schools, the workplace serves as an opportune setting for preventing drug and alcohol use problems. Workers, particularly full-time employees, spend a large portion of their time working. Many who cannot be reached through other channels can be exposed to prevention programming offered by their employers or their unions.

Employers also benefit from incorporating prevention programming into the worksite as research has shown that such programs result in significant decreases in absenteeism, illnesses, inter-employee altercations, and work-related injuries and, because of their role, employers can be influential in assuring the participation in these programs by their employees.

Prevention efforts for the workplace have focused primarily on detecting substance use among applicants and workers involved in high risk or hazardous occupations, referring those found to be substance users to counseling and treatment services, and in altering workplace environments to ease sources of stress and to increase opportunities to have
greater control over work assignments. Outcomes of interest in many of the evaluation studies of these strategies are related to injuries, other health issues, absenteeism, and, the use of substances. In general, there are few rigorous evaluations of individual strategies, and most researchers and agencies recommend a multi-component effort.

Over the years, Employee Assistance Programs (EAPs) have served to help workers with substance problems either self-identified or through referral from their employer. Prior to the wide spread use of drug testing in the workplace, supervisors and managers were trained to recognize employees who may have substance use issues. Drug testing has served as an additional tool for employers to use in identifying and referring workers for counseling and treatment. As mentioned above, findings from recent workplace studies have indicated workplace environmental factors that place vulnerable persons at risk for either increasing their substance use or for initiating such use. For these reasons, most prevention researchers recommend multiple prevention strategies for the workplace. These include:

- Comprehensive written policies about substance use in the workplace.
- Altering the work environment to assure quality of the employee’s work life by reducing feeling of stress and increasing job satisfaction.
- Creating clear social control policies regarding use at work.
- Establishing workplace norms regarding alcohol use.
- Incorporating the promotion of healthy lifestyles that address substance use in the workplace as well as nutrition, exercise, etc.
- Training workers to identify possible substance use by their co-workers, to provide peer support, and counsel them to seek counseling.
- Supervisory and management training on substance abuse, treatment referral, and drug testing.
- Making Employee Assistance Programs available.
- Identification of illegal drug users and drug testing conducted through standard protocols with proper protections of confidentiality in place and on a carefully monitored basis.

Guidelines for the content, structure and delivery of these components are available through several government agencies with appropriate cautions regarding confidentiality and job protection.

Fidelity of Implementation

With the availability of an increasing number of evidence-based programs in the substance abuse prevention field, researchers have been looking to see how these programs are implemented in the “real-world,” while at the same time maintaining their effectiveness. In a review of the fidelity of implementation of drug abuse prevention curricula in schools, Dusenbury and colleagues (2003) measured fidelity in five ways: (1) adherence, (2) dose, (3) quality of program delivery, (4) participant responsiveness and (5) program

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b Reports in the literature regarding the introduction of Screening, Brief Intervention, and Referral to Treatment (SBIRT) approaches in the workplace are as yet not conclusive. However, the use of SBIRT shows great promise.
differentiation. Although these measures were refined for school-based prevention curricula, they also pertain to other types of interventions provided in different settings.

Despite inconsistent definitions and measures of fidelity, research in drug abuse prevention provides evidence that poor implementation is likely to result in a loss of program effectiveness. Studies indicate that most prevention instructors do not cover everything in a curriculum, they are likely to teach less over time and training alone is not sufficient to ensure fidelity of implementation. Key elements associated with high fidelity include quality training, program characteristics, and instructor and organizational characteristics.

Dusenbury (2012) summarizes the following predictors of quality implementation for school-based interventions:

- Teacher training,
- Program structure and complexity are important,
- Provider characteristics—including teacher age and experience—as well as drug education experience,
- Personal or psychological characteristics of the teacher, including efficacy, depression and burnout,
- Teacher confidence about their delivery or attitudes toward the intervention may be stronger predictors of quality of implementation.

She suggests the following components to improve implementation:

- Quality training,
- Provision of ongoing support with coaching and broader professional development to engage participants,
- Provide critical information about the intervention design,
- Correct misinformation,
- Raise the issue of implementation quality,
- Forge the process for implementing the program after training ends.

