
Research Support For Comprehensive Community Interventions to Reduce Youth Alcohol, Tobacco and Drug Use and Abuse

EXECUTIVE SUMMARY

The substance abuse prevention field is at a crossroads. In this time of healthcare reform, the opportunity exists to combat substance abuse and related harms with concerted, community-based and comprehensive efforts to change norms, behaviors, systems and contexts that contribute to substance abuse problems in our communities. The purpose of this paper is to discuss how a truly comprehensive response to substance use and abuse in our country can be implemented. Specifically, this response includes BOTH environmental/policy efforts and individually-focused prevention efforts in order to reduce substance abuse population-wide. Furthermore, it is critical to recognize the invaluable role local, community-based coalitions play in implementing a comprehensive array of evidence-based strategies to reduce underage drinking, tobacco use and illicit drug use. Coalitions have had great success at choosing and implementing the right combination of strategies to address local conditions contributing to substance use and abuse in their communities. Continued efforts are needed to support the role coalitions play in creating safe, healthy and drug-free communities.

This paper was developed to be responsive to the coalition field. It provides evidence to support their use of environmental strategies to address substance abuse in their communities. Environmental strategies are used to change the context (environment) in which substance use and abuse occur. Environmental strategies incorporate efforts aimed at changing or influencing community conditions, standards, institutions, structures, systems and policies (Babor, 2003). This paper was written to help coalitions understand how environmental strategies are critical elements of a comprehensive plan to reduce substance use and abuse. As such, the paper provides an overview of the research on the effectiveness of a variety of environmentally focused-strategies to reduce underage drinking, tobacco use and drug use. These strategies are especially effective at reducing access and availability of substances for youth and young adults and mitigate the damage caused to the community. Environmental strategies also are critically important to support individually and family-focused interventions. It is up to the coalition to pick the right combination of individual, family and community-level interventions to reduce substance abuse in their community.

Substance abuse is a problem facing each community in America. The pervasiveness of substance abuse is apparent in how it cuts across racial, socio-economic, geographic and generational lines (Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 2008). Results from the 2009 Monitoring the Future study, an annual survey on the incidence and prevalence of youth substance use rates funded by the National Institute on Drug Abuse (NIDA), indicate that past declines in substance abuse rates are leveling off and researchers are concerned that softening attitudes among youth on the perceived risk and disap-

proval of marijuana and inhalant use may predict future increases in usage rates (Johnston, O'Malley, Bachman, & Schulenberg, 2009). With 37 percent of 12th graders reporting they have used an illicit drug in past year, 15 percent of 8th graders reporting drinking alcohol in the last month, and 27 percent of 10th graders reporting using marijuana in the last year, the potential costs of substance abuse are enormous, especially if efforts are not put into prevention and treatment.

A complex social problem like substance abuse has multiple causes and when framed using a social-ecological model, we are able to better see the multi-

layered context that affects substance use and abuse in our society. The ecological levels of analysis promoted by Bronfenbrenner (1979) show that individuals are nested within broader contexts that play a critical role in their health and well-being. Given the ecological nature of substance use/abuse in this country, it is important to intervene at all levels, using interventions that improve not only individuals, peers and families but also interventions that improve organizations/services within the community, improve our neighborhoods and cities, and impact change on the broader societal level in order to comprehensively address substance abuse at the population-level.

Coalitions engage in multi-strategy, comprehensive action to work at all levels of the ecological model and facilitate linkages between levels. The real work of an effective coalition is its efforts to change community norms, attitudes, behaviors, systems and environments. "As the field of prevention has matured, it has been recognized that any single strategy is unlikely to succeed and a reinforcing set of strategies has the greatest potential to reduce use" (Johnson et al., 2007, p. 229). As such, coalitions need to engage in strategies to improve conditions in individuals, families, organizations, systems and communities and take action using a wide array of interventions at their disposal, including advocacy efforts and implementation of evidence-based interventions to reduce substance use/abuse at the population-level (Fawcett, Francisco & Schultz, 2004). Research indicates that coalitions are very capable at implementing this comprehensive response. They have been successful at selecting and implementing evidence-based prevention programs targeting youth, peers and families (e.g., individual and microsystems levels) (Hawkins et al., 2009) and implementing strategies to improve conditions in organizations, systems and communities (Hingson, Zakocs, Winter, Rosenbloom & DeJong, 2005; Snell-Johns et al., 2003).

Environmental strategies, as part of a comprehensive prevention effort, are strongly supported by prevention researchers and practitioners as well as government and nongovernmental agencies and organizations working to prevent substance abuse (U.S. Department of Justice, 2006; Centers for Disease Control, 1999; U.S. Department of Health and Human Services, 1994; Imm, Wandersman, Rosenbloom, Guckenburg & Leis, 2007).

The Institute of Medicine's (IOM) 2009 report on Preventing Mental, Emotional and Behavioral Disorders Among Youth People also reinforces the need to reduce access and availability of alcohol and drugs by changing norms and policies (National Research Council and Institute of Medicine, 2009).

A general causal model to guide population-level alcohol, tobacco and illicit drug prevention has been proposed (Birckmayer, Holder, Yacoubian & Friend, 2004). The researchers suggest that alcohol, tobacco and illicit drugs are essentially retail products and as such, economic theories of supply and demand come into play. Most of prevention has focused on reducing demand for these substances (e.g., individual-level prevention programs). However, a comprehensive model for ATOD prevention also requires addressing supply factors, such as availability and promotion (marketing of substances). Norms also play a critical role in this model, affecting availability, promotion and demand factors. In addition, enforcement of laws and policies to reduce ATOD use/abuse is critical.

A variety of environmental strategies have been shown to be effective at reducing youth drinking, tobacco use and illicit drug use, including increasing price of alcohol, enforcing underage drinking laws, limiting availability of alcohol and tobacco, establishing smoke-free indoor air laws, controlling the sale of meth precursor chemicals, reducing drug dealing in private rental places and Crime Prevention Through Environmental Design.

In summary, there is strong scientific evidence to support the effectiveness of environmental strategies as well as evidence that coalitions can be successful at implementing the full array of prevention programs and environmental/policy strategies to address local substance abuse problems. As indicated by the socio-ecological model, effective interventions to address behavior such as substance use and abuse require a comprehensive approach, seeking change at multiple levels (Bronfenbrenner, 1979; Sorensen, Emmons, Hunt & Johnston, 1998). Such an approach addresses the problem using both individually-focused and environmentally-focused interventions as part of a strategic plan to achieve population-level reductions in alcohol, tobacco and illicit drug use.

INTRODUCTION

Substance abuse is a problem facing each community in America. The pervasiveness of substance abuse is apparent in how it cuts across racial, socio-economic, geographic and generational lines (Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 2008). Results from the 2009 Monitoring the Future study, an annual survey on the incidence and prevalence of youth substance use rates funded by the National Institute on Drug Abuse (NIDA), indicate that past declines in substance abuse rates are leveling off and researchers are concerned that softening attitudes among youth on the perceived risk and disapproval of marijuana and inhalant use may predict future increases in usage rates (Johnston, O'Malley, Bachman, & Schulenberg, 2009). With 37 percent of 12th graders reporting they have used an illicit drug in past year, 15 percent of 8th graders reporting drinking alcohol in the last month, and 27 percent of 10th graders reporting using marijuana in the last year, the potential costs of substance abuse are enormous, especially if efforts are not put into prevention and treatment.

These costs go beyond the individual and their family, also affecting society. The public health burden of these risk behaviors is tremendous. 79,000 alcohol-attributable deaths occur each year with 2.3 million Years of Potential Life Lost (YPPL) per year (Brewer & Sparks, 2010). According to the National Highway Traffic Safety Administration (2008), while the proportion of alcohol-related traffic fatalities attributable to alcohol has been in decline in the last 20 years, as of 2005 they were still as high as 33 percent. Additionally, the cost of substance abuse to society is staggering with estimates ranging from \$468 billion (NCASA, 2009) to \$638 billion (Miller & Hendrie, 2009). The economic costs of alcohol and drug abuse include prevention and treatment costs as well as costs accrued in the justice and social welfare systems (Harwood, Fountain & Livermore, 1999).

