

# CHAPTER 3.

## PREVENTION PROGRAMS AND POLICIES

### Chapter 3 Preview

As discussed in earlier chapters, the misuse of alcohol and drugs and substance use disorders has a huge impact on public health in the United States. In 2014, over 43,000 people died from a drug overdose, more than in any previous year on record<sup>2</sup> and alcohol misuse accounts for about 88,000 deaths in the United States each year (including 1 in 10 total deaths among working-age adults).<sup>4</sup> The yearly economic impact of alcohol misuse and alcohol use disorders is estimated at \$249 billion (\$2.05 per drink) in 2010<sup>6</sup> and the impact of illicit drug use and drug use disorders is estimated at \$193 billion—figures that include both direct and indirect costs related to crime, health, and lost productivity.<sup>7</sup> Over half of these alcohol-related deaths and three-quarters of the alcohol-related economic costs were due to binge drinking. In addition, alcohol is involved in about 20 percent of the overdose deaths related to prescription opioid pain relievers.<sup>6</sup>

Substance misuse is also associated with a wide range of health and social problems, including heart disease, stroke, high blood pressure, various cancers (e.g., breast cancer), mental disorders, neonatal abstinence syndrome (NAS), driving under the influence (DUI) and other transportation-related injuries,<sup>8,9</sup> sexual assault and rape,<sup>10,11</sup> unintended pregnancy, sexually transmitted infections,<sup>12</sup> intentional and unintentional injuries,<sup>13</sup> and property crimes.<sup>14</sup>

Given the impact of substance misuse on public health and the increased risk for long-term medical consequences, including substance use disorders, it is critical to prevent substance misuse from starting and to identify those who have already begun to misuse substances and intervene early. Evidence-based prevention interventions, carried out before the need for treatment, are critical because they can delay early use and stop the progression from use to problematic use or to a substance use disorder (including its severest form, addiction), all of which are associated with costly individual, social, and public health consequences.<sup>6,15-17</sup> This chapter will demonstrate that prevention can markedly reduce the burden of disease and related costs. The good news is that there is strong scientific evidence supporting the effectiveness of prevention programs and policies.



#### FOR MORE ON THIS TOPIC

See Chapter 4 - *Early Intervention, Treatment, and Management of Substance Use Disorders*.

This chapter uses the term evidence-based interventions (EBIs) to refer to programs and policies supported by research. The chapter discusses the predictors of substance use initiation early in life and substance misuse throughout the lifespan, called risk factors, as well as factors that can mitigate those risks, called protective factors. The chapter also includes a system of categorizing prevention strategies defined by the Institute of Medicine (IOM).<sup>18</sup> This discussion is followed by a review of rigorous research on substance use initiation and misuse prevention programs that have demonstrated evidence of effectiveness. The chapter continues with a review of the rigorous research on the effectiveness and population impact of prevention policies, most of which are associated with alcohol misuse, as there is limited scientific literature on policy interventions for other drugs. Detailed reviews of these programs and policies are in [Appendix B - Evidence-Based Prevention Programs and Policies](#). The chapter then describes how communities can build the capacity to implement effective programs and policies community wide to prevent substance use and related harms, and concludes with research recommendations.

## KEY FINDINGS\*

- Well-supported scientific evidence exists for robust predictors (risk and protective factors) of substance use and misuse from birth through adulthood. These predictors show much consistency across gender, race and ethnicity, and income.
- Well-supported scientific evidence demonstrates that a variety of prevention programs and alcohol policies that address these predictors prevent substance initiation, harmful use, and substance use-related problems, and many have been found to be cost-effective. These programs and policies are effective at different stages of the lifespan, from infancy to adulthood, suggesting that it is never too early and never too late to prevent substance misuse and related problems.
- Communities and populations have different levels of risk, protection, and substance use. Well-supported scientific evidence shows that communities are an important organizing force for bringing effective EBIs to scale. To build effective, sustainable prevention across age groups and populations, communities should build cross-sector community coalitions which assess and prioritize local levels of risk and protective factors and substance misuse problems and select and implement evidence-based interventions matched to local priorities.
- Well-supported scientific evidence shows that federal, state, and community-level policies designed to reduce alcohol availability and increase the costs of alcohol have immediate, positive benefits in reducing drinking and binge drinking, as well as the resulting harms from alcohol misuse, such as motor vehicle crashes and fatalities.
- There is well-supported scientific evidence that laws targeting alcohol-impaired driving, such as administrative license revocation and lower per se legal blood alcohol limits for adults and persons under the legal drinking age, have helped cut alcohol-related traffic deaths per 100,000 in half since the early 1980s.
- As yet, insufficient evidence exists of the effects of state policies to reduce inappropriate prescribing of opioid pain medications.

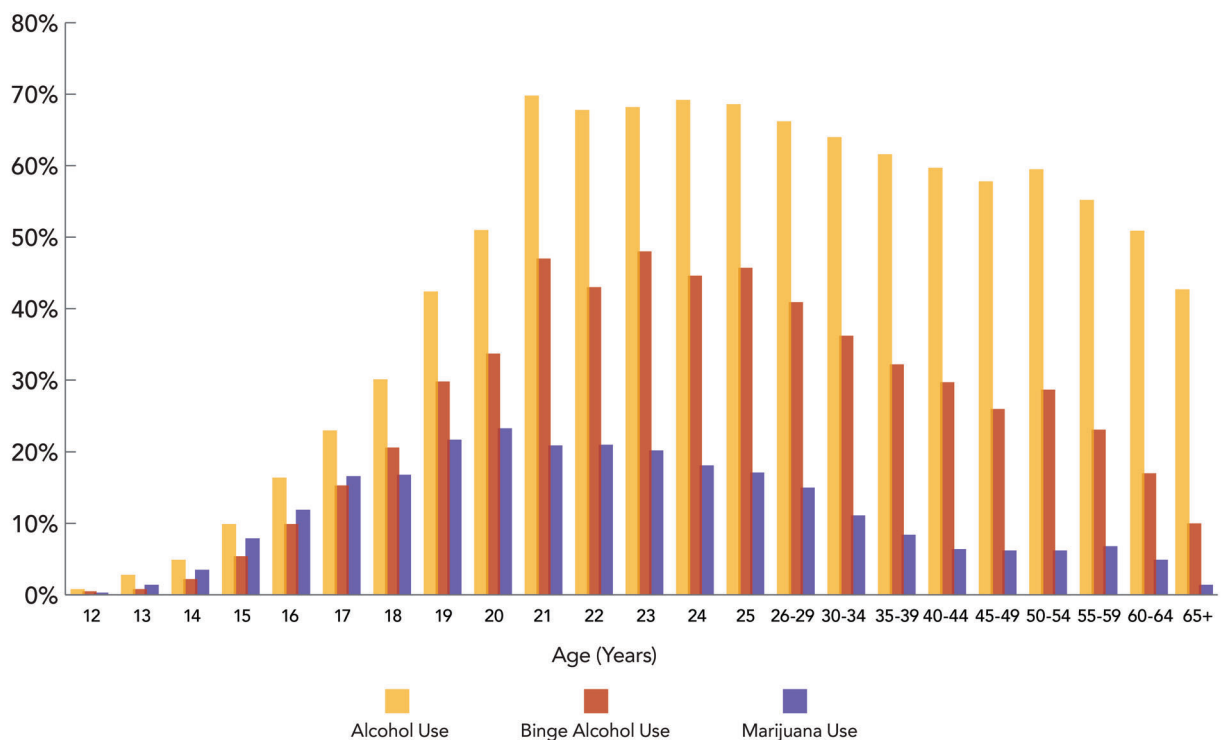
\*The Centers for Disease Control and Prevention (CDC) summarizes strength of evidence as: "Well-supported": when evidence is derived from multiple controlled trials or large-scale population studies; "Supported": when evidence is derived from rigorous but fewer or smaller trials; and "Promising": when evidence is derived from a practical or clinical sense and is widely practiced.<sup>5</sup>

## Why We Should Care About Prevention

Beginning in the twentieth century, the major illnesses leading to death shifted from infectious diseases, such as tuberculosis and infections in newborns, to noncommunicable diseases, such as heart disease, diabetes, and cancer. This shift was a result of effective public health interventions, such as improved sanitation and immunizations that reduced the rate of infectious diseases, as well as increased rates of unhealthy behaviors and lifestyles, including smoking, poor nutrition, physical inactivity, and substance misuse. In fact, behavioral health problems such as substance use, violence, risky driving, mental health problems, and risky sexual activity are now the leading causes of death for those aged 15 to 24.<sup>19</sup>

To effectively prevent substance misuse, it is important to understand the nature of the problem, including age of onset. Although people generally start using and misusing substances during adolescence, misuse can begin at any age and can continue to be a problem across the lifespan. As seen in [Figure 3.1](#), likelihood of substance use escalates dramatically across adolescence, peaks in a person's twenties, and declines thereafter. For example, the highest prevalence of past month binge drinking and marijuana use occurs at ages 21 and 20, respectively. Other drugs follow similar trajectories, although their use typically begins at a later age.<sup>20</sup> Early substance misuse, including alcohol misuse, is associated with a greater likelihood of developing a substance use disorder later in life.<sup>21,22</sup> Of those who begin using a substance, the percentage of those who develop a substance use disorder, and the rate at which they develop it, varies by substance.

**Figure 3.1: Past-Month Alcohol Use, Binge Alcohol Use, and Marijuana Use, by Age: Percentages, 2015 National Survey on Drug and Health (NSDUH)**



Note: Binge alcohol use is defined as drinking five or more drinks (for males) or four or more drinks (for females) on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days.

Source: Center for Behavioral Health Statistics and Quality, (2016).<sup>20</sup>

It is important to note that the vast majority of people in the United States who misuse substances do not have substance use disorders.<sup>20,23</sup> Nonetheless, substance misuse can put individual users and others around them at risk of harm, whether or not they have a disorder. Also, early initiation, substance misuse, and substance use disorders are associated with a variety of negative consequences, including deteriorating relationships, poor school performance, loss of employment, diminished mental health, and increases in sickness and death (e.g., motor vehicle crashes, poisoning, violence, or accidents).<sup>15-17</sup> It is therefore critical to prevent the full spectrum of substance misuse problems in addition to treating those with substance use disorders.

Preventing or reducing early substance use initiation, substance misuse, and the harms related to misuse requires the implementation of effective programs and policies that address substance misuse across the lifespan. The prevention science reviewed in this chapter demonstrates that effective prevention programs and policies exist, and if implemented well, they can markedly reduce substance misuse and related threats to the health of the population. However, evidence-based programs and policies are underutilized. For example, studies have found that many schools and communities are using prevention programs and strategies that have little or no evidence of effectiveness.<sup>24,25</sup> In fact, underuse of effective prevention programs and policies was the impetus for the creation of *Communities That Care* (CTC), a prevention service delivery system that promotes healthy youth development, improves youth outcomes, and reduces substance use and other problem behavior.<sup>26</sup>

At the policy level, research shows that higher alcohol prices reduce alcohol misuse and related harms (e.g., alcohol-related motor vehicle crashes),<sup>27-31</sup> and taxes are one component of price. As of January 1, 2015, 42 states had a beer excise tax of less than \$0.50 per gallon, while only four states had an excise tax more than \$1.00 per gallon ([Table 3.4](#)).<sup>32,33</sup>

## Risk and Protective Factors

Longitudinal research has identified predictors of substance use and other behavioral health problems that are targets for preventive interventions.<sup>34-36</sup> Risk and protective factors influence the likelihood that a person will use a substance and whether they will develop a substance use disorder.

Risk and protective factors become influential at different times during development, and they often relate to physiological changes that occur over the course of development or to factors in a person's environment—for example, biological transitions such as puberty or social transitions such as attending a new school, parental divorce or military deployment, or graduation.<sup>37</sup> These factors can be influenced by programs and policies at multiple levels, including the federal, state, community, family, school, and individual levels.<sup>38-41</sup> Targeted programs implemented at the family, school, and individual levels can complement the broader population-level policy interventions, and assist in reducing specific risk factors ([Table 3.1](#)) and promoting protective factors ([Table 3.2](#)). Although there are exceptions, most



### KEY TERMS

**Risk factors.** Factors that increase the likelihood of beginning substance use, of regular and harmful use, and of other behavioral health problems associated with use.

