

**Growing Absolutely Fantastic Youth:
A Review of the Research on “Best Practices”**

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The primary goal of this report is to provide a research-based guide to healthy youth development. This report is based on information gained from years of research in adolescent health promotion. To set the stage, and to create motivation for action, the report begins with an overview of adolescent health issues. Then, based on evaluated programs and policies, a review of promising approaches for the promotion of healthy youth development is presented.

ADOLESCENCE: A TIME OF GREAT OPPORTUNITY

Adolescence is a time of great opportunity for healthy development. It is a time of curiosity; social, intellectual, and physical development; increasing independence; and establishing behavior patterns for a lifetime. But adolescence is also a time of risk. It is a time of decreased adult supervision and involvement, increased experimentation, and increased risk-taking. Knowing what influences the development of healthy behaviors is the first step in creating conditions to promote healthy behaviors and prevent unhealthy behaviors. Community members can work together to create conditions for healthy development of youth. Conditions for healthy development should provide young people with opportunities:

- to participate as citizens, members of a household, and responsible members of society;
- to gain experience in decision-making;
- to interact with peers and acquire a sense of belonging;
- to have time to reflect on self in relation to others;
- to discuss conflicting values and formulate their own value system;
- to experiment with their own identity, with relationships to others, with ideas;
- to develop a feeling of accountability;
- to cultivate a capacity to enjoy life (Konopka, 1973).

Providing conditions for healthy development is important for the immediate health and well-being of youth, as well as for the prevention of disease as youth mature into adulthood. Promoting healthy development among adolescents is an important goal for communities to embrace.

ADOLESCENT HEALTH-RELATED BEHAVIORS

In the U.S., the vast majority of deaths among youth result from motor vehicle crashes, homicide, and suicide. In addition, substantial health and social problems result from teenage pregnancies and sexually transmitted diseases. Among adults, the majority of premature illness and death is the result of cardiovascular disease and cancer. Therefore, seven categories of behavior have been identified as contributing to the leading causes of adolescent health problems and death in the U.S.: 1) alcohol, tobacco, and other drug use; 2) behaviors related to motor-vehicle occupant injuries; 3) violent and delinquent behaviors; 4) suicide; 5) risky sexual behaviors that contribute to unintended pregnancy and STDs; 6) eating behaviors; and 7) physical activity. The following section describes the prevalence of these behaviors among adolescents in Minnesota and the U.S.

Alcohol, Tobacco, and Other Drug Use

In the U.S., adolescent tobacco use, after having declined since the peak levels of smoking in the late 1970s, is again on the rise. Alcohol use among high school seniors was stable in the mid-1980s, then gradually declined through 1994 or 1995, with some increase since then (O'Malley & Johnston, 1999). Experimentation with alcohol remains almost universal and regular alcohol use is still prevalent among American teenagers. Illicit drug use, too, had been steadily declining since the early 1980s, but is now beginning to increase again (Ozer, Brindis, Millstein, Knopf, & Irwin, 1998). In

Minnesota, the rates of tobacco and marijuana use among most adolescents have increased over the last six years, while the rates of alcohol use are beginning to level off (Minnesota Department of Children, Families, and Learning, 1999).

The rates of alcohol, tobacco, and other drug use among adolescents in Minnesota are comparable to those among adolescents in the United States. For example, the number of teens in Minnesota who report having smoked a cigarette one or more times in the last thirty days is about the same as the number of teens in the U.S. who report the same (Table 1). However, the rate of heavy smoking (smoking a half a pack or more per day) for Minnesota high school seniors is higher than for students nationwide, 15.6% vs. 12.6%, respectively (Centers for Disease Control and Prevention, 1999; Johnson, O'Malley, & Bachman, 1999; Minnesota Department of Children, Families, and Learning, 1998).

The number of Minnesota teens who reported drinking alcohol on one or more occasions in the last twelve months is about the same as the number of other teens in America who report the same (Table 2). Binge drinking remains a problem for older teens in Minnesota, as about one in three twelfth grade students and one in seven ninth grade students reported drinking five or more drinks on a typical drinking occasion, though these rates are somewhat lower than national rates (Centers for Disease Control and Prevention, 1999; Johnson, O'Malley, & Bachman, 1999; Minnesota Department of Children, Families, and Learning, 1998).

Marijuana use rates are lower among Minnesota teens than teens nationwide (Table 3). Still, one in three twelfth graders and one in four ninth graders report having used marijuana at least once in the last year (Johnson, O'Malley, & Bachman, 1999; Minnesota Department of Children, Families, and Learning, 1998).

Table 1. Any cigarette use in the past thirty days.

	Minnesota ¹	United States ²
Males and Females		
Grade 6	7.4%	n/a
Grade 9	30.4%	34.2%
Grade 12	41.7%	40.0%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Table 2. Any alcohol use in the past twelve months.

	Minnesota ¹	United States ²
Males and Females		
Grade 6 (Minnesota) / Grade 8 (United States)	19.7%	43.7%
Grade 9 (Minnesota) / Grade 10 (United States)	54.0%	62.7%
Grade 12	69.8%	74.3%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1998 Monitoring the Future Survey (Johnson, O'Malley, & Bachman, 1999).