Given the large scale social and financial impact of substance abuse, efforts must be made to decrease substance use/abuse in our society, with a particular emphasis on prevention. Drug addiction is a developmental disorder that begins in adolescence, sometimes as early as childhood, for which effective prevention is critical. According to studies by the NIDA and the National Institute on Alcohol Abuse and Alcoholism (NIAAA), the younger a person first uses drugs or alcohol, the greater the likelihood that they will become dependent and/or addicted to drugs and alcohol as an adult. Youth who first smoke marijuana under the age of 14 are more than five times as likely to abuse drugs in adulthood (Department of Health and Human Services, 2003). Forty-five percent of youth who began drinking before age 15 were classified as dependent later in life, whereas among youth who began drinking between age 17 and 21, 24.5 percent were classified as dependent, and of youth who began drinking at age 21 or 22, 10 percent were classified as dependent (Grant & Dawson, 1997). It is therefore critical to focus intently on preventing substance use and abuse.

A focus on prevention also can yield major economic dividends. The savings per dollar spent on substance abuse prevention can be substantial and range from \$2.00 to \$20.00 (Swisher, Scherer & Yin, 2004). Miller and Hendrie (2009) indicate that some prevention efforts result in cost-benefit ratios of more than 30:1. Investing in prevention yields savings and reduces economic and healthcare burdens (National Institute on Drug Abuse, 2007).

Complex community health problems, like substance use and abuse (defined as underage drinking, tobacco, illegal drugs and/or the misuse/abuse of over-the-counter and prescription medications and products), require comprehensive, collaborative solutions to achieve benefit for the entire community or targeted population. This broad degree of change, called popu-

lation-level change, is the ultimate goal of coalitions (Roussos & Fawcett, 2000). Substance abuse prevention coalitions have developed based on a core belief that a collaborative, community-based solution is required to change conditions in the community environment, system and structures that contribute to substance abuse problems (Saxe, et al., 1997). Coalitions are “a group of individuals representing diverse organizations, factions or constituencies who agree to work together to achieve a common goal” (Feighery & Rogers, 1989, p.1). Since no two communities are alike, the premise of coalitions for substance

abuse prevention is that local, coordinated efforts best address the unique needs of the community. Substance abuse coalitions comprise multiple groups of stakeholders, often a mix of citizens, including youth and parents, service agencies, prevention and treatment providers, public health, law enforcement, schools and community organizations, representatives from the faith community, businesses and volunteer groups. By encouraging collaboration among stakeholders, coalitions take a comprehensive approach to addressing substance abuse in their communities.

ADDRESSING SUBSTANCE ABUSE USING A SOCIAL-ECOLOGICAL MODEL

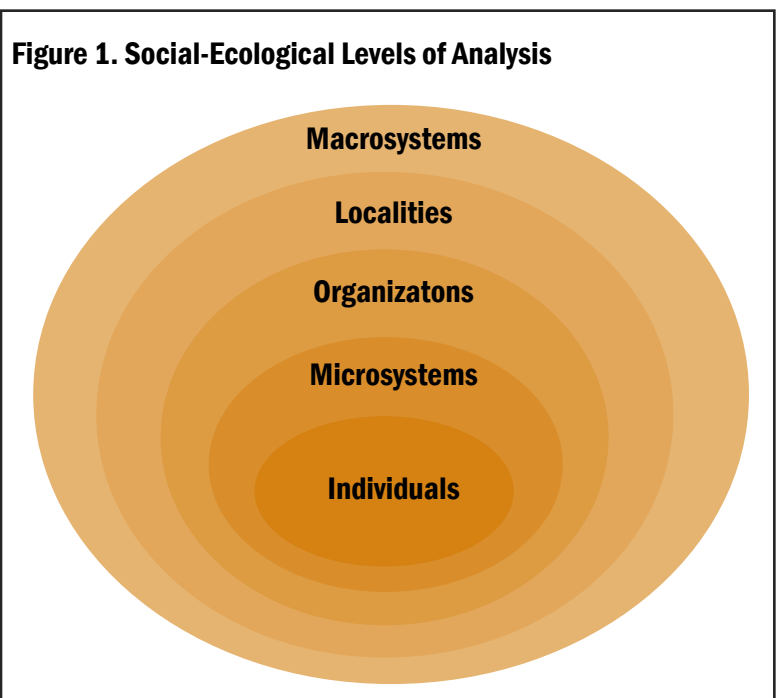
A complex social problem like substance abuse has multiple causes and when framed using a social-ecological model it is easier to see the multi-layered context that affects substance use and abuse in our society. The ecological levels of analysis promoted by Bronfenbrenner (1979) show that individuals are nested within broader contexts that play a critical role in their health and well-being. This same model can be used to better understand communities and community issues (Dalton, Elias & Wandersman, 2007). (See Figure 1 at right.)

The web of connections that surround individuals necessitates interventions at multiple levels:

- **Individuals**—The individual is located at the inner-most level. Many of our interventions are designed to impact the individual directly, such as developing academic and social skills of children, promoting social-emotional competence and building drug refusal skills in youth.
- **Microsystems**—The next level represents the environments in which in-

dividuals interact directly with other people, such as families, friends, classrooms and work groups. These microsystems can provide resources and support to the individual but can also cause harm and stress. Interventions targeting the microsystem include those designed to support positive peer groups, improve parenting skills, and provide strong adult role models.

Figure 1. Social-Ecological Levels of Analysis



- **Organizations**—Organizations are the formal entities surrounding individuals and microsystems. These include schools, human service agencies, health care settings, workplaces, religious groups and neighborhood organizations. Examples of interventions at this level are those focusing on school climate, access to SBIRT (Screening, Brief Intervention and Referral to Treatment) and workplace initiatives.
- **Localities**—This level represents geographic areas, such as towns, cities and neighborhoods. Organizations, microsystems and individuals are housed within localities. Neighborhood conditions are linked to health, academic achievement, behavior problems and well-being (Shinn & Toohey, 2003). Interventions at this level affect policies and practices that govern localities and influence broader community health, such as strategies to reduce underage access to alcohol, improving community lighting, park clean-ups, community development efforts and enforcement of anti-drug laws.
- **Macrosystems**—This is the outer-most level in the ecological model. Societies, cultures, politics and economic and social forces reside at this level. For example, the negative impact of macrosystem-level factors on substance use include legalization of medical marijuana and alcohol and tobacco marketing. On a positive side, the class action lawsuits against big tobacco have provided substantial tobacco settlement funds to states and communities to prevent tobacco use and promote cessation of smoking, and the Drug Free Communities Support Program has infused \$794.8 million into communities across the country. These are important social forces that have supported substance abuse prevention in this country.

Given the ecological nature of substance use/abuse in this country, it is important to intervene at all these levels and change laws, norms and policies to reduce substance abuse and its

impact on our society. However, many of the science-based interventions, such as Life Skills and Strengthening Families, have focused primarily on the individual and micro-system levels. While worthwhile and necessary, these proximally focused interventions target only the levels closest to the individual. In contrast, interventions at more distal levels (i.e., those less immediate to the individual) can have more widespread impacts. It is important to intervene at all levels, using interventions that improve not only individuals, peers and families but also organizations/services within the community, improve our neighborhoods and cities, and impact change on the broader societal level to comprehensively address substance abuse at the population-level.

Environmental strategies used in substance use/abuse prevention are levers to shift political, social and economic conditions that contribute to substance use and abuse. These are community-level interventions seeking to achieve population-level benefits for the entire community. They are used to change levers at the more distal levels of the ecological model. For example, reducing alcohol outlet density and conducting compliance checks with alcohol retailers are environmental strategies used to reduce retail availability of alcohol to underage individuals. These interventions change retail business practice (organizations), change community norms that support underage drinking (locality) and on a large-scale create an infrastructure of communities that support the health and safety of their youth (macrosystem). A focus on organizations, localities and macrosystems is needed to have broad impact on substance use/abuse and to achieve population-level reductions in substance abuse and related-problems. Interventions at these outer three levels are of critical importance to the substance abuse field in achieving population-level reductions in use and abuse.