**Protective factors.** Factors that directly decrease the likelihood of substance use and behavioral health problems or reduce the impact of risk factors on behavioral health problems.

risk and protective factors associated with substance use also predict other problems affecting youth, including delinquency, psychiatric conditions, violence, and school dropout. Therefore, programs and policies addressing those common or overlapping predictors of problems have the potential to simultaneously prevent substance misuse as well as other undesired outcomes.<sup>42-44</sup>

Some risk and protective factors appear to have consistent effects across cultural and gender groups, although low-income and disadvantaged populations are generally exposed to more risk factors, including risk factors within the environment, and to fewer protective factors than are other groups in the population. However, research has shown that binge drinking is more common among individuals in higher income households as compared to lower income households.<sup>45</sup> This has implications for the types of prevention programs and policies that might be most successful with disadvantaged populations. Despite the similarities in many identified risk factors across groups, it is important to examine whether there are subpopulation differences in the exposure of groups to risk factors.

Table 3.1: Risk Factors for Adolescent and Young Adult Substance Use

Risk Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
<b>Individual/Peer</b>			
Early initiation of substance use <sup>46,47</sup>	Engaging in alcohol or drug use at a young age.	✓	✓
Early and persistent problem behavior <sup>48,49</sup>	Emotional distress, aggressiveness, and "difficult" temperaments in adolescents.	✓	
Rebelliousness <sup>48,50</sup>	High tolerance for deviance and rebellious activities.	✓	✓
Favorable attitudes toward substance use <sup>51,52</sup>	Positive feelings towards alcohol or drug use, low perception of risk.	✓	✓
Peer substance use <sup>53-55</sup>	Friends and peers who engage in alcohol or drug use.	✓	✓
Genetic predictors <sup>56</sup>	Genetic susceptibility to alcohol or drug use.	✓	✓
<b>Family</b>			
Family management problems (monitoring, rewards, etc.) <sup>57-60</sup>	Poor management practices, including parents' failure to set clear expectations for children's behavior, failure to supervise and monitor children, and excessively severe, harsh, or inconsistent punishment.	✓	✓
Family conflict <sup>61-63</sup>	Conflict between parents or between parents and children, including abuse or neglect.	✓	✓
Favorable parental attitudes <sup>64,65</sup>	Parental attitudes that are favorable to drug use and parental approval of drinking and drug use.	✓	✓
Family history of substance misuse <sup>66,67</sup>	Persistent, progressive, and generalized substance use, misuse, and use disorders by family members.	✓	✓

Risk Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
<b>School</b>			
Academic failure beginning in late elementary school <sup>68,69</sup>	Poor grades in school.	✓	✓
Lack of commitment to school <sup>70,71</sup>	When a young person no longer considers the role of the student as meaningful and rewarding, or lacks investment or commitment to school.	✓	✓
<b>Community</b>			
Low cost of alcohol <sup>30,72</sup>	Low alcohol sales tax, happy hour specials, and other price discounting.	✓	✓
High availability of substances <sup>73,74</sup>	High number of alcohol outlets in a defined geographical area or per a sector of the population.	✓	✓
Community laws and norms favorable to substance use <sup>75,76</sup>	Community reinforcement of norms suggesting alcohol and drug use is acceptable for youth, including low tax rates on alcohol or tobacco or community beer tasting events.	✓	✓
Media portrayal of alcohol use <sup>77-79</sup>	Exposure to actors using alcohol in movies or television.	✓	
Low neighborhood attachment <sup>80,81</sup>	Low level of bonding to the neighborhood.	✓	
Community disorganization <sup>82,83</sup>	Living in neighborhoods with high population density, lack of natural surveillance of public places, physical deterioration, and high rates of adult crime.	✓	
Low socioeconomic status <sup>84,85</sup>	A parent's low socioeconomic status, as measured through a combination of education, income, and occupation.	✓	
Transitions and mobility <sup>80,86</sup>	Communities with high rates of mobility within or between communities.	✓	

Table 3.2: Protective Factors for Adolescent and Young Adult Substance Use

Protective Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
<b>Individual</b>			
Social, emotional, behavioral, cognitive, and moral competence <sup>87,88</sup>	Interpersonal skills that help youth integrate feelings, thinking, and actions to achieve specific social and interpersonal goals.	✓	✓
Self-efficacy <sup>89,90</sup>	An individual's belief that they can modify, control, or abstain from substance use.	✓	✓
Spirituality <sup>91,92</sup>	Belief in a higher being, or involvement in spiritual practices or religious activities.	✓	✓

Protective Factors	Definition	Adolescent Substance Use	Young Adult Substance Use
Resiliency <sup>88</sup>	An individual's capacity for adapting to change and stressful events in healthy and flexible ways.	✓	✓
<b>Family, School, and Community</b>			
Opportunities for positive social involvement <sup>93,94</sup>	Developmentally appropriate opportunities to be meaningfully involved with the family, school, or community.	✓	✓
Recognition for positive behavior <sup>51</sup>	Parents, teachers, peers and community members providing recognition for effort and accomplishments to motivate individuals to engage in positive behaviors in the future.	✓	✓
Bonding <sup>95-97</sup>	Attachment and commitment to, and positive communication with, family, schools, and communities.	✓	✓
Marriage or committed relationship <sup>98</sup>	Married or living with a partner in a committed relationship who does not misuse alcohol or drugs.		✓
Healthy beliefs and standards for behavior <sup>51,99</sup>	Family, school, and community norms that communicate clear and consistent expectations about not misusing alcohol and drugs.	✓	✓

Note: These tables present some of the key risk and protective factors related to adolescent and young adult substance initiation and misuse.

## Types of Prevention Interventions

The IOM has described three categories of prevention interventions: *universal*, *selective*, and *indicated*.<sup>18</sup> Universal interventions are aimed at all members of a given population (for instance, all children of a certain age); selective interventions are aimed at a subgroup determined to be at high-risk for substance use (for instance, justice-involved youth); indicated interventions are targeted to individuals who are already using substances but have not developed a substance use disorder. Communities must choose from these three types of preventive interventions, but research has not yet been able to suggest an optimal mix. Communities may think it is best to direct services only to those with the highest risk and lowest protection or to those already misusing substances.<sup>100</sup> However, a relatively high percentage of substance misuse-related problems come from people at lower risk, because they are a much larger group within the total population than are people at high-risk. This follows what is known as the Prevention Paradox: “a large number of people at a small risk may give rise to more cases of disease than the small number who are at a high risk.”<sup>1</sup> By this logic, providing prevention interventions to everyone (i.e., universal interventions) rather than only to those at highest risk is likely to have greater benefits.<sup>3</sup>

One advantage of a properly implemented universal prevention intervention is that it is likely to reach most or all of the population (for example, school-based interventions are likely to reach all students). Targeted (selective and indicated) approaches are likely to miss a large percentage of their targets, but

they provide more intensive services to those who are reached. Because the best mix of interventions has not yet been determined, it is prudent for communities to provide a mix of universal, selective, and indicated preventive interventions.

## Universal Prevention Interventions

Universal interventions attempt to reduce specific health problems across all people in a particular population by reducing a variety of risk factors and promoting a broad range of protective factors. Examples of universal interventions include policies—such as the setting of a minimum legal drinking age (MLDA) or reducing the availability of substances in a community—and school-based programs that promote social and emotional competencies to reduce stress, express emotion appropriately, and resist negative social influences. Because they focus on the entire population, universal interventions tend to have the greatest overall impact on substance misuse and related harms relative to interventions focused on individuals alone.<sup>18</sup>

## Selective Interventions

Selective interventions are delivered to particular communities, families, or children who, due to their exposure to risk factors, are at increased risk of substance misuse problems. Target audiences for selective interventions may include families living in poverty, the children of depressed or substance-using parents, or children who have difficulties with social skills. Selective interventions typically deliver specialized prevention services to individuals with the goal of reducing identified risk factors, increasing protective factors, or both. Selective programs focus effort and resources on interventions that are intentionally designed for a specific high-risk group.<sup>101</sup> Selective programs have an advantage in that they focus effort and resources on those who are at higher risk for developing behavioral health problems. In so doing, they allow planners to create interventions that are more specifically designed for that audience. However, they are typically not population-based and therefore, compared to population-level interventions, they have more limited reach.

## Indicated Interventions

Indicated prevention interventions are directed to those who are already involved in a risky behavior, such as substance misuse, or are beginning to have problems, but who have not yet developed a substance use disorder. Such programs are often intensive and expensive but may still be cost-effective, given the high likelihood of an ensuing expensive disorder or other costly negative consequences in the future.<sup>102</sup>

## Evidence-based Prevention Programs

This section identifies universal, selective, and indicated prevention programs that have been shown to successfully reduce the number of people who start using alcohol or drugs or who progress to harmful use. Inclusion of the programs here was based on an extensive review of published research studies. Of the 600 programs considered, 42 met criteria to be included in this *Report*. Studies on programs that

included people who already had a substance use or related disorder were excluded. The review used standard literature search procedures which are summarized in detail in [Appendix A - Review Process for Prevention Programs](#).

The vast majority of prevention studies have been conducted on children, adolescents, and young adults, but prevention trials of older populations meeting the criteria were also included. Programs that met the criteria are categorized as follows: Programs for children younger than age 10 (or their families); programs for adolescents aged 10 to 18; programs for individuals ages 18 years and older; and programs coordinated by community coalitions. Due to the number of programs that have proven effective, the following sections highlight just a few of the effective programs from the more comprehensive tables in [Appendix B - Evidence-Based Prevention Programs and Policies](#), which describe the outcomes of all the effective prevention programs. Representative programs highlighted here were chosen for each age group, domain, and level of intervention, and with attention to coverage of specific populations and culturally based population subgroups. It is important to note that screening and brief intervention (SBI) and electronic SBI for reducing alcohol misuse have been recognized as effective strategies for identifying and reducing substance misuse among adults, but these are discussed in detail in [Chapter 4 - Early Intervention, Treatment, and Management of Substance Use Disorders](#) as effective early intervention strategies.<sup>103-106</sup>

## Interventions for Youth Aged 0 to 10

Few substance use prevention programs for children under the age of 10 have been evaluated for their effect on substance misuse and related problems. Such studies are rare because they require expensive long-term follow-up tracking and assessment to demonstrate an impact on substance initiation or misuse years or decades into the future. Consistent with general strategies to increase protective factors and decrease risk factors, universal prevention interventions for infants, preschoolers, and elementary school students have primarily focused on building healthy parent-child relationships, decreasing aggressive behavior, and building children's social, emotional, and cognitive competence for the transition to school. Both universal and selective programs have shown reductions in child aggression and improvements in social competence and relations with peers and adults (generally predictive of favorable longer-term outcomes), but only a few have studied longer-term effects on substance use.<sup>107,108</sup> Select programs showing positive effects are described below.

### *Nurse-Family Partnership*

Only one program that focused on children younger than age 5—the *Nurse-Family Partnership*—has shown significant reductions in the use of alcohol in the teen years compared with those who did not receive the intervention.<sup>109,110</sup> This selective prevention program uses trained nurses to provide an intensive home visitation intervention for at-risk, first-time mothers during pregnancy. This intervention provides ongoing education and support to improve pregnancy outcomes and infant health and development while strengthening parenting skills.