As mentioned above, although much of the research on implementation fidelity has focused on schools, researchers have also examined this issue in parenting programs and community-based interventions. In recent articles on the effectiveness of intervention research, many authors now include measures of fidelity and dose to determine differences in outcome. For example, Durlak and colleagues reported that educational programs they reviewed were implemented with varying degrees of fidelity and that variability in quality of program implementation was related to student outcomes both in terms of academic performance as well as effects related to social and emotional learning.

The great challenge is the fine line between implementation fidelity and adaptation. Castro and his research group have written extensively on this issue and have developed an approach

**Overarching Concepts from Research**

1. There is agreement in the prevention field that prevention is a process that takes place across the lifespan. The factors related to increasing the risks for initiating substance use
occur across developmental stages suggesting that interventions should take place at key developmental points, including infancy, early childhood, childhood, preadolescence, and adolescence. Early interventions with identified vulnerable children may be most effective in the long term. Yet the expected outcomes from interventions for each developmental stage are not clear.

2. The sequencing of substance use suggests that the risk for using marijuana is increased if a young adolescent has used alcohol or tobacco, particularly if this use was initiated in childhood or early adolescence. Therefore, prevention programs should address multiple substances. The social tolerance is unequal for each of these substances and some programs may be less effective for one or more of these substances.  

3. Parents and caregivers are a key socialization agent in society with responsibilities involving some of the following domains:
   - Forming attachments to parents and the family;
   - Engaging in sharing/reciprocity relationships;
   - Acquiring behavioral self-control; and
   - Learning and internalizing accepted norms, values and age-and gender-specific behaviors of the community/society.
   - Positive parenting approaches have been found to reduce oppositional behaviors, prevent delinquency/adolescent drug use; and assume the societal/family values, norms, behaviors.
   - Engaging parents and children in family-based interventions with supportive approaches, minimum confrontation, a menu of options, and flexibility is helpful in attracting and retaining parent participation.

4. A meta-analysis comparing outcomes of school-based preventive interventions on risk factors found that positive changes in attachment and commitment to school—i.e., school bonding—were consistently accompanied by positive changes in problem behavior. Many school-based prevention interventions focus on promoting school culture and school bonding, at the school-wide and individual class level.

5. School-based drug prevention curricula include the following common elements:
   - Dispelling misconceptions regarding the normative nature and expectancies of substance use (i.e., the prevalence and positive/negative effects of use);
   - Impacting perceptions of risks associated with substance use for children and adolescents (i.e., emphasizing immediate consequences, usually social, not long-term);
   - Providing and practicing life skills, including making decisions, especially about substance use; communicating these decisions; and resistance skills to refuse the use of tobacco, alcohol, and illicit drugs using authentic scenarios;
   - Providing interventions and boosters over multiple years into middle and high school when students are most at risk.

6. The meta-analyses also found that prevention programs that engage students in the learning process had better outcomes than those programs that used primarily didactic presentations. Recent reanalyses of Tobler’s data suggest that interactive programs are more effective for middle school rather than high school students.
7. Several studies and meta-analyses\textsuperscript{131} suggest that interventions delivered by same age or slightly older peer leaders are more effective than when delivered by adults. On the other hand, as Botvin and Griffin (2003)\textsuperscript{132} point out, peer leaders alone may not have the maturity to manage a classroom or to engage students in small group or open discussion, particularly when the program heavily emphasizes skills building. Their suggestion is to use peer leaders in supportive roles, such as, assisting with program activities with adults taking the lead in delivery.

8. Effective community coalitions and partnerships\textsuperscript{133} serve three major functions in promoting prevention; they:
   - Create collaborative capacity across diverse organizations (health, social service, schools, faith-based);
   - Help their communities develop the capacity to build the social capital needed to address community health and social issues; and,
   - Become the agents of change at the local level through strong policies or regulations, influencing health behaviors, and supporting the delivery of services.

9. Multi-component interventions for smoking prevention, which combine effective school-, family, environmental, and media-based interventions, have greater impact when compared to no-interventions or single interventions.\textsuperscript{134}

10. The issue of adaptation versus implementation fidelity is one of the great challenges to the prevention field. Implementation fidelity addresses the degree to which the curriculum content and delivery style consistently and completely match that of the original tested program. Often, a program taken from a research setting to the “real world” will undergo changes to meet the needs of the school or of the instructor. Understanding the curriculum design and key elements of the program is important. Sound training helps instructors comprehend why program design is essential and provides a basis for a commitment to prevention. The establishment of a monitoring system to assess program implementation and providing ongoing technical assistance would ensure fidelity of implementation.

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