Coalitions Work at All Levels of the Social-Ecological Model

Coalitions by design engage in multi-strategy, comprehensive action to work at all levels of the ecological model and facilitate linkages between levels. The convergence of community stakeholders involved with a coalition is not an end in and of itself. The real work of an effective coalition is its efforts to change community norms, attitudes, behaviors, systems and environments. “As the field of prevention has matured, it has been recognized that any single strategy is unlikely to succeed and a reinforcing set of strategies has the greatest potential to reduce use” (Johnson et al., 2007, p. 229). A single intervention is unlikely to achieve the high level of community transformation needed to improve health and well-being (Merzel & D’Affitti, 2003). Instead, ecological theory proposes that substance use and abuse is influenced at multiple levels and as such interventions must be broad-based, comprehensive and seek change at multiple levels (Bronfenbrenner, 1979; Sorensen, Emmons, Hunt & Johnston, 1998).

Research indicates that coalitions are very capable of selecting and implementing evidence-based prevention programs targeting youth, peers and families (e.g., individual and microsystems levels) (Hawkins et al., 2009) and implementing strategies to improve conditions in organizations, systems and communities (Hingson, Zakocs, Winter, Rosenbloom & De-Jong, 2005; Snell-Johns et al., 2003). Coalitions need to engage in strategies to improve conditions in individuals, families, organizations, systems and communities and take action using a wide array of interventions at their disposal, including advocacy efforts and implementation of evidence-based interventions to reduce substance use/abuse at the population-level (Fawcett, Francisco & Schultz, 2004).

Researchers have put effort into categorizing the interventions implemented by coalitions to bring about changes in substance abuse and

other health outcomes (Florin et al., 1993; Paine-Andrews et al., 2002; Roussos & Fawcett, 2000). Interventions targeting substance abuse prevention can be categorized by scale and impact. Activities focused more on individuals seek change on a smaller scale in terms of the number of individuals that might be reached via the intervention (i.e., inner levels of ecological model) while those activities focused more at the community and systems-level seek broader change for more individuals (i.e., outer levels of ecological model). Coalition intervention efforts can be categorized into the following areas, ranging from more individually-focused activities to those that are considered to be “environmental strategies” in the substance abuse prevention world (Paine-Andrews et al., 2002):

- **Providing information**—Educational presentations, workshops or seminars, and data or media presentations (e.g., public service announcements, brochures, billboard campaigns, community meetings, town halls, forums, Web-based communication).
- **Enhancing skills**—Workshops, seminars or activities designed to increase the skills of community members, such as youth, parents and citizens (e.g., training, parenting classes, evidence-based prevention programs for youth).
- **Providing support**—Creating opportunities that reduce risk or enhance protection (e.g., providing alternative activities, mentoring, support groups, youth clubs, parenting groups, Alcoholics or Narcotics Anonymous).
- **Enhancing access/reduce barriers**—Improving community and service delivery processes to increase the ease, ability and opportunity for community members to access and use the services (e.g., access to treatment, childcare, transportation, housing, education, special needs, cultural and language sensitivity).

- **Changing consequences**—Using incentives and disincentives to alter consequences of a specific behavior (e.g., increasing public recognition for deserved behavior, individual and business rewards, taxes, citations, fines, revocations/loss of privileges).
- **Changing the physical design of the environment**—Altering the physical structure of the community so individuals are less likely to engage in substance use (e.g., creating parks, improving landscapes, limiting alcohol advertising signage, improving lighting, decreasing outlet density).
- **Modifying/changing policies**—Working to create formal changes in written procedures, by-laws, proclamations, rules or laws with written documentation and/or voting procedures (e.g., public policy actions, systems change within government, communities and organizations).

These interventions support the social-ecological model in that they can be used to influence all levels of the analysis, with the last four intervention strategies considered “environmental” in nature. Coalitions apply all seven behavior change strategies to address local conditions—factors unique to each community that contribute to substance abuse locally (i.e., availability of marijuana via individuals that purchase from medical marijuana dispensaries). To select the correct combination of strategies under each category, coalitions must invest time and resources to identify these local conditions. Through a community needs assessment, coalitions need to understand not just the substances causing problems within the community, but also the root causes and local conditions that illuminate why and how substance abuse manifests itself within the community. This process then leads to actionable data on which coalitions can take action to select the specific combination of seven behavior change strategies that will target each specific local condition. This results in a truly comprehensive and effective response to substance

abuse prevention that engages all levels of the ecological model.

Coalitions Success at Taking Evidence-Based Programs to Scale

One role coalitions have successfully carried out is in selecting and implementing evidence-based prevention programs for their local community. For example, the PROSPER model (Promoting School-community-university Partnerships to Enhance Resilience) has three components comprised of community teams, university Extension offices and researchers. The PROSPER community teams have been very successful at implementing family-focused and school-based substance abuse prevention programs, such as Life Skills, Project ALERT, Strengthening Families and All Stars (Spoth, Guyll, Lillehoj, Redmond & Greenberg, 2007).

State governments also have supported coalitions in their use of evidence-based prevention programs. One example is the Kentucky State Incentive Grant (SIG) (Collins, Johnson & Becker, 2007). Nineteen coalitions were studied in the Kentucky SIG project, called the Kentucky Incentives for Prevention Project (KIP). Each coalition implemented one to four of the following universal evidence-based programs: Project ALERT, Life Skills Training, SMART Moves, Preparing for the Drug-Free Years and Project Northland. The study examined if coalitions that implement evidence-based programs reduce substance abuse among adolescents. The researchers compared 8th and 10th graders in KIP schools (communities implementing KIP) to 8th and 10th graders in non-KIP schools. These schools were matched based on school size and percentage of students living in urban areas. Student survey data were analyzed at two time points, 1999 and 2002 in KIP schools and 2000 and 2002 in non-KIP schools. While 8th graders in KIP schools did not experience decreases in substance use, the picture is different when looking at 10th graders. Tenth graders did experience slightly lower use of cigarettes (37.4% to 29.7%), alcohol (40.2% to

35.6%) and binge drinking (28.9% to 26.6%). 10th graders in non-KIP schools also experienced decreases in cigarette and alcohol use but these decreases were smaller than KIP-schools. Additionally, non-KIP 10th graders experienced an increase in binge drinking.

The Communities That Care (CTC) model is another example of a coalition building approach focused on helping communities learn substance abuse prevention principles and strategies. The CTC model trains communities to bring key leaders together, build their understanding of prevention science and the risk and protective factors associated with youth problems, implement a survey to assess each community for its specific risk and protective factor profile, and design a plan targeted at implementing evidence-based programs to address the community's identified risk factors. CTC is a popular coalition building model used in this country and has undergone multiple cross-site evaluations of the effectiveness of the model (Feinberg, Greenberg, Osgood, Anderson & Babinski, 2002; Quinby, Hanson, Brooke-Weiss, Arthur, Hawkins, & Fagan, 2008)

The Community Youth Development (CYD) study empirically examined the effectiveness of CTC communities. The CYD study was conducted in eight states with 24 matched pairs of communities, and intervention sites demonstrated reductions between 6th and 8th grades in the prevalence of alcohol, tobacco and marijuana use. The matched comparison sites did not experience these same declines (Hawkins et al., 2009). These studies indicate that with support from researchers and technical assistance providers, communities can successfully implement evidence-based programs targeting the individual, school and family environments, resulting in changes in risk and protective factors and community-level reductions in substance abuse rates (Feinberg et al., 2009; Spoth & Greenberg, 2005).

Coalitions Success at Implementing Environmental Strategies

Coalitions have often been the entities established to bring stakeholders together to engage in environmental and policy strategies. For example, The Fighting Back Program was a Robert Wood Johnson Foundation initiative that funded 12 communities to develop coalitions to combat substance abuse and related problems. A case study of the policy efforts of the Fighting Back Coalition in South Carolina illustrates various roles that a coalition can play toward facilitating community efforts aimed at environmental and policy change to prevent and decrease substance use (Snell-Johns et al., 2003). The coalition actively engaged in generating ideas, strategies and language for specific environmental changes at various levels, such as no-ATOD use policies at county recreational facilities and a multi-strategy early intervention program for the local university. The coalition also became the facilitator of important policy efforts by being responsive to community members' requests. For example, when parents of a young teenager lost their child in an alcohol-related boating accident, they went to the coalition for help. The coalition was able to facilitate a community process to enact a "Safe in the Lake Campaign," resulting in boating under the influence legislation. Because the coalition was considered to be a neutral, community-led organization, it had the trust and buy-in of the community to bring about significant environment and policy level change efforts.