### *The Good Behavior Game and Classroom-Centered Intervention*

One universal elementary school-based prevention program has shown long-term preventive effects on substance use among a high-risk subgroup, males with high levels of aggression. The *Good Behavior Game* is a classroom behavior management program that rewards children for acting appropriately during instructional times through a team-based award system. Implemented by Grade 1 and 2 teachers, this program significantly lowered rates of alcohol, other substance use, and substance use disorders when the children reached the ages of 19 to 21.<sup>111</sup> The *Classroom-Centered Intervention*, which combined the *Good Behavior Game* with additional models of teacher instruction, also reduced rates of cocaine and heroin use in middle and high school, but it had no preventive effects on alcohol or marijuana initiation.<sup>112,113</sup>

### *Raising Healthy Children*

A number of multicomponent, universal, elementary school programs involving both schools and parents are effective in preventing substance misuse.<sup>114,115</sup> One example is the *Raising Healthy Children* program (also known as *Seattle Social Development Project*) which targets Grades 1 through 6 and combines social and emotional learning, classroom instruction and management training for teachers, and training for parents conducted by school-home coordinators, who work with the children in school and the parents at home, focusing on in-home problem solving and similar workshops. Studies of this program showed reductions in heavy drinking at age 18 (6 years after the intervention)<sup>114,115</sup> and in rates of alcohol and marijuana use.<sup>115</sup>

### *The Fast Track Program*

Two multicomponent selective and universal prevention programs were effective. An example is the *Fast Track Program*, an intensive 10-year intervention that was implemented in four United States locations for children with high rates of aggression in Grade 1. The program includes universal and selective components to improve social competence at school, early reading tutoring, and home visits as well as parenting support groups through Grade 10. Follow-up at age 25 showed that individuals who received the intervention as adolescents decreased alcohol and other substance misuse, with the exception of marijuana use.<sup>116</sup>

## Interventions for Adolescents Aged 10 to 18

A variety of universal interventions focused on youth aged 10 to 18 have been shown to affect either the initiation or escalation of substance use.<sup>117-124</sup> In general, school-based programs share a focus on building social, emotional, cognitive, and substance refusal skills and provide children accurate information on rates and amounts of peer substance use.<sup>119,120,124</sup>

### *School-based Programs*

One well-researched and widely used program is *LifeSkills Training*, a school-based program delivered over 3 years.<sup>117</sup> Research has shown that this training delayed early use of alcohol, tobacco, and other substances and reduced rates of use of all substances up to 5 years after the intervention ended. A multicultural model, *keepin'it REAL*, uses student-developed videos and narratives and has shown

positive effects on substance use among Mexican American youth in the Southwestern United States.<sup>121</sup> Another example is *Project Toward No Drug Abuse*, which focuses on youth who are at high risk for drug use and violence. It is designed for youth who are attending alternative high schools but can be delivered in traditional high schools as well. The twelve 40-minute interactive sessions have shown positive effects on alcohol and drug misuse.<sup>125</sup>

### *Family-based Programs*

A number of family-focused, universal prevention interventions show substantial preventive effects on substance use.<sup>126-130</sup> For example, *Strengthening Families Program: For Parents and Youth 10–14* (SFP) is a widely used seven-session universal, family-focused program that enhances parenting skills—specifically nurturing, setting limits, and communicating—as well as adolescent substance refusal skills. Across multiple studies conducted in rural United States communities, SFP showed reductions in tobacco, alcohol, and drug use up to 9 years after the intervention (i.e., to age 21) compared with youth who were not assigned to the SFP.<sup>126,130</sup> SFP also shows reductions in prescription drug misuse up to 13 years after the intervention (i.e., to age 25), both on its own and when paired with effective skills-focused school-based prevention.<sup>131,132</sup> *Strong African American Families*, a cultural adaptation of SFP, shows reductions in early initiation and rate of alcohol use for Black or African American rural youth.<sup>127-129</sup>

Three selective programs focus on interventions with families.<sup>133-135</sup> An example is *Familias Unidas*, a family-based intervention for Hispanic or Latino youth. It includes both multi-parent groups (eight weekly 2-hour sessions) and four to ten 1-hour individual family visits and has been shown to lower substance use or delay the start of substance use among adolescents.<sup>133</sup>

A number of selective and indicated interventions successfully prevent substance misuse when delivered to youth aged 10 to 18.<sup>125,136-142</sup> Most of these interventions target students who show early aggressive behavior, delinquency, or early substance use, as these are risk factors for later substance misuse, and some offer both a youth component in the classroom setting and a parent component. An example is *Coping Power*, a 16-month program for children in Grades 5 and 6 who were identified with early aggression. The program, which is designed to build problem-solving and self-regulation skills, has both a parent and a child component and reduces early substance use.<sup>136</sup>

### *Internet-based Programs*

A number of computer- and Internet-based interventions also show positive effects on preventing substance use.<sup>143-146</sup> An example is *I Hear What You're Saying*, which involves nine 45-minute sessions to improve communication, establish family rules, and manage conflict. Specifically focused on mothers and daughters, follow-up results showed lower rates of substance use in an ethnically diverse sample.<sup>143-145</sup> Additionally, *Project Chill*, a brief intervention (30 to 45 minutes) delivered in primary care settings through either a computer or a therapist, reduced the number of youth who started using marijuana.<sup>146</sup>

## Programs for Young Adults

Young adulthood is a key developmental period, when individuals are exposed to new social contexts with greater freedom and less social control than they experienced during their high school years. Social roles are changing at the same time that social safety net supports are weakening.<sup>147</sup> In addition, many young adults are undergoing transitions, such as leaving home, leaving the compulsory educational system, beginning college, entering the workforce, and forming families. As a result of all these forces, young adulthood is typically associated with increases in substance use, misuse, and misuse-related consequences.

Numerous studies have examined the effectiveness of brief alcohol interventions for adolescents and young adults. One review examined 185 such experimental studies among adolescents aged 11 to 18 and adults aged 19 to 30. Overall, brief alcohol interventions were associated with significant reductions in alcohol consumption and alcohol-related problems in both adults and adolescents, and in some studies, effects persisted up to one year.<sup>148</sup> The United States Preventive Services Task Force has recommended screening and brief intervention for reducing alcohol misuse among adults, as discussed in [Chapter 4 - Early Intervention, Treatment, and Management Of Substance Use Disorders](#), and the American Academy of Pediatrics recommends that screening and brief interventions for alcohol misuse or use disorders be implemented for adolescent patients as well.<sup>149</sup>

## Programs for College Students

Many interventions have been developed to reduce alcohol and marijuana misuse among college students. Several literature reviews of alcohol screening and brief interventions in this population have reported that these interventions reduce college student drinking,<sup>150-154</sup> and several other interventions for college students have shown longer term reductions in substance misuse.<sup>155-165</sup> One analysis reviewed 41 studies with 62 individual or group interventions and found that recipients of interventions experienced reduced alcohol use and fewer alcohol related problems up to four years post intervention.<sup>166</sup> Effective intervention components were personalized feedback, protective strategies to moderate drinking, setting alcohol-related goals, and challenging alcohol expectancies. Interventions with four or more components were most effective. Two example interventions for college students are described below.

*Brief Alcohol Screening and Intervention for College Students* (BASICS) is an example of a brief motivational intervention for which results have been positive. BASICS is designed to help students reduce alcohol misuse and the negative consequences of their drinking. It consists of two 1-hour interviews, with a brief online assessment after the first session. The first interview gathers information about alcohol consumption patterns and personal beliefs about alcohol, while providing instructions for self-monitoring drinking between sessions. The second interview uses data from the online assessment to develop personalized, normative feedback that reviews negative consequences and risk factors, clarifies perceived risks and benefits of drinking, and provides options for reducing alcohol use and its consequences. Follow-up studies of students who used BASICS have shown reductions in drinking quantity in the general college population, among fraternity members, with heavy drinkers who volunteered to use BASICS, and among those who were mandated to engage in the program from college disciplinary bodies.<sup>106,162,164</sup>

A second intervention, the *Parent Handbook*, focuses on teaching parents how and when to intervene during the critical time between high school graduation and college entry to disrupt the escalation of heavy drinking during the first year of college. The *Parent Handbook* is distributed during the summer before college, and parents receive a booster call to encourage them to read the materials. Research has found that the timing for the *Parent Handbook* is critical. If parents received it during the summer before college, it reduced the odds of students becoming heavy drinkers, but this intervention was not effective if used after the transition to college.<sup>167</sup> One study showed the combination of BASICS, and the *Parent Handbook* significantly reduced alcohol consumption among incoming college students who showed heavy rates of high school drinking.<sup>168</sup>

Many other interventions have been developed for this population that have not shown effects beyond 3 or 6 months after the intervention, and most positive effects are not maintained by 12-month follow-up.<sup>155-159</sup> For example, even though brief motivational interviewing (BMI) interventions have appeared promising, a recent analysis of 17 randomized trials demonstrated little effectiveness among college-aged individuals.<sup>160</sup>

## A Resource: The National Institute on Alcohol Abuse and Alcoholism's (NIAAA's) CollegeAIM: Alcohol Intervention Matrix

In an effort to inform colleges and universities of the rapidly growing evidence base of programs and policies that can reduce harmful and underage drinking and related harms by college students, NIAAA has published *CollegeAIM-the College Alcohol Intervention Matrix*.

CollegeAIM reviews nearly 60 interventions, including both individual-level strategies and environmental-level policy strategies. The strategies are ranked by effectiveness (higher, moderate, lower, not effective, and too few studies to evaluate). Implementation costs (lower, mid-range, and higher) and implementation barriers (higher, moderate, and lower) are also ranked, as is public health reach (broad or focused).<sup>169</sup>

## Programs in Adult Workplaces

Two programs met this *Report's* criteria for workplace or clinic-based prevention programs;<sup>170-172</sup> others have not shown significant preventive effects longer than 6 months.<sup>173</sup> The successful programs, *Team Awareness* and *Team Resilience*, were delivered in three 2-hour sessions to restaurant workers and led to decreases in heavy drinking and work-related problems. These programs reached approximately 30,000 workers in diverse settings, including military, tribal, and government settings, and with ex-offenders, young restaurant workers, and more.<sup>170,172</sup>

## Programs for Older Adults

Only two studies showed preventive effects on alcohol use in older adults.<sup>174,175</sup> One is *Project Share*, which showed reductions in heavy drinking among those aged 60 and older. *Project Share* provided personalized feedback to at-risk older drinkers, which included a personalized patient report, discussion with a physician, and three phone calls from a health educator.<sup>174</sup> A second study, the *Computerized Alcohol-Related Problems Survey* (CARPS) assessed personalized reports of drinking risks and

benefits accompanied with education for physicians and patients aged 65 and older. The study found a significant decrease in alcohol misuse, including reductions in the quantity and frequency that older individuals reported drinking.<sup>175</sup>

## Economics of Prevention

The Washington State Institute for Public Policy developed a standardized model using scientifically rigorous standards to estimate the costs and benefits associated with various prevention programs. Benefit-per-dollar cost ratios for EBIs ranged from small returns per dollar invested to more than \$64 for every dollar invested. These estimates are illustrated below in [Table 3.3](#).

**Table 3.3: Cost-Benefit of EBIs Reviewed by the Washington State Institute for Public Policy, 2016**

Program	Benefit per Dollar Cost
Nurse-Family Partnership	\$1.61
Raising Healthy Children/SSDP	\$4.27
Good Behavior Game	\$64.18
LifeSkills Training	\$17.25
keepin' it REAL	\$11.79
Strengthening Families Program 10-14	\$5.00
Guiding Good Choices	\$2.69
Positive Family Support/ Family Check Up	\$0.62
Project Towards No Drug Abuse	\$6.54
BASICS	\$17.61

\*Cost estimates are per participant, based on 2015 United States dollars.

Note: This is a general indication of the potential health and social value of EBIs. It is not possible to estimate specific cost-benefit for every EBI due to challenges in calculating accurate intervention effect sizes, the failure to document costs, the variation of methods used, and few mandates or incentives to complete this research. Reaching a consensus on standards for cost-benefit analyses and making them a routine part of prevention program evaluation could help policymakers choose EBIs that both prevent substance misuse and ensure that investments return benefits over the life course.

Source: Washington State Institute for Public Policy, (2016).<sup>176</sup>

## Evidence-based Community Coalition-based Prevention Models

Community-based prevention programs can be effective in helping to address major challenges raised by substance misuse and its consequences. Such programs are often coordinated by local community coalitions composed of representatives from multiple community sectors or organizations (e.g., government, law enforcement, health, education) within a community, as well as private citizens.

These coalitions work to change community-level risk and protective factors and achieve community-wide reductions in substance use by planning and implementing one or more prevention strategies in multiple sectors simultaneously, with the goal of reaching as many members of the community as possible with accurate, consistent messages. For example, interventions may be implemented in family, educational, workplace, health care, law enforcement, and other settings, and they may involve policy interventions and publicly funded social and traditional media campaigns.<sup>28,74,177-179</sup>

A common feature of successful community programs is their reliance on local coalitions to select effective interventions and implement them with fidelity. An important requirement is that coalitions receive proactive training and technical assistance on prevention science and the use of EBIs and that they have clear goals and guidelines. Technical assistance can be provided by independent organizations such as Community Anti-Drug Coalitions of America (CADCA), academic institutions, the program developers, or others with expertise in the substance misuse prevention field. Three examples of effective community-based coalition models are provided below.