Table 3. Any marijuana use in the past twelve months.

	Minnesota ¹	United States ²
Males and Females		
Grade 6 (Minnesota) / Grade 8 (United States)	4.1%	16.9%
Grade 9 (Minnesota) / Grade 10 (United States)	24.1%	31.1%
Grade 12	30.3%	37.5%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

² 1998 Monitoring the Future Survey (Johnson, O'Malley, & Bachman, 1999).

Behaviors Related to Motor-Vehicle Occupant Injuries

Unfortunately, no data are available on the prevalence of behaviors related to unintentional injuries among Minnesota adolescents. However, nationwide, a number of adolescents do report rarely or never wearing seat belts when riding in a car driven by someone else, with more males reporting this behavior than females (Table 4) (Centers for Disease Control and Prevention, 1998). And even more American teens report, on one or more occasions during the thirty days preceding the survey, having ridden with a driver who had been drinking alcohol (Table 5) (Centers for Disease Control and Prevention, 1998).

Table 4. Rarely or never wore seat belts when riding in a car driven by someone else.

	Minnesota	United States ¹
Males		
Grade 9	n/a	25.9%
Grade 12	n/a	24.5%
Females		
Grade 9	n/a	16.0%
Grade 12	n/a	13.5%

¹1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Table 5. Rode with a driver who had been drinking alcohol.

	Minnesota	United States ¹
Males		
Grade 9	n/a	31.8%
Grade 12	n/a	41.7%
Females		
Grade 9	n/a	34.9%
Grade 12	n/a	39.1%

¹1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Violent and Delinquent Behavior

Rates of violent and delinquent behavior among adolescents in Minnesota are comparable to those among adolescents across the United States. Somewhat fewer teens in Minnesota report having been in a physical fight one or more times in the last year compared to other teens in America (Table 6). And about the same number of teens in Minnesota report having carried a weapon (such

as a gun, knife, or club) on school property one or more times in the last thirty days compared to other teens in the United States (Table 7) (Centers for Disease Control and Prevention, 1998; Minnesota Department of Children, Families, and Learning, 1999). In the national sample, males were more likely to have been in a physical fight and to have carried a weapon than females; and Black and Hispanic students were more likely than White students to have been in a physical fight (Centers for Disease Control and Prevention, 1998). In Minnesota, the rates of physical fighting have steadily declined since 1992, while the rates of weapon carrying have remained the same since 1995 (Minnesota Department of Children, Families, and Learning, 1999).

Table 6. Any physical fight in the past twelve months.

	Minnesota ¹	United States ²
Males		
Grade 6	51.0%	n/a
Grade 9	48.0%	56.0%
Grade 12	29.0%	36.6%
Females		
Grade 6	30.0%	n/a
Grade 9	30.0%	32.4%
Grade 12	14.0%	18.9%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Table 7. Carried a weapon on school property in the past thirty days.

	Minnesota ¹		United States ²
	gun	other weapon	gun or other weapon
Males			
Grade 6	2.0%	10.0%	n/a
Grade 9	6.0%	16.0%	15.0%
Grade 12	6.0%	12.0%	10.0%
Females			
Grade 6	0.7%	3.0%	n/a
Grade 9	1.0%	5.0%	5.0%
Grade 12	0.5%	2.0%	3.0%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Suicide

Overall, the prevalence of suicidal ideation and suicidal behavior among adolescents in Minnesota are comparable to those among adolescents across the nation. In both Minnesota and the United States, more young females than males report having seriously considered attempting suicide in the last year (Table 8) as well as having attempted suicide one or more times in the last year (Table 9) (Centers for Disease Control and Prevention, 1998; Minnesota Department of Children, Families, and Learning, 1999, personal communication).

Table 8. Seriously considered attempting suicide in the last year.

	Minnesota ¹	United States ²
Males		
Grade 6	14.0%	n/a
Grade 9	16.0%	16.1%
Grade 12	15.0%	13.5%
Females		
Grade 6	17.0%	n/a
Grade 9	31.0%	28.9%
Grade 12	19.0%	23.6%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Table 9. Attempted suicide one or more times in the last year.

	Minnesota ¹	United States ²
Males		
Grade 6	5.0%	n/a
Grade 9	4.0%	6.3%
Grade 12	3.0%	3.7%
Females		
Grade 6	6.0%	n/a
Grade 9	10.0%	15.1%
Grade 12	4.0%	6.2%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Risky Sexual Behaviors

Minnesota teenagers are less sexually active than other American teenagers; fewer teens in Minnesota report ever having sexual intercourse compared to other teens in America (Table 10). And, among those who are currently sexually active, somewhat more Minnesota teens, with the exception of male twelfth graders, report having used a condom the last time they had intercourse compared to other American teens (Table 11) (Centers for Disease Control and Prevention, 1998; Minnesota Department of Children, Families, and Learning, 1999). In the national sample, Black students were more likely to have sexual intercourse than Hispanic students, and both Black and Hispanic students were more likely to have had sexual intercourse than White students (Centers for Disease Control and Prevention, 1998). In Minnesota, the percentage of students who reported having had sexual intercourse declined over the last decade (Minnesota Department of Children, Families, and Learning, 1999).