A follow-up study of the entire Fighting Back Program looked more carefully at a subset of the original Fighting Back communities—those that devoted a significant portion of their time and effort to limiting access to alcohol and expanding treatment services (Hingson et al., 2005). The researchers found that these coalitions were successful at implementing a variety of environmental and systems-change focused interventions, including limiting alcohol availability; engaging in sting operations; conducting

responsible beverage training; enacting ordinances to prohibit public consumption or beverage sales; closing problem liquor stores/blocking new stores/monitoring problematic outlets; persuading liquor stores to sign voluntary responsible sales agreements; limiting marketing/advertising; increasing publicly funded treatment; establishing referral and/or awareness campaigns about treatment services; creating or expanding treatment/aftercare programs; initiating hospital ED screens/referrals; establishing drug courts and opening new treatment/aftercare facilities. Five of 12 sites initiated eight or more concentrated activities in these areas.

This focus on environmental strategies by coalitions (i.e., targeting outer levels of the ecological model) is also associated with population-level reductions in substance abuse and related problems. The five Fighting Back sites that initiated eight or more of the concentrated activities limiting access to alcohol and expanding treatment services subsequently achieved a significant 22 percent decrease in alcohol-related crashes (at 0.01 percent or higher blood alcohol concentration or BAC) relative to fatal crashes not involving alcohol during the 10 years of the FB program compared to 10 years prior to the program (Hingson et al., 2005).

Other outcomes associated with coalitions and the community-mobilization efforts in which they engaged include:

- **Communities Mobilizing for Change on Alcohol (CMCA)**—CMCA is a community-organizing program designed to reduce 13 - 20 year old youth's access to alcohol by changing community policies and practices. Community strategy teams employ a range of social-organizing techniques to eliminate illegal alcohol sales to minors, obstruct the provision of alcohol to youth, and ultimately reduce alcohol use by teens. Community members are involved in seeking and achieving changes in local public policies and practices of community institutions that can affect youths' access to alcohol. Outcomes include: decreased youth access to alcohol in bars/restaurants; self-reported decreases in youth's attempts to buy alcohol and provision of alcohol to underage teens, decreased number of drinks consumed the last time they drank and number of times in the last month that they drank; and decreased driving under the influence (DUI) arrests (Wagenaar et al., 1999).
- **Community Trials Intervention to Reduce High-Risk Drinking**—This multi-component, community-based coalition initiative was created to alter the alcohol use patterns and reduce alcohol-related accidents among people of all ages. Its environmental interventions help communities to: 1) use zoning and municipal regulations to restrict alcohol access through alcohol outlet density control; 2) enhance responsible beverage service by training, testing, and assisting beverage servers/retailers to develop policies and procedures that reduce intoxication and driving after drinking; 3) increase law enforcement and sobriety checkpoints to raise actual and perceived risk of arrest for driving after drinking; and 4) reduce youth access to alcohol by training retailers to avoid selling to minors and those who provide alcohol to minors (Holder et al., 2000). Outcomes include: reductions in 1) drinking quantities; 2) driving when having had too much to drink; 3) driving over the legal limit; and 4) monthly rates of alcohol related traffic crashes and injuries. The Sacramento Neighborhood Prevention Program (SNAPP) was a follow-up to the Community Trials Intervention. This initiative also had positive outcomes in reducing underage drinking and related harms (Treno, Gruenewald, Lee, & Remer, 2007).
- **Tobacco Policy Options for Prevention (TPOP)**—TPOP is designed to reduce youth cigarette smoking by restricting youth access to tobacco products. The success of this community-based intervention relies

heavily on the mobilization efforts of local coalitions to advocate for, and successfully change local policies and practices that affect youth access to tobacco. TPOP requires four phases to complete the intervention: 1) information gathering and team recruitment, 2) community awareness building and ordinance development, 3) preparation for city council, and 4) ordinance establishment and enforcement. Outcomes include: an increase in retailers asking for identification to purchase tobacco products, decreased perceived availability from retail sources, and a lower prevalence of daily smoking among youth (self-reported youth surveys) when compared to control communities (Forster, Murray, Wolfson, Blaine, Wagenaar & Hennrikus, 1998).

- **Border Binge-Drinking Reduction Program—** This program used an innovative process to change the social and community norms associated with underage and binge drinking that has proven effective at reducing alcohol-related trauma caused by young American's binge drinking across the U.S.-Mexican border. A Binational Policy Council was formed which recommended policy changes on both sides of the border and provided spokespeople for media advocacy and community organizing. This effort to curb irresponsible drinking practices used several environmental and communitywide strategies: 1) surveys of youths returning from a night of drinking with blood alcohol concentration (BAC) breath tests; 2) strong media advocacy using survey data to heighten awareness, mobilize the community to action, and reframe the issue from an accepted norm to a health and safety issue for the community; 3) increased enforcement of existing laws and policies, such as ID checks at border crossings and in bars in Tijuana, Mexico; and 4) implemented policies and practices that impact the environment

where cross-border drinking occurs. Outcomes measured during the 2-year intervention (1997-99) include: 1) decreased numbers of Americans arrested in Tijuana, Mexico, for alcohol-related violations; 2) 20 percent decrease in the number of Tijuana bars with a majority of American patrons; 3) 45 percent reduction in the number of night-time alcohol-related crashes involving 16- to 20-year-old drivers; 4) 29 percent decrease in number of youth crossing into Tijuana to drink; and 5) 40 percent decrease in the number of youth returning from Tijuana with high BACs (Voas, Tippetts, Johnson, Lange, & Baker, 2002).

- **Challenging College Alcohol Abuse (CCAA)—** CCAA is a social norms and environmental management program to reduce high-risk drinking and related negative consequences among 18-24 year old college students. CCAA uses a campus-based media campaign (using articles, press releases in the school newspaper and campus displays) and other strategies to address misperceptions about alcohol and make the campus environment less conducive to drinking. CCAA funds and promotes non-alcohol social events that compete with traditional drinking occasions and encourages increased restrictions and monitoring of on- and off-campus alcohol use by faculty, staff, parents and the local community. Outcomes include a decrease in binge and frequent drinking among freshmen, improved alcohol-related knowledge, attitudes, and perceptions; and decreases in negative consequences of alcohol and drug use (getting into a fight, argument or trouble with campus police/authorities, memory loss, being taken advantage of sexually, doing poorly on test/project, and missing class) (Glider, Midyett, Mills-Novoa, Johannessen, & Collins, 2001).

OVERVIEW OF ENVIRONMENTAL STRATEGIES TO ADDRESS SUBSTANCE ABUSE

This section discusses the role environmental strategies play to decrease substance use/abuse and associated harms. A great deal of research has been conducted examining the effectiveness of a variety of school and family-focused evidence-based programs targeting the inner circles of the ecological model (i.e., Life Skills, Strengthening Families, All Stars, etc.). These individual-level approaches are more commonly found on lists of effective programs, such as SAMHSA's National Registry of Effective Programs and Practices (NREPP) and the National Institute on Drug Abuse's (NIDA) Preventing Drug Use Among Children and Adolescents (2003), than their environmental-level counterparts. They have met the scientific rigor of improving substance abuse and other health and well-being outcomes for the individuals that participate in the program (Institute of Medicine, 2009). Less well advertised are environmental strategies. It is important to note that many environmental strategies have also been well tested and passed rigorous standards to be considered effective.

The Centers for Disease Control and Prevention publishes Community Guides—documents that describe the effectiveness of a variety of environmental/policy interventions to improve the public health, including strategies/interventions focused on reducing and preventing alcohol and tobacco use and abuse (<http://www.thecommunityguide.org/index.html>). The CDC's Community Guides are developed using an independent, rigorous and systematic scientific review process of the research literature and provide clear evidence of the effectiveness of a variety of strategies to reduce substance abuse at the population-level via the use of environmental/policy-level strategies. Environmental strategies do work and complement individual-level strategies in the following ways: emphasis on changing community systems instead of individual-level actions; use of marketing and media to impact community leaders and organizations

instead of changing individual-level behaviors; valuing the community as a resource to support systems change instead of as groups of individuals to receive and disseminate information; and focus on decreasing supply and/or associated risk instead of the decreasing demand for drugs (Gruenewald et al., 2003 as cited in Johnson et al., 2007).