### *Communities That Care*

Communities That Care (CTC) creates a broad-based community coalition to assess and prioritize risk and protective factors and substance use rates, using a school survey of all students in Grades 6, 8, 10, and 12. The coalition then chooses and implements EBIs that address their chosen priorities. CTC was tested in a 24-community trial, where 12 communities were randomly assigned to receive the CTC intervention.

Among a panel of students in Grade 5 who were enrolled in the study before the intervention, those in the CTC communities who were compared to the prevention as usual communities had lower rates of alcohol and tobacco initiation at Grades 10 and 12.<sup>26,180-182</sup>

### *PROmoting School-community-university Partnerships to Enhance Resilience*

The PROmoting School-community-university Partnerships to Enhance Resilience (PROSPER) delivery system focuses on community-based collaboration and capacity building that links the land-grant university Cooperative Extension System with the public school system. Local teams select and implement family-focused EBIs in Grade 6 and a school-based EBI in Grade 7. PROSPER has shown reductions through Grade 12 in marijuana, methamphetamine, and inhalant use, and lifetime prescription opioid misuse and prescription drug misuse. Analysis showed greater intervention benefits for youth at higher versus lower risk for most substances.<sup>183,184</sup>



#### KEY TERMS

**Prescription drug misuse.** Use of a drug in any way a doctor did not direct an individual to use it.

## Communities That Care - 24 Community Randomized Trials in Colorado, Illinois, Kansas, Maine, Oregon, Utah, and Washington

### Agency or Organization:

University of Washington Center for Communities That Care

### Purpose:

This evidence-based system provides communities with strategic consultation, training and research-based tools for prevention planning. The CTC system engages entire communities (e.g. youth, parents, elected officials, law enforcement, schools, businesses, etc.) and is tailored to the risks and needs of each defined community population.

### Goals:

1. Promote positive development and healthy behaviors for all children and youth.
2. Prevent problem behaviors, including substance use, delinquency, teen pregnancy, school drop-out, and violence.

### Outcomes:

- Following a panel of over 4,000 young people in 24 CTC communities from Grades 5 to 8, researchers found that compared to control communities not using the CTC model, youth in the CTC communities were:
  - ◆ 33 percent less likely to begin smoking;
  - ◆ 32 percent less likely to begin using alcohol;
  - ◆ 33 percent less likely to begin using smokeless tobacco; and
  - ◆ 25 percent less likely to initiate delinquent behavior (itself a risk factor for future substance use).

*I think one of the biggest advantages of Communities That Care is that it has really brought together the entire community. When I preach and prepare, and if I'm speaking specifically to something that bears upon the teen culture and teen population, the fact is [with CTC assessment data from the community], I'm able to speak with greater clarity with greater directness and with greater understanding of what they are facing.*

– Adam Kohlstrom, Pastor, Camden, ME

### *Communities Mobilizing for Change on Alcohol*

Community coalition-driven environmental models attempt to reduce substance use by changing the macro-level physical, social, and economic risk and protective factors that influence these behaviors. Most research on environmental interventions has focused on alcohol misuse and related problems, including DUI, injuries, and alcohol use by minors.<sup>185-187</sup> For example, *Communities Mobilizing for Change on Alcohol* (CMCA) implemented coalition-led policy changes aimed at reducing youth access to alcohol, including training for alcohol retailers to reduce sales to minors, increased enforcement of underage drinking laws, measures to reduce availability of alcohol at community events, and media campaigns emphasizing that underage drinking is not acceptable.<sup>188,189</sup> In a randomized trial comparing seven communities in Minnesota and Wisconsin using CMCA with eight communities in states not implementing CMCA, significant reductions in alcohol-related problem behaviors were shown among young adults aged 18 to 20 from the beginning of the initiative to 2.5

years after coalition activities began. The proportion of young adults aged 19 to 20 who reported providing alcohol to other minors declined by 17 percent,<sup>188</sup> and arrests for DUI decreased more for this age group in the intervention compared to the control sites.<sup>189</sup>

## Evidence-based Prevention Policies

This section primarily discusses the evidence of effectiveness for policies to reduce alcohol misuse, as well as the more limited body of scientific literature on the effectiveness of policies to prevent the misuse of prescription medications, including pain relievers, tranquilizers, stimulants, and sedatives.

### Policies to Reduce Alcohol Misuse and Related Problems

Research has shown that policies focused on reducing alcohol misuse for the general population can effectively reduce alcohol consumption among adults as well as youth, and they can reduce alcohol-related problems including alcohol-impaired driving.<sup>190,191</sup> In addition to discussing a number of effective population-level alcohol policies, this section will also describe policies designed specifically to reduce drinking and driving and underage drinking.

#### *Price and Tax Policies*

Evidence indicates that higher prices on alcoholic beverages are associated with reductions in alcohol consumption and alcohol-related problems, including alcohol-impaired driving. Several systematic reviews have linked higher alcohol taxes and prices with reduction in alcohol misuse, including both underage and binge drinking.<sup>28,31,72,192-197</sup> One 2009 review examined 1,003 separate estimates from 112 studies.<sup>72</sup> The authors concluded, “We know of no other prevention intervention to reduce drinking that has the numbers of studies and consistency of effects seen in the literature on alcohol taxes and prices.” Similarly, a 2010 review of 73 taxation studies found “consistent evidence that higher alcohol prices and alcohol taxes are associated with reductions in both alcohol misuse and related, subsequent harms.”<sup>31</sup> For example, a study found that the price elasticity of binge drinking among individuals aged 18 to 21 was -0.95 for men and -3.54 for women, meaning that a 10.0 percent increase in the price of alcohol is expected to decrease binge drinking by 9.5 percent among men and 35.4 percent among women in that age group.<sup>198</sup>

The effectiveness of increasing alcohol taxes as a strategy for reducing alcohol misuse and related problems has also been acknowledged outside the United States.<sup>28</sup> For example, a 2009 World Health Organization (WHO) review stated that “when other factors are held constant, such as income and the price of other goods, a rise in alcohol prices leads to less alcohol consumption” and “[p]olicies that increase alcohol prices delay the time when young people start to drink, slow their progression towards drinking larger amounts, and reduce their heavy drinking and the volume of alcohol drunk on each occasion.”<sup>192</sup> Additionally, studies have found that increasing alcohol taxes is not only cost effective but can result in a net cost savings (i.e., the savings outweigh the costs of the intervention).

## *Policies that Affect Access to and Availability of Alcohol*

### *Policies Affecting Alcohol Outlet Density*

Research suggests that an increase in the number of retail alcohol outlets in an area—called higher alcohol outlet density—is associated with an increase in alcohol-related problems in that area, such as violence, crime, and injuries.<sup>177,199,200</sup> Four longitudinal studies of communities that reduced the number of alcohol outlets showed consistent and significant reductions in alcohol-related crimes, relative to comparison communities that had not reduced alcohol outlet density.<sup>199,201-203</sup> Although no studies have explicitly analyzed the cost-benefit ratio of this intervention, research suggests that the costs of limiting the number of alcohol outlets is expected to be much smaller than the societal costs of alcohol misuse.<sup>177</sup>

### *Commercial Host (Dram Shop) Liability Policies*

Commercial host (dram shop) liability allows alcohol retailers—such as the owner or server(s) at a bar, restaurant, or other retail alcohol outlet—to be held legally liable for harms resulting from illegal beverage service to intoxicated or underage customers.<sup>204</sup> In a systematic review, 11 studies assessed the association between dram shop laws and alcohol-related health outcomes.<sup>205</sup> The review found a median reduction of 6.4 percent (range was 3.7 percent to 11.3 percent) in alcohol-related motor vehicle fatalities associated with these policies. Two studies on the effects of these laws did not find reductions in binge drinking.

### *Policies to Reduce Days and Hours of Alcohol Sales*

A review of 11 studies of changing days of sale (both at on-premise alcohol outlets such as restaurants and bars, and off-premise outlets such as grocery, liquor, and convenience stores) indicated that increasing the number of days alcohol could be sold was associated with increases in alcohol misuse and alcohol-related harms, while reducing days alcohol is sold was associated with decreases in alcohol-related harms.<sup>206</sup> Similarly, a review of 10 studies (none conducted in the United States) found that increasing hours of sale by two or more hours increased alcohol-related harms, while policies decreasing hours of sale by at least two hours reduced alcohol-related harms.<sup>207</sup> One study found that lifting a ban on Sunday sales of alcohol led to an estimated 41.6 percent increase in alcohol-related fatalities on Sundays during the period from 1995 to 2000, equating to an additional cost of more than \$6 million in medical care and lost productivity per year in one state.<sup>208</sup> Banning sales of alcohol on Sundays has been recognized as a cost-effective strategy.

### *State Policies to Privatize Alcohol Sales*

The privatization of alcohol sales involves changing from direct governmental control over the retail sales of one or more types of alcohol, and allowing private, commercial entities to obtain alcohol licenses, typically to sell liquor in convenience, grocery, or other off-premise locations. A systematic review of studies evaluating the impact of privatizing retail alcohol sales found that such policies increased per capita alcohol sales in privatized states by a median of 44.4 percent. Studies show that per capita alcohol sales is known to be a proxy for alcohol misuse.<sup>209,210</sup>

## *Policies to Reduce Drinking and Driving*

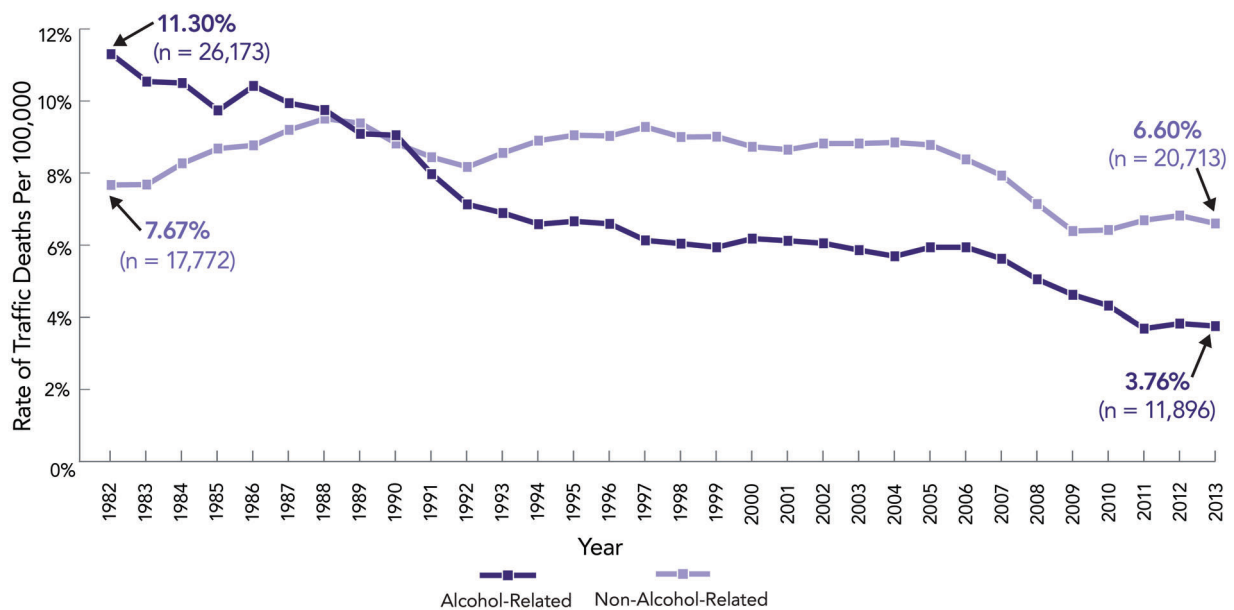
Since the early 1980s, alcohol-related traffic deaths in the United States have been cut by more than half ([Figure 3.2](#)). It has been estimated that reductions in driving after drinking prevented more than 300,000

deaths during this time period.<sup>211</sup> In fact, declines in traffic deaths due to reductions in drinking and driving have exceeded declines from the combined effects of increased use of seat belts, airbags, and motorcycle and bicycle helmets.<sup>212</sup> From 1982 to 2013, alcohol-related traffic deaths decreased by 67 percent, whereas non-alcohol-related traffic deaths decreased by only 14 percent.<sup>213</sup>

Several policies and law enforcement approaches have been found to reduce rates of drinking and driving and related traffic crashes, injuries, and deaths within the general population, among both youth and adults. These DUI policies and enforcement approaches create deterrence by increasing the public’s awareness of the consequences of drinking and driving, including the possibility of arrest. Some of these strategies include:

- 0.08 percent criminal per se legal blood alcohol content (BAC) limits, meaning that no further evidence of intoxication beyond a BAC of 0.08 percent is needed for a DUI case;<sup>214-221</sup> and
- Sobriety checkpoints.<sup>222-224</sup>

Figure 3.2: Alcohol- Versus Non-alcohol-related Traffic Deaths, Rate per 100,000, All Ages, United States, 1982-2013



Source: Adapted from Hingson and White, (2014),<sup>213</sup>

Other proven DUI prevention strategies fall under the rubric of indicated interventions as they target drivers who have been convicted of DUI to reduce recidivism:<sup>223</sup>

- Lower legal blood alcohol limits for people convicted of DUI;<sup>217,223</sup>
- Mandatory ignition interlock laws for all convicted offenders, including first offenders;<sup>223,225,226</sup>
- Mandatory assessment and treatment of persons convicted of DUI;<sup>223</sup>
- DUI courts;<sup>223</sup>
- Continuous 24/7 alcohol monitoring of persons with one or multiple DUI charges;<sup>223</sup> and
- Vehicle impoundment or immobilization.<sup>223</sup>

## The Implications of Drinking-Oriented and Driving-Oriented Policies to Reduce Harms

An examination of state-level data on 29 alcohol control policies in all 50 states from 2001-2009<sup>227</sup> divided those policies into two mutually exclusive groups: (1) drinking-oriented policies, intended to regulate alcohol production, sales, and consumption, raise alcohol taxes, and prevent sales to minors; and (2) driving-oriented policies, which are intended to prevent an already intoxicated person from driving. State data on impaired driving from more than 12 million adults during the even years of 2002 through 2010 were evaluated, and four results were reported, two of which are presented here:

- First, the review found that drinking-oriented policies were slightly more effective in reducing impaired driving than driving-oriented policies, though both types of policy changes were independently associated with lower levels of impaired driving.
- Second, drinking-oriented policies appeared to exert their effects by reducing binge drinking, which in turn was associated with a lower likelihood of impaired driving. The authors concluded that most states may have a greater opportunity for adopting and aggressively implementing drinking-oriented policies to reduce overall harms, although there is a need to strengthen driving-oriented policies as well.

Overall, these findings support the importance of implementing a comprehensive range of alcohol policies to effectively reduce alcohol misuse and related harms, including strengthening both drinking-oriented policies and driving-oriented policies.

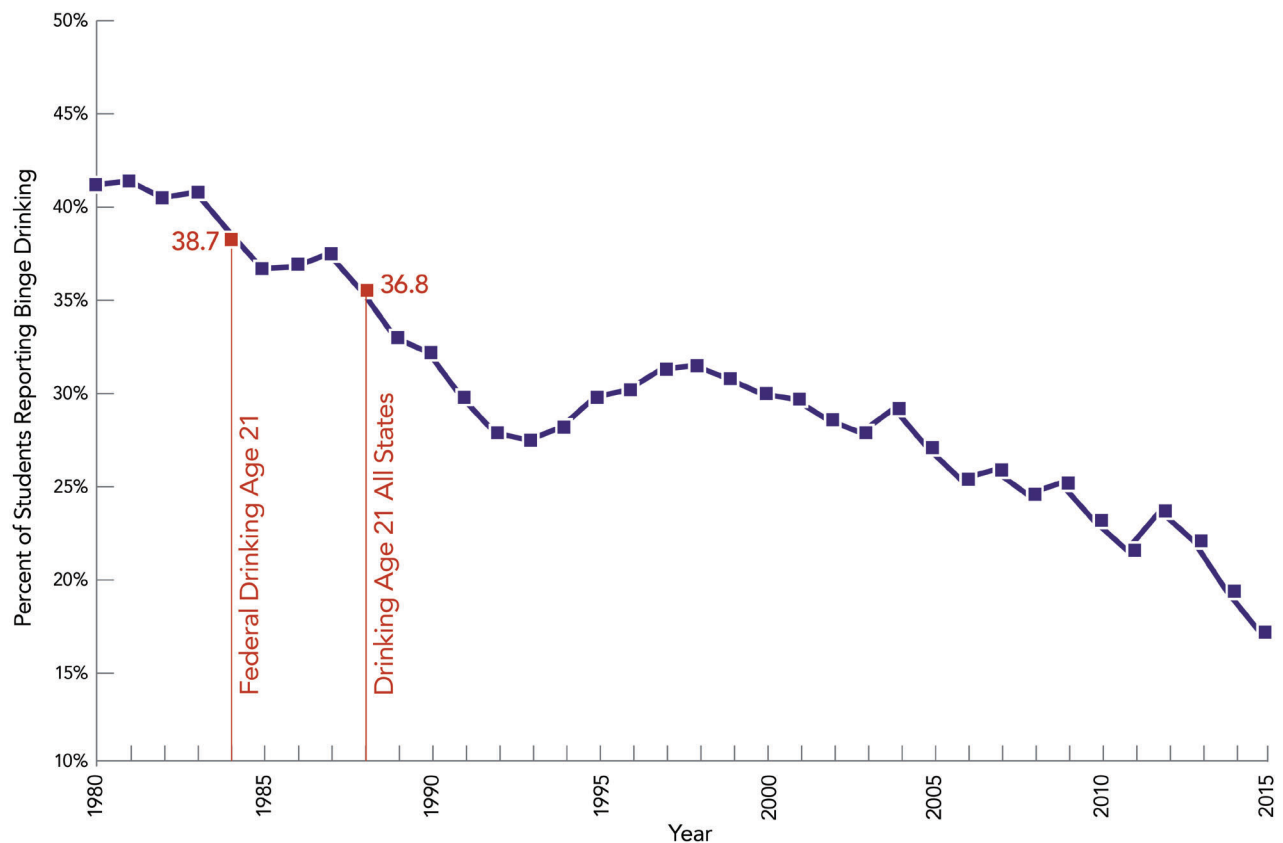
### *Policies to Reduce Underage Drinking*

#### *Raising the Minimum Legal Drinking Age*

Before 1984, only 22 states had a MLDA of 21. To reduce DUIs, Congress passed the National Minimum Drinking Age Act, which threatened to withhold a portion of states' federal highway construction funds if states made the purchase or public possession of alcoholic beverages legal for those under the age of 21. By 1988, all states had adopted age 21 as the MLDA. In the 1982 *Monitoring the Future* annual national survey of middle and high school students, 71.2 percent of high school seniors reported that they drank in the past 30 days and 42 percent reported binge drinking in the past 2 weeks.<sup>228</sup> In 2014, these same statistics were 37.4 percent and 19 percent respectively ([Figure 3.3](#)).<sup>213</sup> These declines may be partially attributable to the MLDA<sup>214</sup> along with other policy and behavior-change interventions occurring at the same time.

Many studies have shown the benefits of raising the MLDA. A Community Guide review found that raising the MLDA reduced crashes among drivers aged 18 to 20 by a median of 16 percent:<sup>215</sup> A finding replicated in a prospective analysis of the National Highway Traffic Safety Administration's (NHTSA's) Fatality Analysis Reporting System (FARS) examining the ratio of drinking to non-drinking drivers aged 20 and younger. The analysis statistically adjusted for zero tolerance laws, graduated licensing restrictions (e.g., provisional licenses for new drivers that include restrictions on driving at night or with any measurable alcohol in their systems), use/lose laws, administrative license revocation, 0.08% BAC per se laws, per capita beer consumption, unemployment rate, vehicle miles traveled, frequency of sobriety check points, number of licensed drivers, and the ratio of drinking to non-drinking drivers in fatal crashes ages 26 and older.<sup>214</sup> An additional analysis examined national alcohol-related fatal traffic crash data before and after states raised the MLDA to 21. Before those laws were instituted, 61 percent of drivers aged 16 to 20 had a positive BAC compared with 33 percent following institution of those laws.<sup>229</sup> These analyses showed general declines in alcohol-related fatal crashes across age groups, but the declines were highest for drivers aged 16 to 20. Comparing the declines across ages is useful because these older drivers were not the main focus of the MLDA changes.

Figure 3.3: Trends in 2-Week Prevalence of 5 or More Drinks in a Row among 12th Graders, 1980-2015



Note: The first vertical bar indicates institution of the MLDA 21 policy change in 7 states in 1984. The second vertical bar indicates federal passage of the MLDA 21 policy in all states in 1988.

Source: Adapted from Hingson and White, (2014).<sup>213</sup>

An extensive review concluded that raising the MLDA to 21 has been directly associated with less frequent drinking, less heavy drinking, and fewer alcohol-related traffic fatalities in the age groups targeted by the law.<sup>178</sup> More specifically, NHTSA estimates that raising the MLDA to 21 may have prevented 30,323 traffic deaths since 1975.<sup>230</sup>

#### MLDA Compliance Checks

As a complement to the MLDA laws, research has shown the importance of repeated compliance check surveys on alcohol sales to people younger than age 21. These compliance check surveys monitor the percentage of attempts to buy alcohol that result in a sale to a person appearing to be younger than age 21. Alcohol outlet owners are informed in writing whether or not they were observed selling alcohol to underage-appearing individuals, told about the penalties for selling to minors, which can include fines or license suspension, and informed that the surveys will be repeated. A review identified several studies that found these compliance check surveys reduce the percentage of underage alcohol buying attempts and sales of alcohol to youthful-looking decoys by more than 40 percent.<sup>187</sup> This strategy is an effective way to reduce alcohol consumption by minors and can be implemented in conjunction with population level alcohol policies.

#### Zero Tolerance Laws

All 50 states have passed laws making it illegal for persons younger than age 21 to drive with any measurable BAC. These laws, called zero tolerance laws, were instituted because of the higher fatal crash risk among drivers younger than age 21<sup>215,231</sup> and because of studies showing that lowering the drinking age below age 21 was related to increases in fatal crashes.<sup>232</sup> Another study examined the first eight states to implement zero tolerance laws, comparing each with a nearby state that did not enact such a law.<sup>233</sup> Examining an equal number of years before and after these laws changed, researchers found 20 percent fewer alcohol-related traffic crash deaths in the targeted age groups within the zero tolerance states compared to nearby states without these laws. Similarly, a more recent examination of *Monitoring the Future* survey data for high school seniors in 30 states before and after adoption of zero tolerance laws found that after the laws were enacted, a 19 percent decline in driving after drinking occurred as well as a 23 percent decline in driving after five or more drinks.<sup>234</sup>

#### Use/Lose Laws

Use/lose laws allow states to suspend a person's driver's license for underage alcohol violations. An examination of the *Youth Risk Behavior Surveillance System* survey data by state (statistically adjusted to account for state differences in age, gender, race, ethnicity, and other factors) from 1999 to 2009 found past-month drinking declined after use/lose laws were instituted.<sup>235</sup> The study also found that after these laws were instituted, survey respondents were half as likely to report driving after drinking compared with before the laws were instituted.