Environmental strategies, as part of a comprehensive prevention effort, are strongly supported by prevention researchers and practitioners, and government and nongovernmental agencies and organizations working to prevent substance abuse (U.S. Department of Justice, 2006; Centers for Disease Control and Prevention, 1999; U.S. Department of Health and Human Services, 1994; Imm, Wandersman, Rosenbloom, Guckenbug & Leis, 2007). The Institute of Medicine's (IOM) 2004 report on Reducing Underage Drinking: A Collective Responsibility cites the importance of environmental strategies to reduce access of alcohol by minors, including compliance checks and sobriety check points (National Research Council and Institute of Medicine, 2004). In addition, another more recent IOM report on Preventing Mental, Emotional and Behavioral Disorders Among Youth People also reinforces the need to reduce access and availability of alcohol and drugs by changing norms and policies (National Research Council and Institute of Medicine, 2009). The Surgeon General's Call to Action To Prevent and Reduce Underage Drinking (2007) also recommends efforts to increase the consequences of underage drinking, including enforcing underage drinking laws and holding adults responsible for underage drinking parties.

Additionally, environmental strategies, commonly referred to as community-level interventions, are increasingly emphasized over individual-level interventions; especially when limited resources are available for prevention activities. This is because by changing systems

and policy and increasing enforcement efforts, environmental strategies can produce rapid results in behavior changes at the population level with little to no associated monetary costs (Pacific Institute for Research and Evaluation, 1999; The Marin Institute, 2005).

Much of the evidence in support of environmental strategies to address substance abuse comes from the alcohol and tobacco prevention literature and relates to limiting access and availability to substances. However, just as the alcohol prevention field applied lessons learned from the tobacco prevention field, some of the lessons learned in both fields are being applied to the prevention of other substances of abuse. For example, as a strategy to reduce methamphetamine production and associated problems, many states have restricted access to medications containing pseudoephedrine by placing them behind the counter and requiring buyer identification.

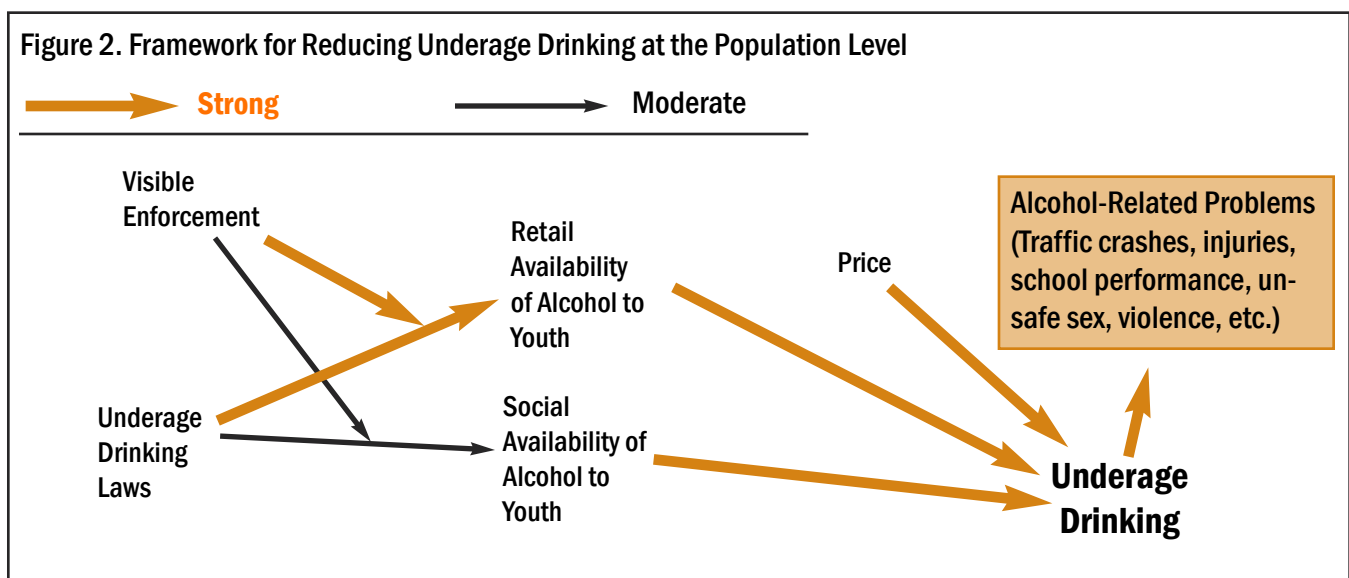
While researchers are currently exploring the efficacy of a variety of environmental strategies to reduce illicit drug use, a general causal model to guide population-level alcohol, tobacco and illicit drug prevention has been proposed (Birckmayer, Holder, Yacoubian & Friend, 2004). The researchers suggest that alcohol, tobacco and illicit drugs are essentially retail products and as such, economic theories of

supply and demand come into play. Most of prevention has focused on reducing demand for these substances (e.g., individual-level prevention programs). However, a comprehensive model for ATOD prevention also requires addressing supply factors, such as availability and promotion (marketing of substances). Norms also play a critical role in this model, affecting availability, promotion and demand factors. In addition, enforcement of laws and policies to reduce ATOD use/abuse is critical. This model can be used to identify a variety of strategies that may have population-level prevention effects for illicit drugs.

Community-Level Strategies for Prevent and Control Underage Drinking

A Framework to Understand the Evidence to Prevent Underage Drinking

Recently, researchers from the Pacific Institute for Research and Evaluation (PIRE) conducted a comprehensive review of the existing literature related to underage drinking prevention. They synthesized the findings into a graphic picture, or framework, that depicts how different environmental variables are associated with the level of underage drinking in a community and subsequent alcohol-related problems (Birckmayer, Boothroyd, Fisher, Grube & Holder,



2007). The first of its kind, and informed entirely by empirical evidence, this framework depicts the direction and strength of the relationships between and among a variety of variables (e.g., price, drinking context, retail availability of alcohol to youth) as they relate to underage drinking and alcohol-related problems. More importantly in terms of community prevention planning, this framework indicates the most effective points of intervention for communities to implement evidence-based environmental strategies to produce lasting, population-level effects. (See Figure 2 on page 12.)

Factors Strongly Associated with the Level of Underage Drinking in a Community

The following outlines the current state of the literature on the factors related to underage drinking and what research says about the environmental interventions associated with them.

Price of Alcohol

The most extensive research evidence to date is the effect of price on the level of alcohol consumption. Studies within and outside of the United States consistently confirm that even small increases in the price of alcohol result in decreases in alcohol consumption and related problems among youth and adults (Chaloupka, 2004; Cook & Moore, 2002). A recent review of the literature confirms this inverse relationship (Wagenaar, Salois & Komro, 2009). Interestingly, it appears that increases in the price of alcohol may have stronger effects on the drinking behaviors of youth when compared to adults (Chaloupka & Warner, 2001). In addition:

- Price consistently affects the drinking behaviors of all types of drinkers from light to heavy. While the effects of price on drinking may vary depending on other variables (individual, societal, commu-

nity, etc.), the overall finding across studies is that there is an inverse relationship. As the price goes up, the consumption of any type of beverage goes down (Wagenaar, Salois & Komro, 1999).

- Increasing the price of alcohol reduces incidents of drinking and driving (Chaloupka et al., 1993; Kenkel, 1993; Chaloupka & Laixuthai, 1997).
- Price increases appear to have a greater effect on reducing alcohol related problems such as youth traffic fatalities in communities with weak alcohol regulations (Ponicki, Gruenewald & LaScala, 2007).