#### Criminal Social Host Liability Laws

Criminal state social host liability laws require law enforcement to prove intent to provide alcohol to underage guests. Specifically, "social host" refers to adults who knowingly or unknowingly host underage drinking parties on property that they own, lease, or otherwise control. With social host ordinances, law enforcement can hold adults accountable for underage drinking through fines and potentially criminal charges. More than 30 states have some form of social host liability laws. To see

the effect of these laws, researchers examined rates of alcohol consumption, binge drinking, and DUI between 1984 and 2004 from the annual *Behavioral Risk Factor Surveillance System*. They also looked at data from the FARS from 1975 to 2005 on alcohol-related versus non-alcohol-related fatal traffic deaths among those aged 18 to 20. After controlling for the state's legal drinking age, several drinking laws, and socioeconomic factors, social host liability laws were independently associated with declines in binge drinking (3 percent), driving after drinking (1.7 percent), and alcohol-related traffic deaths (9 percent).<sup>236</sup>

#### Civil Social Host Liability Laws

In contrast to state-level criminal social host ordinances, city- or county-level civil liability ordinances allow for a lower burden of proof but still deter underage drinking parties. Through civil social host liability laws, adults can be held responsible for underage drinking parties held on their property, regardless of whether they directly provided alcohol to minors. To date, more than 150 cities or counties have social host liability ordinances in place. The research on this strategy is still emerging, but findings currently show that social host liability reduces alcohol-related motor vehicle crashes as well as other alcohol-related problems.<sup>28,237</sup>

#### Proposals for Reductions in Alcohol Advertising

Although evidence of a causal relationship is lacking, research has found an association between increased exposure to marketing and increased alcohol consumption among youth.<sup>77</sup> For example, one study found that for every additional advertisement seen by youth per month, they drank one percent more, while for every additional dollar per capita spent on alcohol advertising in a youth's media market, they drank three percent more.<sup>238</sup> Typically, these studies have not controlled for other factors known to influence underage drinking, such as parental attitudes and drinking by peers. Further, studies have yet to determine whether reducing alcohol marketing leads to reductions in youth drinking. One study estimated that a 28 percent decrease in alcohol marketing in the United States could lead to a decrease in the monthly prevalence of adolescent drinking from 25 percent to between 21 and 24 percent.<sup>239</sup> A separate study of alcohol advertising bans concluded that "there is a lack of robust evidence for or against recommending the implementation of alcohol advertising restrictions."<sup>240</sup>

## Many Policy Interventions Are Not Consistently Implemented

Despite the evidence discussed in this section, many policies are not consistently implemented in states or communities. For example, commercial host (dram shop) liability laws, which permit alcohol retail establishments to be held responsible for injuries or harms caused by service to intoxicated or underage patrons have not been implemented consistently, have been changed over time, or both. Consequently, as of January 1, 2015, only 20 states had dram shop liability laws with no major limitations; 25 states had these laws but with major limitations (e.g., restrictions on who this liability applied to and the evidence required to determine liability); and six states have no dram shop liability laws at all.<sup>241</sup> These numbers have not changed since 2013 ([Table 3.4](#)).<sup>242</sup>

Policies related to the regulation of alcohol outlet density have changed over time. For example, as of 2013, only 18 states had exclusive local or joint state/local alcohol retail licensing authority, and eight states allowed no local control over alcohol retail licensing.

Additionally, one study analyzed FARS from 1982-2012. The authors compared the ratio of drinking drivers in fatal crashes to non-drinking drivers in fatal crashes among drivers aged 20 and younger and those 26 and older. Using advanced statistical analyses that adjusted for state DUI laws, safety belt laws, economic strength, driving exposure, and beer consumption, the authors identified nine laws designed to reduce underage drinking and driving whose implementation was prospectively, independently, and significantly associated with decreases in the ratio of drinking to non-drinking drivers under age 21 in fatal crashes, including laws prohibiting underage possession and purchase of alcohol; use alcohol lose your license (use/lose) laws; zero tolerance laws; laws requiring bartenders to be aged 21 or older; state responsible beverage/server programs; fake identification state support services for retailers; dram shop liability; and social host civil liability. Those nine laws were estimated to save approximately 1,135 lives annually, yet only five states have enacted all nine laws. The authors estimated that if all states adopted these laws an additional 210 lives could be saved every year.<sup>243</sup>

**Table 3.4: Status of Selected Evidence-Based Strategies in States for Preventing Alcohol Misuse and Related Harms**

Alcohol Policy (Ratings categories)	Number of states by rating and year of CDC Prevention Status Report					
	Green		Yellow		Red	
	2013	2015	2013	2015	2013	2015
<b>State excise taxes on beer*</b> (Green: ≥\$1.00 per gallon; Yellow: \$0.50-\$0.99 per gallon; Red: <\$0.50 per gallon)	3	4	4	4	43	42
<b>State excise taxes on distilled spirits*</b> (Green: ≥\$8.00 per gallon; Yellow: \$4.00-\$7.99 per gallon; Red: <\$4.00 per gallon)	3	3	10	11	21	20
<b>State excise taxes on wine*</b> (Green: ≥\$2.00 per gallon; Yellow: \$1.00-1.99 per gallon; Red: <\$1.00 per gallon)	2	2	7	8	30	29
<b>Commercial host (dram shop) liability laws</b> (Green: Commercial host liability with no major limitations; Yellow: Commercial host liability with major limitations; Red: No commercial host liability)	21	20	24	25	6	6
<b>Local authority to regulate alcohol outlet density</b> (Green: Exclusive local or joint state/local alcohol retail licensing; Yellow: Exclusive state alcohol retail licensing but with local zoning authority or other mixed policies; Red: Exclusive state alcohol retail licensing)	18	N/A	24	N/A	8	N/A

Note: \*The ratings reflect where each state’s tax fell within this range. N/A: Not Applicable.

Sources: Centers for Disease Control and Prevention, (2014)<sup>242</sup> and (2016).<sup>241</sup>

These data suggest that effective alcohol control policies are not being widely implemented in the United States despite the well-documented, scientific evidence on the effectiveness of such policies for reducing alcohol misuse and related harms. To have maximum public health impact, it is critical to implement effective policy interventions that address alcohol misuse and related harms, and that recognize the widespread nature of the problem and the strong relationship between alcohol misuse, particularly binge drinking, and related harms among adults and youth in states.<sup>190,191,244</sup>

## Policies to Reduce Other Substance Misuse and Related Problems

### *Preventing Prescription Drug Misuse*

Policies to prevent prescription drug misuse and related harms have only begun to receive research attention. However, some studies have begun to examine the impact of prescription drug monitoring programs (PDMPs) on misuse of prescription medications.<sup>245</sup> These state-initiated policies are designed to curb the rate of inappropriate prescribing of opioid pain relievers through various methods. Data from the U.S. Drug Enforcement Administration's (DEA's) *Automation of Reports and Consolidated Orders System (ARCOS)*<sup>246</sup> showed little impact of these monitoring systems, perhaps because of the variability of the policies controlling different state systems. The ARCOS is an automated, comprehensive drug reporting system which monitors the movement of controlled substances from where they are manufactured through distribution at the retail level, such as hospitals, pharmacies, and practitioners.

Some studies associate state PDMPs with lower rates of prescription drug misuse and altered prescribing practices, although evidence is mixed and inconclusive.<sup>247</sup> One reason for inconsistent findings may be low and variable prescriber utilization of PDMPs. Because mandates are relatively new, their efficacy in increasing PDMP utilization has not been formally studied. However, preliminary data suggest that in some states mandates have contributed to a rapid increase in provider enrollment and utilization of PDMPs and subsequent decreases in prescribing of controlled substances and the number of patients who visit multiple providers seeking the same or similar drugs.<sup>248</sup> Data from Kentucky, Tennessee, New York and Ohio—early adopters of comprehensive PDMP use mandates—indicate substantial increases in queries, reductions in opioid prescribing, and declines in multiple provider episodes (doctor shopping) following implementation.<sup>249</sup> In one of the most rigorous studies to date, Florida's simultaneous institution of a prescription drug monitoring system and "pill mill" control policies was compared to Georgia, a state without either policy. This study demonstrated "modest reductions in total opioid volume, mean morphine milligram equivalent per transaction, and total number of opioid prescriptions dispensed, but no effect on duration of treatment. These reductions were generally limited to patients and prescribers with the highest baseline opioid use and prescribing."<sup>250</sup>

A 2016 study found that the implementation of a PDMP was associated with 1.12 fewer opioid-related overdose deaths per 100,000 people in the year immediately after the program was implemented, and if every state in the United States had a robust PDMP, there would be an estimated 600 fewer overdose deaths per year.<sup>251</sup> However, another study analyzed eight types of laws that restricted the prescribing and dispensing of opioids (including PDMP laws but not including prescriber mandate laws) and found no relationship between the laws and opioid-related outcomes among disabled Medicare beneficiaries, who accounted for nearly 25 percent of opioid overdose deaths in 2008.<sup>252</sup>

Collectively, these early results suggest the potential influence of PDMPs to reduce unsafe controlled substance prescribing and rates of misuse and diversion, but there is a need to conduct additional research on the effectiveness of specific strategies for implementation and use of PDMPs. Multiple efforts to address prescription drug misuse within states occurring in concert with mandatory PDMP legislation may limit the ability to draw causal conclusions about the effectiveness of mandatory use of PDMPs.

The CDC has developed the *CDC Guideline for Prescribing Opioids for Chronic Pain*, which provides research-based recommendations for the prescribing of opioids for pain in patients aged 18 and older in primary care settings. The guideline includes a discussion of when to start opioids for chronic pain, how to select the right opioid and dosage, and how to assess risks and address harms from opioid use.<sup>253</sup> This guideline can help providers reduce opioid misuse and related harms among those with chronic pain.

## Adolescent Use of Marijuana

Marijuana use, in adolescents in particular, can cause negative neurological effects. Long-term, regular use starting in the young adult years may impair brain development and functioning. The main chemical in marijuana is delta-9-tetrahydrocannabinol (THC), which, when smoked, quickly passes from the lungs into the bloodstream, which then carries it to organs throughout the body, including the brain.<sup>254</sup> THC disrupts the brain's normal functioning and can lead to problems studying, learning new things, and recalling recent events.<sup>255</sup> One study followed people from age 13 to 38 and found that those who began marijuana use in their teens and developed a persistent cannabis use disorder had up to an eight point drop in IQ, even if they stopped using in adulthood.<sup>256</sup> Frequent marijuana use has also been linked to increased risk of psychosis in individuals with specific pre-existing genetic vulnerabilities.<sup>257,258</sup> And marijuana use—particularly long-term, chronic use or use starting at a young age—can also lead to dependence and addiction.

These effects highlight the importance of prevention. To prevent marijuana use before it starts, or to intervene when use has already begun, parents and other caregivers as well as those with relationships with young people—such as teachers, coaches, and others—should be informed about marijuana's effects in order to provide relevant and accurate information on the dangers and misconceptions of marijuana use. Comprehensive prevention programs focusing on risk and protective factors have shown success preventing marijuana use.<sup>259,260</sup> Evidence-based strategies or best practices in community level prevention efforts can be used to assess, build capacity, plan, implement, and evaluate initiatives.<sup>261</sup>

## Prevention Interventions for Specific Populations

An important consideration in any assessment of the overall effectiveness of EBIs is whether and to what extent they work with specific populations, such as Blacks or African Americans, Hispanics or Latino/as, Asians, American Indians or Alaska Natives, Native Hawaiians or Other Pacific Islanders, veterans, or lesbian, gay, bisexual, and transgender (LGBT) populations. The EBIs described in this chapter have been purposely selected because many have been implemented, tested, and found to be effective in diverse populations. It should be noted that while prevention policies have shown impacts for the entire population, and a number of prevention programs at each developmental period have shown positive outcomes with a mix of populations, most studies have not specifically examined their differential effects on racial and ethnic subpopulations. Studies finding significant prevention effects

across multiple population subgroups include *LifeSkills Training*, *keepin' it Real*, *Nurse Family Partnership*, *Raising Healthy Children*, *Good Behavior Game*, *Classroom-Centered Intervention*, *Fast Track*, *SODAs City*, *I Hear What You're Saying*, *Project Chill*, *Positive Family Support*, *Coping Power*, *Project Towards No Drug Abuse*, *Communities That Care*, *Project Northland*, and *Project STAR*.



#### FOR MORE ON THIS TOPIC

See Appendix A - Review Process for Prevention Programs and Appendix B - Evidence-Based Prevention Programs and Policies.

The following programs were found to be equally effective in White and specific racial and ethnic minority populations: *Fast Track*, which is equally effective for White and Black or African American adolescents, *LifeSkills Training*, which is equally effective with White and Black or African American and Hispanic or Latino adolescents, and *keepin' it REAL*, which is equally effective with White and Hispanic or Latino adolescents. In addition, some interventions developed for specific populations have been shown to be effective in those populations, i.e., *Strong African American Families*, *Familias Unidas* for Hispanics or Latinos, *Bicultural Competence* for American Indian or Alaska Natives, and *PROSPER* for rural communities.

## Adaptation of EBIs in Diverse Communities

A goal of prevention and public health professionals is to broadly disseminate all tested-and-effective EBIs, thus making them readily available to communities and consumers.<sup>262</sup> Achieving population-level exposure of an EBI to all population groups—or “going to scale”—raises critical issues of “fit” of the EBI’s contents and the needs and preferences of local community residents.<sup>263</sup>

Often, some form of local adaptation is necessary when a certain feature of the selected EBI fails to engage a specific group within a local community. However, not all EBIs may work with all community subgroups.<sup>264,265</sup> The sometimes delicate balance that needs to be struck between fidelity to the program as originally designed and tested and the need for adapting it to the needs of specific subgroups is an important issue and requires sophisticated methodology to address. Currently, several cultural adaptations of an original EBI have been developed and tested.<sup>266</sup>



#### KEY TERMS

**Fidelity.** The extent to which an intervention is delivered as it was designed and intended to be delivered.

Issues regarding the cultural adaptation of EBIs have been reviewed extensively within the past two decades.<sup>266-268</sup> Early studies examined the utility of developing a culturally-focused version of the EBI *LifeSkills Training* to fit the needs of racially and ethnically diverse adolescents living in the New York City area.<sup>269</sup> In general, the challenge involves the viability of implementing an EBI with total fidelity to its protocol, versus adapting it by making adjustments so the EBI is more relevant and responsive to the needs of local community residents.<sup>270</sup> Producing an adapted version of an established EBI may not generalize well enough to create the same effects when implemented with a culturally different group from that used to validate the original intervention. Such limited generalizability might occur if the intervention is insufficiently sensitive, culturally or otherwise, to the unique stressors, resources, cultural traditions, family practices, and other prevailing sociocultural factors that govern the lives of residents from that community.<sup>265</sup>

It is worth noting that the major racial and ethnic populations in the United States—Hispanics or Latinos, Blacks or African Americans, Asians, and American Indians or Alaska Natives—also exhibit significant within-population variations in important sociocultural characteristics.<sup>271</sup> Beyond differential EBI efficacy that may appear by racial or ethnic status—Black or African American versus White, for example—differential efficacy may also be observed by one of several demographic or clinical variables that define any one racial or ethnic group. These variables include gender (male vs. female), age group (younger vs. older), grade level (Grade 8 vs. Grade 10), sexual and gender identity, neighborhood status (problem vs. non-problem), problem severity (moderate vs. high), level of education (middle school vs. high school or greater), level of acculturation (low acculturation, bicultural, high acculturation). It can also include sociocultural needs and preferences that can be incorporated into the culturally adapted prevention intervention.

Given the multiple sources of within-group variation, one dissenting view is that it is impractical to develop many different versions of an original EBI in efforts to respond to the needs of various groups. A contrasting view is that a few selective and directed adaptations may be sufficient to respond to the sociocultural needs of many of these groups “to ensure fit with diverse consumer populations.”<sup>265</sup> Clusters of these groups may share common life experiences, such as their identity and identification as a person of color, experiences with discrimination and disempowerment, or the need for cultural validation.<sup>264</sup>

All of these issues create a “Fidelity-Adaptation Dilemma:” How to make necessary local or cultural adaptations that are responsive to the needs of a growing diversity of cultural groups in the United States, while also not compromising the fundamental science-based components or “active ingredients” that drive the effectiveness of the original EBI. As originally formulated, the Fidelity-Adaptation Dilemma framed fidelity and adaptation as diametrically opposed approaches in the implementation of an EBI.<sup>267,268</sup> After more than a decade of analysis and research, this conceptualization appears no longer productive, given that both fidelity and adaptation are now recognized as important for the effective implementation of an EBI, especially when delivered within diverse racial and ethnic communities. The dual aim for resolving the Fidelity-Adaptation Dilemma is to adhere with fidelity to the intervention’s theory, principles, goals, and mechanisms of effect for attaining the EBI’s intended outcomes, while also making well-reasoned “cultural adaptations” that remedy emerging problems with the EBI’s contents and/or activities.<sup>272,273</sup> A partnership between intervention developers, persons delivering the intervention, and potential program participants who can represent the group’s concerns, is recommended for developing well-reasoned solutions to remedy specific features of the original EBI that are not working as intended.<sup>121,274</sup> The ultimate aim is to craft needed adaptive adjustments that aptly remedy these emerging problems and that also enhance the efficacy of the intervention in attaining the intended outcomes with local community residents.

Several adaptations use a social participatory approach<sup>274-276</sup> with a community advisory committee that is composed of local leaders who know the local community well.<sup>274</sup> These individuals offer “insider” observations and recommendations that inform substantive deep-structure modifications that can make the original EBI more culturally responsive.<sup>267,277</sup>

Although sufficient evidence has not yet accrued to inform a single best approach for addressing this Fidelity-Adaptation Dilemma, a review of the EBI adaptation literature shows a convergence of specifically prescribed steps for adapting an original EBI.<sup>266</sup> Several models describe these steps in the

cultural adaptation and testing of an original EBI.<sup>266</sup> Other approaches have introduced the concept of “adaptive interventions” that aim to tailor the intervention individually based on empirically-developed decision rules.<sup>278,279</sup>

A future goal for effective cultural adaptation would be to identify robust principles and guidelines that can inform and guide the development of cultural adaptations. One emerging principle involves avoiding adaptations that produce detrimental changes, termed “misadaptations,” that erode the original EBI’s established efficacy for changing intended outcomes.<sup>263</sup> A second emerging principle is to conduct adaptations that enhance consumer engagement based on curriculum activities that are culturally responsive to the needs and preferences of the local community of consumers. Additional research is needed to establish the robustness of these or other emerging principles and to generate clear and functional guidelines that can inform intervention design and implementation to promote both fidelity and adaptive fit. The aim of this adaptation is to maximize intervention effect when delivered to diverse groups of consumers.

EBI adaptation that is based on evidence-based outcomes data constitutes an empirically-based methodology to correct, refine, and enhance an original EBI. From this perspective, these adaptations or modifications transcend fidelity-adaptation issues, advance toward EBI refinement that is conducted systematically, increase efficacy as well as generalizability, and reach and benefit a greater number of those who are most in need of EBIs.

## Maximizing Prevention Program and Policy Effectiveness

Although a variety of prevention policies and programs have been shown to reduce substance misuse and consequences of use, many are underutilized. Additionally, many programs are not currently being implemented with sufficient quality to effectively improve public health. For example, although it is difficult to collect data on this issue, research suggests that few family-serving agencies are using EBIs to address child behavioral and emotional problems,<sup>280,281</sup> and surveys of school administrators indicate that only 8 to 10 percent report using EBIs to prevent substance misuse.<sup>282,283</sup> Additionally, research has shown that untested or ineffective prevention programs are used more often than EBIs,<sup>282,283</sup> and, when they are used, EBIs are often poorly implemented, do not serve large numbers of participants, and are not sustained.<sup>284,285</sup> For example, family-based EBIs are often delivered with less intensity and/or to different types of participants than specified by program developers.<sup>286</sup> School officials have reported low rates of implementation fidelity, including failure to deliver all required lessons, content, and activities; to use the required materials; to employ the recommended instructional strategies; to target the appropriate students with lessons; and/or to ensure that all teachers receive training.<sup>24,283,284,287,288</sup> EBIs that are poorly implemented tend to have weak or no effects on participants.<sup>272,289-296</sup> For example, in one study, the *LifeSkills Training* program delivered in middle and junior high schools has shown significant, long-term effects on Grade 12 students’ alcohol and marijuana use only among students whose teachers delivered at least 60 percent of the required material.<sup>292</sup>

Research demonstrates that building prevention infrastructure; activating federal, state, local, and tribal stakeholders; ensuring collaboration; and helping communities select, implement, and sustain EBIs<sup>297</sup> is possible and can be done effectively. For example, one large-scale study provided schools and various human service agencies with training and technical assistance to replicate nine EBIs rated as “Model” by the *Blueprints for Healthy Youth Development*.<sup>268</sup> That study indicated that when provided with ongoing support, 74 percent of sites successfully implemented these systems.<sup>298</sup> Evaluations of PROSPER and CTC, which provide community coalitions with prevention infrastructure to choose EBIs that addressed their needs and to implement the chosen EBIs with fidelity, have shown that communities using these delivery systems implement EBIs with high fidelity and sustain them over time.<sup>299-304</sup> In addition, evaluations showed that CTC communities reached more participants with more EBIs compared with communities that did not use this prevention infrastructure support system.<sup>302,303</sup> These and other studies indicate that prevention infrastructure can be generated by taking the actions discussed in the section on [Improving the Dissemination and Implementation of Evidence-based Programs](#) later in this chapter.

Additionally, strengthening state and local public health capacity will help to increase the surveillance and monitoring of risk and protective factors and substance misuse by adolescents and adults in the general population, including persons who drink to excess but are not dependent on alcohol. It is important to educate and raise awareness about the public health burden of substance misuse and effective program and policy interventions for preventing and reducing substance use across the population.

## The History of Substance Use and Misuse Policy Formation and Implementation

The dissemination and implementation of evidence-based prevention programs have been studied extensively; less research has been conducted on evidence-based policy formation and implementation. This section describes three organizations or activities focusing on federal, state, and local policy to reduce substance misuse: Mothers Against Drunk Driving (MADD), CADCA, and the Congressional Sober Truth on Preventing Underage Drinking (STOP) Act.

In the early 1980s, President Ronald Reagan established a bipartisan presidential commission to reduce drunk driving. The commission's first recommended action was to raise the MLDA to 21. In 1984 and with strong support from the newly founded MADD, Congress passed legislation to withhold federal highway construction funds from states that did not raise the MLDA to 21. MADD was also instrumental in supporting the passage of legislation in 1996 to withhold federal highway construction funds from states that did not have zero tolerance laws. They were a key player in 2000 legislation to withhold construction funds from states that did not lower the legal blood alcohol limit to 0.08 percent for adult drivers. Since the early 1980s, more than 2,000 other state laws have been passed to reduce driving after drinking, and MADD has been a major citizen activist force encouraging the passage of many of those laws.

MADD also has prepared and published periodic state and national “report cards” rating each state and the nation's efforts to reduce alcohol-impaired driving.<sup>319</sup> States have been rated on how many of the more than 30 laws scientifically demonstrated to reduce impaired driving had been passed and how many were passed since the previous report card. In one study, these state report cards were found to clearly predict the percent of respondents in each state who reported driving after drinking in the past month.<sup>320</sup> Although the impact of the report cards in accelerating passage of the laws has never been empirically tested, media monitoring of news stories derived from the report cards indicated that at least one third of the United States population has been exposed to media coverage about the report cards.

One study compared characteristics of MADD chapters that had early success in raising the MLDA to 21 to chapters in states that did not raise the age. The analysis found that having chapters headed by people who lost immediate family members through drinking and driving crashes and those with higher percentages of such victim members were the most successful in early passage of MLDA laws. Of note, the size of chapters' financial budget did not predict the passage of these laws.<sup>321</sup>

Although MADD has helped to foster passage of more than 2,000 state-level laws, implementation of those laws is accomplished at the community level. This often requires the existence of trained coalitions focusing on substance use. One such collaboration, CADCA, has played a critical role in training local coalitions in implementing laws, particularly the MLDA law in all 50 states. CADCA's membership includes more than 5,000 community coalitions nationwide that seek to reduce underage drinking and drug use. CADCA has partnered with MADD and federal organizations to develop a manual on how to reduce drinking and driving and underage drinking in communities.<sup>322</sup> CADCA holds its annual leadership meeting in Washington, D.C. so that its members can also meet with congressional representatives to explore better ways to reduce alcohol and drug misuse and underage drinking.

In 2004, the IOM released *Reducing Underage Drinking: A Collective Responsibility*, a report on underage drinking in the United States.<sup>323</sup> Partly in response to this report, Congress passed the STOP Act, which:

- Provided supplemental funding to community programs that were already addressing substance use so that they could also address underage drinking;
- Called on all states to test the BAC in anyone younger than age 21 who died from an injury or overdose;
- Encouraged every state to develop an interagency task force of officials from multiple state governmental departments and private citizens and organizations to develop strategic plans to reduce underage drinking (38 states have established task forces and strategic plans);
- Required the federal government to establish the Interagency Coordinating Committee for the Prevention of Underage Drinking (ICCPUD), comprising the following departments and agencies: Departments of Education, Health and Human Services, Transportation, and Defense; and the Federal Trade Commission. The Committee meets monthly to coordinate federal efforts to reduce underage drinking; and
- Required the federal government through ICCPUD and SAMHSA to provide annual reports to Congress on the magnitude of underage drinking and related problems and what the federal and state governments are doing to prevent and reduce underage drinking.