Price Interventions with Strong Evidence of Population-Level Prevention Effects

Increasing Alcohol Taxes

There is substantial evidence in support of increases in alcohol taxes to reduce heavy alcohol consumption and related problems. In 1988, Coate and Grossman estimated that if the United States increased the price of alcohol by restoring the federal excise taxes to the rate of current inflation, fewer young people would report frequent beer drinking (32 percent fewer) and fairly frequent beer drinking (24 percent fewer). Tax increases also appear to reduce instances of traffic crash fatalities (Ruhm, 1996).

Promising Price Interventions

Restricting Happy Hours

Alcohol price discounts and promotions greatly affect the price of alcohol. Happy hours are associated with an increase alcohol consumption in both casual and heavy adult drinkers (Babor, Mendelson, Greenberg & Kuehnle, 1978) as well as in youth aged 14-17 years-old (Van Hoof, Van Noordenburg & DeJong, 2008). While more research is needed on this intervention, it appears to be promising as part of a comprehensive plan.

Underage Drinking Laws (MLDA-21)

There is a large body of evidence demonstrating that the minimum legal drinking age of 21 is an effective policy in reducing heavy drinking and associated harms among young people (Wechsler & Nelson, 2010). The policy is easily studied given that throughout history, the laws have not always remained constant. It is clear, however that in cases where states lower the minimum legal drinking age, alcohol consumption increases along with alcohol-involved traffic deaths; particularly among youth aged 18-20 years old (Wagenaar & Toomey, 2002; Dang, 2008; Douglass, 1980). Of course, the minimum legal drinking age law of 21 does not stand on its own. It is supported by a variety of state laws and alcohol control policies that tend to vary in terms of how well they are enforced. Without consistent enforcement of the laws, youth will have access to alcohol. Recent research continues to confirm the association between comprehensive alcohol policies and reductions in youth alcohol use (Paschall, Grube & Kypri, 2009).

Underage Drinking Law Interventions with Strong Evidence of Population-Level Prevention Effects

Limiting Retail Availability of Alcohol

Depending on their geographic location, is estimated that between 30 and 90 percent of on-premise (e.g. bars, restaurants) and off-premise (e.g., liquor stores, gas stations, grocery stores) alcohol outlets sell to minors (Wagenaar & Wolfson, 1995). Research has identified numerous effective strategies to address the retail access of alcohol to young people. The following describes these strategies and some of the supporting research:

- **Regulating Alcohol Outlet Density**—Alcohol outlet density is defined as the number of licensed establishments per capita in any defined community. Alcohol outlet density directly affects the availability of alcohol. By reducing or limiting the num-

ber of licensed alcohol retailers, alcohol consumption and related problems will decrease (Gruenewald, Johnson & Treno, 2002). Numerous studies have found a relationship between alcohol outlet density and the consumption of alcohol as well as related problems:

- Young people who live within walking distance of alcohol establishments report more binge drinking and driving after drinking. Higher outlet densities are associated with greater instances of these behaviors among young people (Dang Truong & Sturm, 2009; Chen, Grube & Gruenewald, 2010).
- Communities with high alcohol outlet densities experience more problems with drinking and driving and riding in a car with a person under the influence of alcohol among 16 to 20 year-olds (Treno, Grube & Martin, 2003).
- Students at college campuses with high alcohol outlet density in the surrounding area are more likely to report heavy and frequent drinking and experience other drinking-related problems among their students (Weitzman, Folkman, Folkman & Wechsler, 2003; Kypri, Bell, Hay & Baxter, 2008).
- As alcohol outlet density increases, young people report easier access to alcohol from an individual over 21 and by purchasing it themselves without identification (Todd, Grube & Gruenewald, 2005).
- **Restricting Hours and Days of Alcohol Sales**—Studies find that states and communities that limit the hours and days of alcohol sales have fewer drinking and drinking-related problems. The effectiveness of this strategy is easily studied when hours and days of alcohol sales are modified from being more restrictive to more liberal. Few studies found specific effects on youth drinking, but the effects

seen in the general population are significant enough to assume that limiting hours and days of alcohol sales also affect young people. The following summarize key findings supporting this strategy:

- A temporary weekend ban of alcohol sales in Mexico drastically reduced cross-border binge drinking among American youth as measured by Breath Alcohol Content (BAC) (Kelley-Baker, Johnson, Voas & Lange, 2000).
- Increasing the number of days that licensed retailers can sell alcohol is associated with an increase in the consumption of beer and spirits (Stehr, 2007).
- Limiting hours and days of sale can reduce alcohol related traffic

- RBS training is most effective when follow-up sessions are offered over a period of time. This is particularly important for younger merchants whose positive behavior effects as a result of the training may diminish over time (Buka & Birdthistle, 1999).
- When combined with additional strategies such as compliance checks, policy development and media advocacy, RBS is most likely to be successful (Grube, 1997; Saltz & Stanghetta, 1997).
- Research associates the implementation of RBS programs with a reduction in sales of alcohol to minors, violence in areas surrounding alcohol establishments, traffic crashes and sales to intoxicated individuals (Wallin, Norstrom & Andreasson, 2003; Holder & Wagenaar, 1994).

Promising Underage Drinking Law Interventions

Responsible Beverage Service Training

Enforcing the minimum legal drinking age laws and preventing sales of alcohol to youth requires multiple interventions as part of a comprehensive effort (Imm, Chinman, Wandersman, Rosenbloom, Guckenbug & Leis, 2007). One key component involves educating the individuals that sell or serve alcohol about the laws and the consequences of selling to underage youth. The program teaches servers skills such as how to check identification and recognize false ID's, the importance of offering food and alcohol-free beverages and how to determine when an individual has had too much to drink (Birckmayer et al., 2007). Responsible Beverage Service (RBS) is a program that targets all merchants that sell alcohol including servers at bars and restaurants where drinking occurs on-site, sellers in retail establishments where individuals purchase alcohol and consume it at another location as well as managers and owners. Responsible Beverage Service training is considered a promising strategy with the following research support:

Retail Monopolies on Alcohol Sales

When states restrict private licensing of alcohol sales, it not only reduces the number of establishments that sell alcohol, but may also make it easier to enforce laws against selling to minors (Her, Giesbrecht, Room & Rehm, 1999). States that allow private sales of alcohol and therefore price competition, experience more alcohol consumption among youth and more fatal traffic deaths involving alcohol-impaired drivers than states that control alcohol sales and price through a state retail monopoly (Miller, Snowden, Birckmayer & Hendrie, 2006).

Limiting Social Availability of Alcohol

Research finds that the most common source of alcohol for underage youth comes from social sources such as an adult friend or family member over the age of 21 (Wagenaar, Toomey, Murray, Short, Wolfson & Jones-Webb, 1996). In another study, 87 percent of underage youth reported obtaining alcohol through social sources such as a friend or family mem-

ber while only 23 percent reported the ability to purchase alcohol in retail commercial settings (Paschall, Grube, Black & Ringwalt, 2007). While social availability is a large source of alcohol for young people, research knows less about how to intervene in this area. The following strategies are promising approaches:

Promising Social Availability Interventions

Keg Registration

One way to potentially control underage access to alcohol outside of licensed alcohol establishments is to monitor the sales of beer kegs which are often purchased for private parties (Imm et al., 2007). Keg registration laws allow retailers to keep track of when a keg was purchased and who purchased it. This allows law enforcement to determine, when necessary, the individual responsible for providing alcohol to minors. Research is not yet clear as to how keg registration laws might impact youth drinking rates, but there appears to be an association with reduced rates of traffic fatalities among the general population (Cohen, Mason & Scribner, 2001).

Social Host Laws

In another effort to deter individuals from providing alcohol to minors, social host laws place liability on adults in situations where an intoxicated person is killed, injured or causes harm or death to another individual (Imm et al., 2007). Advocating for social host liability laws is increasingly popular among communities in an effort to decrease social access to alcohol. However, more research is needed to better understand the effectiveness of this strategy; in particular how it affects youth alcohol consumption. Currently, research has linked social host liability laws with the following:

- Individuals residing in states with social host liability laws engage in heavy drinking and drinking and driving less fre-

quently than those residing in states without the laws (Stout, Sloan, Liang & Davies, 2000).

- Social host liability laws are associated with a reduction in alcohol-related traffic fatalities (Whetten-Goldstein, 2000).