# Improving the Dissemination and Implementation of Evidence-based Programs

The emerging field of dissemination and implementation research seeks to identify ways to increase the use and high-quality implementation of evidence-based programs and address challenges to implementation. This research indicates that the key to achieving significant gains in public health, including reductions in substance use initiation and substance misuse, is to build prevention infrastructure at the local level.<sup>305-307</sup> This means increasing awareness of EBIs among community leaders, service providers, and local citizens. It

also means providing tools to help communities select and use EBIs that will be feasible to implement and relevant for their populations.<sup>308-310</sup> When agencies and staff are unaware of, do not support, or lack the ability to select and implement appropriate EBIs with quality, then dissemination, implementation, and sustainability will be hindered.<sup>285,311-313</sup> In contrast, when local systems and agencies learn more about the effectiveness of prevention interventions, have a culture and climate that supports innovation and the use of EBIs, and have the budget and skills needed to plan for and monitor the implementation of EBIs, then effective dissemination and implementation will be fostered.<sup>294,311,312,314-318</sup>

Coalition-based systems have been developed to assist communities in building these capacities, and when tested in randomized trials, these systems have been shown to improve community capacity for effective prevention; increase dissemination, implementation, and sustainability of EBIs; and produce community-wide reductions in youth substance use.<sup>324</sup> An important feature of these systems is the provision of community coalitions with multiple training workshops and ongoing technical assistance. Just as organizations require technical assistance to ensure high-quality implementation of specific EBIs, coalitions need technical assistance to support and develop their prevention capacities.<sup>325-328</sup> Each community model has different steps that outline their process; the following four steps are one example of how to build broader implementation of evidence-based prevention.

## Step 1. Form Diverse, Representative, Cross-Sector Community Coalitions

Coalitions, or groups of stakeholders working together to achieve a common goal, are a useful mechanism for building and maintaining local prevention infrastructure and capacity.<sup>25,34,324,325,329-331</sup> The first step in building a coalition is to decide on the “community” to be involved in prevention activities, including the geographic area in which services will be delivered, and to identify the organizations, agencies, groups, and individuals whose participation is necessary for success. The more the coalitions represent the community in terms of demographic diversity, organizations expected to deliver services, and groups or individuals expected to receive services, the more likely they are to ensure that EBIs will be supported.<sup>329,332,333</sup> Similarly, such coalitions will be better equipped to implement multiple EBIs across diverse contexts and to a larger percentage of the population, all of which should make population-level improvements more likely.<sup>329</sup> In addition, by sharing information and resources,



### KEY TERMS

**Dissemination.** The active distribution of EBIs to specific audiences, with the goal of increasing their adoption.

**Implementation.** A specified set of activities designed to put policies and programs into practice.

community coalitions can help minimize duplication of efforts and potentially offer more cost-effective services that are better implemented and more likely to be sustained.<sup>25,334-337</sup>

## Step 2. Conduct a Needs Assessment and a Fit Assessment

Needs and fit assessments help coalitions select the right EBIs for their community. The right EBIs are those that address the highest-priority local risk and protective factors the coalition identifies (e.g., the risk factors that are most elevated and the protective factors that are most depressed in the community) and the groups or individuals most in need of services.<sup>330,338</sup> Coalitions conduct needs assessments by gathering data on risk and protective factors, substance misuse, and related problems. For example, in the CTC system, needs assessments rely primarily on data reported by adolescents on school-based, anonymous surveys. These data are reviewed by coalition members and risk factors that are consistently elevated and protective factors that are consistently depressed are identified as targets that need to be addressed by EBIs.<sup>334</sup> The priorities may vary by neighborhood in larger cities or by specific subpopulations (e.g., gender or racial and ethnic groups).<sup>334</sup>

To select the best-fitting EBIs, coalitions need to be familiar with the list of possible interventions that can address their needs, and must consider whether or not they can meet all the implementation requirements of the EBIs.<sup>294,312,339</sup> Consulting a registry of EBIs, such as the *National Registry of Evidence-based Programs and Practices* (NREPP)<sup>340</sup> and the *Blueprints for Healthy Youth Development*<sup>341</sup> or NIAAA's *Alcohol Policy Information System*<sup>342</sup> for alcohol policies, can assist in creating the list of EBIs that meet community needs. These databases compile information about programs that have met rigorous evaluation criteria in a user-friendly format, which makes it easy for communities to learn about and compare intervention costs and requirements.<sup>343,344</sup> The databases also describe the intervention methods and population(s) with which the interventions were tested to help coalitions determine whether the EBI is culturally relevant and compatible with the norms, values, and needs of the local community.

## Step 3. Enhance Implementation Fidelity and Implementers' Capacity

Some research suggests that EBIs can never be perfectly replicated in communities and that changes or adaptations to the EBI's content, activities, materials, or methods of delivery will be necessary given the differences between well-controlled research trials and real-world settings.<sup>263,270,345-347</sup> However, research has shown that when EBIs are implemented with fidelity, programs achieve expected results. While culturally relevant adaptations can be expected to increase the relevance of the material, better engage participants, and improve effectiveness, it is clear that poor or inappropriate adaptation can reduce effectiveness.<sup>268,295</sup> For example, an evaluation showed that the effectiveness of the *Nurse-Family Partnership* program was significantly reduced when paraprofessionals rather than registered nurses delivered services in communities that lack registered nurses.<sup>348</sup> These types of inappropriate adaptations emphasize the need for communities to learn as much as they can about EBIs during the fit assessment and select only those interventions that are considered feasible given resources.

## Steps to Build Prevention Infrastructure for Effective Community-based Prevention

Conduct a local needs assessment:

- Collect data on levels of substance use;
- Collect data on risk and protective factors related to substance use; and
- Identify and prioritize elevated risk factors and depressed protective factors.

Conduct a resource assessment:

- Assess current prevention programming, including the risk and protective factors addressed by current services, numbers and types of populations served, effectiveness, and implementation quality; and
- Identify potential new services using EBI and policy registries.

Assess the fit of new EBIs with the local community:

- Determine whether or not each potential EBI addresses the identified substance misuse problems and priority risk and protective factors; and
- Assess the degree to which the new EBI is culturally relevant for the local population.

Assess local readiness and capacity to implement EBIs:

- Identify the organization(s) that will deliver each new EBI;
- Assess levels of support for each new EBI among all key personnel; and
- Identify the financial and human resources and all other requirements necessary to implement each EBI.

Select the intervention(s) that is the best fit for the community: The ones that are most likely to be fully supported meet prioritized needs, are culturally relevant, can be well implemented, and can be sustained over the long-term.

Ensure high quality implementation of each new EBI:

- Create a detailed implementation plan;
- Specify participant eligibility criteria, participation goals, and recruitment procedures;
- Create teams to oversee implementation;
- Hire all necessary staff and administrators;
- Ensure that all staff are trained and regularly supervised; and
- Seek regular technical assistance from intervention developers.

Evaluate the impact of the selected interventions: It is critical to systematically collect and analyze information about program activities, participant characteristics, and outcomes.

- Collect data on all aspects of implementation; and
- Regularly review implementation and outcomes data and improve procedures as needed.

In addition to appropriate cultural adaptations, staff competency is critical to successful delivery of EBIs, and coalition members can support local agencies to ensure that they hire staff who have the credentials and experience recommended by developers, and that they receive training in each EBI's theory, content, and methods of delivery.<sup>142,294,312,339,349</sup> Training is an important ingredient in ensuring greater levels of implementation fidelity, especially because the content, activities, and methods of delivery may be new to practitioners.<sup>24,294,295</sup> In general, relatively few professionals responsible for implementing EBIs (including mental health counselors, teachers, psychologists, and social workers) receive training in substance misuse prevention, including knowledge of risk and protective factors that impact alcohol and drug use, the knowledge of EBIs that target these factors, or the importance of implementation fidelity when delivering interventions.<sup>18,350</sup> These topics should be incorporated into undergraduate, graduate, and in-service professional training programs.<sup>351</sup> In the meantime, staff should be supervised and receive coaching and corrective feedback to ensure they are implementing EBIs with quality.<sup>294,295,349,352</sup>

Technical assistance from EBI developers can assist local agencies in staff supervision, and most EBIs offer support in how to monitor implementation activities, overcome challenges when they arise, and integrate EBIs into agency operations.<sup>294,295,353</sup> Although experimental studies are lacking, observational studies have reported that technical assistance, implementation monitoring, and staff feedback help ensure the high-quality delivery and sustainability of EBIs.<sup>268,285,294,312,314,354,355</sup>

## Step 4. Plan for Long-Term Sustainability

A lack of funding is a significant barrier to the long-term sustainability of EBIs,<sup>294,308,311,356-359</sup> and it is critical that, even before implementation, agencies and communities consider how each EBI will be integrated into existing systems and funded over time.<sup>304,360</sup> Considering how a new EBI will address local needs can be useful in gaining support.<sup>361</sup>

## Recommendations for Research

Although much has been learned in prevention research over the past four decades, much remains to be understood. Future research should develop and evaluate new prevention interventions, both programs and policies, and continue to assess the effectiveness of existing interventions about which little is known. This research will help guide the field toward strategies with the greatest potential for reducing substance misuse and related problems.

Research also is needed to examine the effectiveness of screening and brief interventions for alcohol use in adolescents and for drug use in adolescents and adults; the combinations of evidence-based alcohol policies that most effectively reduce alcohol misuse and related harms; the public health impact of policies to reduce drug misuse; and the effectiveness of strategies to reduce marijuana misuse, driving after drug use, and simultaneous use of alcohol and drugs. In addition, the public health impact of marijuana decriminalization, legalization of medical marijuana, and legalization of recreational marijuana on marijuana, alcohol, and other drug use, as well as policies to reduce prescription drug misuse, should be monitored closely.

Research is needed to develop and test new prevention interventions, both policies and programs, to fill gaps in existing EBIs and to meet emerging public health needs across the lifecourse.

Given that racial and ethnic minority communities are often disproportionately affected by the adverse consequences of substance misuse, culturally-informed research should be conducted to examine ways to increase the cultural relevance, engagement, and effectiveness of prevention interventions for diverse communities. Additionally, studies of these interventions should be replicated and examined to determine the impact of prevention interventions for different cultural groups and contexts.

Consistent standards for evaluating interventions, conducting replication trials, and reporting the results should be developed. Examples of such standards have been developed by the Society for Prevention Research and the United Nations Office on Drugs and Crime.<sup>26,357,362-368</sup> Studies evaluating the effectiveness of interventions for reducing substance misuse should collect data over extended periods of time to track the long-term effects of these interventions on persons of all ages. The impact of environmental interventions on substance misuse should also be followed for at least a year beyond the end of the period of intervention support. The field needs to develop a consensus on standardization of methods of cost-benefit analysis, and increase research on cost-effectiveness evaluations of prevention EBIs.

Evidence is also needed to develop improved strategies for intervention in primary health care settings to prevent the initiation and escalation of adolescent substance use. More research is also needed on linking screening with personalized interventions, improved strategies for effective referral to specialty treatment, and interventions for adolescents that use social media and capitalize on current technologies. Research should also consider the optimal conditions for bringing effective prevention interventions to scale, develop consensus on standardization of methods for cost-benefit analysis, and increase research on cost-effectiveness evaluations of prevention EBIs.

Surveillance of risky drinking, drug use, and related problems needs to be improved. All drivers in fatal crashes should have their blood alcohol content tested and be tested for drug use. All unintentional and intentional injury deaths, including overdoses, should be tested for both alcohol and drugs. Surveillance surveys need to add questions about simultaneous alcohol and drug use and questions about the maximum quantities consumed in a day and frequency of consumption at those levels. Efforts are needed to increase surveillance of the second-hand effects of alcohol and drug use, such as assaults, sexual assaults, motor vehicle crashes, homicides and suicides, and effects of substance use on academic and work performance. Efforts are needed to expand surveillance beyond national and state levels to the level of local communities.

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