Other recommended interventions include: (1) Curfews for youth, (2) Restricting access to alcohol at social events, (3) Party patrols and (4) Restrictions on drinking locations and possession of alcohol (Birckmayer et al., 2007; Imm et al., 2007). Currently, little is known about how these interventions affect alcohol consumption among young people. However, these interventions may prove effective in combination with a comprehensive plan that includes evidence-based environmental interventions.

Visible Enforcement

Visible enforcement is a necessary component of any comprehensive prevention plan and is important in generating deterrence around youth drinking, as well as the sales and provision of alcohol to young people (Birckmayer et al., 2007). In fact, research finds that when adolescents perceive high rates of alcohol policy enforcement and compliance in their community they are less likely to use commercial sources to obtain alcohol, drink at school, drink and drive and drink heavily in any circumstances (Dent, Grube & Biglan, 2005). Enforcement of the minor in possession laws also is associated with less binge and overall drinking (Dent, Grube & Biglan, 2005). In addition, a recent study found that young people's perceptions of the level of police enforcement of the underage drinking laws positively related to their perceptions of community disapproval of youth alcohol use (Lipperman-Kreda, Grube & Paschall, 2010). While visible enforcement is important, studies find that it is often low and tends to vary significantly across states (Wagenaar & Wolfson, 1995). Given this, it is important for communities to consider implementing

strategies to increase the visibility of enforcement. The following describes the research behind compliance checks, one evidence-based enforcement intervention:

Compliance Checks

Compliance checks are used to determine whether or not licensed alcohol establishments sell to underage youth. Law enforcement obtains parental consent of youth who are then trained in the procedures of a compliance check. If asked for identification, underage youth present their own identification and do not lie about their age. The goal is to reduce the likelihood that retailers will sell alcohol to an underage person. Often, compliance checks are implemented in combination with media recognition for retailers that refuse sales to individuals under the age of 21. They demonstrate to the community that selling alcohol to underage persons is unacceptable.

Compliance checks have been instrumental in lowering rates of sales to underage youth as well as their smoking rates (Biglan et al., 2000). In fact, research finds that when compliance rates increase, young people report less use of commercial sources for alcohol (Paschall, Grube, Black, Flewelling, Ringwalt & Biglan, 2007). Increasingly, compliance checks are being used to reduce youth retail access to alcohol and have been demonstrated effective in a variety of studies.

- Implementation of compliance checks reduced the number of licensed retailers selling alcohol to individuals under age 21 by more than 20 percent (Stroh, 1998).
- In combination with other interventions, compliance check programs reduced reported alcohol consumption among youth (Grube 1997, Grube 1998).
- Compliance checks are more likely to reduce illegal alcohol sales when they are

conducted on a regular basis, as they appear to have a decaying effect over time (Wagenaar, Toomey & Erickson, 2005a; Wagenaar, Toomey & Erickson, 2005b)

Community-Level Strategies for Tobacco Prevention and Control

Research shows that most smokers begin smoking before the age of 21 (Gilpin, Lee, Evans & Pierce, 1994). Given this, preventing the early onset of tobacco use is critical in reducing the many negative health consequences associated with both early and prolonged use. In 1994, the Surgeon General responded to this problem by publishing a report called “Preventing Tobacco Use Among Young People” (U.S. Department of Health and Human Services, 1994). The report highlights the importance of implementing comprehensive, communitywide efforts to prevent and reduce tobacco use among young people. Specific strategies such as increasing tobacco taxes, enforcing existing tobacco control policies, implementing mass media campaigns, developing tobacco-free school policies, establishing education and prevention programs in schools, and restricting tobacco advertising and promotions are mentioned as components of a comprehensive approach.

In 1999, the CDC published a manual to support states in planning comprehensive tobacco control programs to reduce disease, disability, and death associated with tobacco use. To achieve these goals, the CDC also emphasized the importance of preventing the initiation of tobacco use as well as promoting cessation, decreasing exposure to second hand smoke, and eliminating disparities in tobacco use effects among different populations. To achieve these aims, the CDC emphasizes the need for the federal government, states, and local communities to work in partnership and at multiple levels to successfully address tobacco prevention (CDC, 1999). Key strategies include those focused on

the individual-level as well as the community-level, or environmental strategies.

Environmental strategies important for tobacco control and prevention include the adoption and enforcement of public and private tobacco control policies. It should be noted that rigorous enforcement is important in the success of any policy. In fact, research shows that the strict enforcement of youth access laws can effectively reduce youth access to cigarettes (Feighery, Altman & Shaffer, 1991; Jason, Yi, Anes & Birkhead, 1991; Jason, Billows, Schnopp-Wyatt & King, 1996). The following briefly describes a few of the key strategies currently being implemented in states and local communities (often led by community coalitions and other community mobilization efforts) across the country and some of the associated research:

Increasing Tobacco Excise Taxes

Tobacco excise taxes are determined by the state and therefore vary across the country. Research shows that young people are highly sensitive to an increase in cigarette prices when compared to adults. As prices increase, young people are less likely to report smoking (Ross & Chaloupka, 2004; Lewit, Coate & Grossman, 1981).

Restricting Youth Access to Tobacco

Research provides little information about how to reduce tobacco access through social sources. Similar to alcohol, while young people do report obtaining tobacco by purchasing it themselves, the majority of early experimenters, advanced experimenters and established youth smokers obtain cigarettes from others who either purchase it for them or who give them away. Some youth also report taking cigarettes without permission (Emery, Gilpin, White & Pierce, 1999). While more research is needed in the area of social sources for tobacco, research is growing in the area of retail access and there is significant evidence that strategies to reduce retail access of tobacco products can reduce youth smoking

rates. The following highlights some of these strategies that can be implemented at the state and community levels:

- **Compliance Checks**

Unannounced compliance checks in which minors attempt to purchase tobacco products can aid in the enforcement of tobacco control laws. Research finds that compliance checks are an important element in a youth smoking prevention plan as they can reduce tobacco sales to youth (Jason et al., 1991), reduce the amount of tobacco consumed by youth smokers, and reduce the overall rates of youth smoking in a community (Ross & Chaloupka, 2004; Tutt, Bauer & DiFranza, 2009). Strong enforcement components are necessary for a compliance program to be truly successful in reducing illegal sales and smoking rates among young people (Tutt, 2009). A media component can also strengthen the effectiveness of compliance checks for tobacco sales to minors. In one community, a compliance program with strong enforcement that included regular direct contact with retailers educating them on the fines and sanctions associated with violations of the law and reminding them that they are subject to random compliance checks resulted in an over 20 percent increase in compliance (Tutt et al., 2009).

- **Product Placement**

Many states now require retail outlets in which individuals under the age of 18 are allowed on the premises to place tobacco products in a location that cannot be reached without the help of an employee. Doing this can eliminate the theft of tobacco products by underage persons which is shown to be a larger problem for retailers with self-service tobacco displays (Cummings, Hyland, Saunders-Martin & Perla, 1998-1999).

- **Tobacco Licensing Restrictions**

There is some evidence that placing restrictions on the number of outlets provided with tobacco licenses in a given area may prevent or reduce youth smoking (Novak, Reardon, Raudenbush & Buka, 2006). Some states also have policies that allow license revocation for retailers that continue to sell to minors.

Other strategies used for restricting youth access to tobacco are the use of tobacco product scanners that prompt store clerks to ask purchasers for age identification (Cummings et al., 1998-1999), penalties for selling tobacco to minors and penalties or fines for minors who attempt to purchase tobacco (Jacobson & Wasserman, 1999).

- **Establishing Smoke-Free Indoor Air Laws**

Smoke-free indoor air laws place restrictions on smoking in both public and private settings such as government buildings, restaurants, schools, health facilities and workplaces. Studies examining the enforcement of these public and private policies to reduce or eliminate second-hand exposure to tobacco smoke have had good success. The policies protect non-smokers and also appear to reduce the daily number of cigarettes smoked by employees (Bauer, Hyland, Li, Steger & Cummings, 2005). Some studies report that laws restricting smoking in public places may reduce overall cigarette consumption and demand among current smokers (Chaloupka, 1991; Chaloupka & Wechsler, 1997; Wasserman, Manning, Newhouse & Winkler, 1991). Smoke-free indoor air laws also appear to affect smoking behaviors in the youth population. For example, placing local restrictions on smoking in restaurants was found to reduce rates of smoking as well as smoking intensity among youth in the surrounding community (Ross & Chaloupka, 1994).

- **Advertising Restrictions on Tobacco Products**

Some studies suggest that advertising can influence young people to smoke cigarettes (Pucci & Siegel, 1999, Hanewinkel, Isensee, Sargent & Morgenstern, 2010). To reduce tobacco advertising, communities often place limitations on where tobacco and cigarette advertising can be posted. For example, advertising may only be allowed if it is at least 1,000 feet away from a church or school. Laws also may place limits on the size of an advertisement or billboard. Some states place similar restrictions on tobacco advertising outside of retail stores. California, for example, limits retailer ad displays to no larger than fourteen square feet. In addition, California state law limits advertising displays to no more than one-third of the square footage of glass doors and windows of any retailer (California Department of Health Services, 2005).

- **Community-Level Strategies to Address Illicit Drug Problems**

Because of the fact that illicit drug manufacture, distribution and sale occur underground, illicit drug prevention strategies often differ from strategies for legal substances such as alcohol and tobacco. However, one illicit substance that has been addressed through policy at the local level in many communities is methamphetamine. Because of the fact that the chemicals used to produce this drug are available legally, Federal, state and local laws can place restrictions on access to these chemicals as an effort to reduce local production and use of methamphetamine. The following describes such restrictions in more detail:

- **Controlling the Sale of Precursor Chemicals**

Efforts to control the sale of chemicals used in methamphetamine production as well as enforcing penalties for those who

violate the laws can increase the perceived costs and perception of risk associated with methamphetamine production (O'Connor, Chriqui, McBride, Eidson, Baker, Terry-McElrath & VanderWaal, 2007). For example, federal laws have been passed to address the problem including the Combat Methamphetamine Act passed in 2005 that set limits to the amount of over the counter pseudoephedrine products behind the counter and set limits to how much of the product can be sold to an individual (O'Connor et al., 2007). Federal law does not prevent states from drafting more strict policies and some have done so with success (O'Connor et al., 2007). In addition, many states' local efforts also can be implemented to pass laws related to methamphetamine precursors or associated criminal penalties for those in violation of the law.

Lessons learned from crime prevention efforts shed light on the role that environmental strategies can play to reduce other illicit drug problems within the community. Many of these strategies include reducing the availability of drugs in the community through supply reduction. For example there is some success in the following:

- **Reducing Drug Dealing in Private Rental Places**—There is strong research evidence that suggests drug related crimes can be decreased via implementation of appropriate management of rental properties. Civil, criminal and regulatory rules and laws can be used to force third-parties (i.e., landlords and owners) to take some responsibility in controlling crime committed on their property. Nuisance abatement efforts that threaten landlords/owners with legal action to seize properties in which drug dealing occurs have been successful at reducing drug related crimes, such as dealing and drug offenses (Eck, 1997; Mazerolle, Soole & Rombouts, 2007).

- **Crime Prevention Through Environmental Design (CPTED)**—This describes strategies targeted at crime reduction by changing aspects of the physical environment in which problems occur. CPTED aimed at drug problems may include installing surveillance cameras, adding additional lighting and eliminating bus stops or phone booths used by drug users and dealers. There is some support that CPTED aimed at reducing drug problems is successful at impacting drug and violent arrests (Mazerolle, Soole & Rombouts, 2007).

Researchers have recently developed a comprehensive intervention to prevent youth use of harmful legal products, such as inhalants, prescription drugs and over-the-counter-drugs (Johnson et al., 2007).

- **Comprehensive Prevention Intervention to Reduce Youth Use of Harmful Legal Products**—This intervention has three evidence-based substance abuse prevention components: community mobilization to support the prevention efforts, environmental strategies to reduce the availability of harmful legal products, and school-based prevention education to improve youths' behavioral and cognitive skills. The particular environmental strategies emphasized in this intervention include working with retailers to post warning labels, identify products with high-risk of being abused, developing store policies regarding sales of these high-risk products, changing how/where products are displayed, and restricting sales to youth. Strategies also engaged parents and schools in restricting access of harmful products within the home and school environments. The program has undergone a study to test feasibility of implementing the program components in four Alaskan communities. Results

from the feasibility study indicate fewer youth (12-17 years) were able to purchase harmful products (Courser, Collins, Holder, Johnson & Ogilvie, 2007) and

parents and schools adopted practices to restrict youth abuse of harmful legal products (Johnson et al., 2007).

CONCLUSION

In summary, it is clear that strong scientific evidence exists to support the effectiveness of environmental strategies, as well as evidence that coalitions can be successful at implementing the full array of prevention programs and environmental/policy strategies to address local substance abuse problems. As indicated by the socio-ecological model, effective interventions to address behavior such as substance use and abuse requires a comprehensive approach, seeking change at multiple levels (Bronfenbrenner, 1979; Sorensen, Emmons, Hunt & Johnston, 1998). Such an approach addresses the problem using both individually-focused and environmentally-focused interventions as part of a strategic plan to achieve population-level reductions in alcohol, tobacco and illicit drug use.

Additionally, by implementing a comprehensive plan addressing all levels of the ecological model, coalitions bring about key community and systems changes (e.g., new or modified programs, policies and practices brought about by the coalition related to its mission) that are considered critical intermediate outcomes needed to bring about population-level changes in substance abuse outcomes (Roussos & Fawcett, 2000). Examples of community changes include: implementing a prescription drug take-back program, expanding the practice of health clinics to screen for youth drug use and changing policy to increase the tax paid for tobacco products. These community changes represent progress toward achieving long-term goals and can be documented with reliability (Fawcett et al., 1997; Francisco, Paine, & Fawcett, 1993).

Other researchers agree that markers of intermediate outcomes toward more distal health outcomes are changes in the community environment, such as the shifts in programs, policies and practices described above (Butterfoss, 2007; Kegler, Twiss & Look, 2000).

Research examining the relationship between community changes and population-level outcomes provides indication that these community changes are important precursors of improvements in population-level health outcomes. Fawcett and colleagues (1997; Paine-Andrews et al., 2002) have demonstrated in numerous case studies that reductions in population-level health outcomes are more likely when a sufficient number of community changes have been achieved. When coalitions are effective at facilitating new or modified programs, policies and practices, such as increasing enforcement of underage drinking laws, decreasing availability of tobacco, and implementing evidence-based drug prevention programs, they are more likely to experience population-level decreases in targeted health outcomes, such as the reduction of youth substance abuse and decreases in alcohol-related crashes and fatalities. These studies provide strong examples of community changes as intermediate outcomes toward population-level outcomes.

Research on substance abuse coalitions makes a further case for coalitions and use of comprehensive, community change efforts. Project Freedom, a drug abuse prevention coalition in Wichita, Kans., (Fawcett et al., 1997) was engaged in high levels of community mobilization

and was effective at facilitating new or modified programs, policies and practices targeted at their mission of preventing substance abuse. Additionally, survey data from high school seniors showed a modest impact on reducing use of alcohol. Examination of single nighttime vehicle crashes, a population level indicator of community health, also suggests a negative relationship between this variable and the number of community changes the coalition helped bring about. The researchers discovered that rates of single nighttime vehicle crashes were more likely to decrease when a sufficient number of community changes had been achieved, suggesting that the coalition contributed to reductions in crash rates through the implementation of a variety of strategies targeting substance abuse prevention.

It is examples like the one above that show how coalitions can be the vehicles through which comprehensive prevention occurs within the community. By ensuring that a multi-level, multi-component response is implemented by the multitude of community stakeholders involved in the coalition, communities are more likely to reduce substance abuse population-wide. Research is clear that both individual-level and community-level interventions are needed to affect all individuals and sectors within the community. Coalitions are well poised to be the change agent to help the community select the right combination of evidence based programs, policies and practices to achieve population-level reductions in substance abuse/use rates.

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Published 2010
CADCA National Coalition Institute
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CADCA's National Coalition Institute is operated by funds administered by the Executive Office of the President, Office of National Drug Control Policy in partnership with SAMHSA's Center for Substance Abuse Prevention.