Table 10. Ever had sexual intercourse.

	Minnesota ¹	United States ²
Males		
Grade 9	28.0%	41.8%
Grade 12	49.0%	60.1%
Females		
Grade 9	20.0%	34.0%
Grade 12	51.0%	61.9%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Table 11. Condom use during last intercourse.

	Minnesota ¹	United States ²
Males		
Grade 9	63.0%	59.2%
Grade 12	58.0%	61.2%
Females		
Grade 9	63.0%	58.3%
Grade 12	50.0%	43.0%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Eating Behaviors

Fewer Minnesota teens are practicing healthy eating behaviors when compared to teens across the nation. Less than half as many adolescents in Minnesota report having eaten five or more servings of fruit and vegetables in the previous day as adolescents across the United States, across both genders and grade levels (Table 12) (Centers for Disease Control and Prevention, 1998; Minnesota Department of Children, Families, and Learning, 1999, personal communication). In the national sample, male students were more likely to report this behavior than female students (Centers for Disease Control and Prevention, 1998).

Table 12. Eaten five or more servings of fruit and vegetables in the last day.

	Minnesota ¹	United States ²
Males		
Grade 6	21.0%	n/a
Grade 9	14.0%	34.5%
Grade 12	12.0%	30.1%
Females		
Grade 6	22.0%	n/a
Grade 9	14.0%	27.9%
Grade 12	10.0%	23.3%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

Physical Activity

The rates of physical activity among adolescents in Minnesota are comparable to those among adolescents across the United States. Somewhat fewer teens in Minnesota report having participated in vigorous physical activity (defined as participating in activities that caused sweating or heavy breathing for at least twenty minutes) on three or more of the seven days preceding the survey when compared to other teens in America (Table 13) (Centers for Disease Control and Prevention, 1998; Minnesota Department of Children, Families, and Learning, 1999, personal communication). In the national sample, males were more likely to have participated in vigorous physical activity than females; and White students were more likely than Black and Hispanic students to have reported the same. The rates of vigorous physical activity also decline with age (Centers for Disease Control and Prevention, 1998).

Table 13. Participated in vigorous physical activity.

	Minnesota ¹	United States ²
Males		
Grade 6	70.0%	n/a
Grade 9	71.0%	78.7%
Grade 12	59.0%	68.4%
Females		
Grade 6	65.0%	n/a
Grade 9	64.0%	66.1%
Grade 12	46.0%	43.6%

¹1998 Minnesota Student Survey (Minnesota Department of Children, Families, and Learning, 1999).

²1997 Youth Risk Behavior Surveillance Survey (Centers for Disease Control and Prevention, 1998).

WHAT PUTS ADOLESCENTS AT RISK? WHAT PROTECTS THEM?

Health-compromising behaviors, premature disability and death, and chronic disease can often be linked to social and environmental factors that can be changed. Successfully developing and implementing effective strategies and providing optimal conditions to prevent health-compromising and promote health-enhancing behaviors among adolescents depends on identifying priority health-related behaviors and the causes of those behaviors. Identifying those causes depends on a combination of theory and research. Theory can tell us where to search for causes and suggest the means of prevention. Research can tell us whether our search has been successful and whether our prevention efforts have been effective.

Many promising prevention strategies have been guided by theories that focus on social and environmental factors that influence individual risk and protective factors and behaviors, and then attempt to make changes in those factors. Adolescents are exposed to social relationships and environmental contexts in their home, peer group, school, neighborhood, community, and society.

Many studies confirm that health-compromising behaviors among adolescents are interrelated (Dryfoos, 1990). Many risk and protective factors are related to multiple health-related behaviors among adolescents (Dryfoos, 1990; Komro, Hu, & Flay, 1997). Table 14 summarizes family, school, and community risk and protective factors for health-compromising behaviors among adolescents (Hawkins, Catalano, & Miller, 1992; Komro, Hu, & Flay, 1997; Scales & Leffert, 1999). Knowledge and understanding of risk and protective factors are key to developing effective prevention strategies (Resnick, Bearman, Blum et al., 1997).

Table 14. Social and Environmental Influences on Adolescent Health-related Behaviors

	Family/Home	School	Community
Risk Factors	<ul style="list-style-type: none"> • Low economic status • Low parental education • Family disruption and conflict • Lack of parental support • Low parental supervision • Repressive and abusive parenting styles • Inadequate family problem-solving and coping skills • Low parental expectations • Weak family bonds • Availability of detrimental products • Family history of criminality, violence, mental illness • Parents and siblings health-compromising behaviors 	<ul style="list-style-type: none"> • Academic failure • Students' health-compromising behaviors • School strain • Repressive environment • Tracking within a school • Poor classroom management • Segregated schools 	<ul style="list-style-type: none"> • High rates of poverty • High unemployment • High rates of crime • High mobility • High population density • Physical deterioration • Low attachment • Availability of detrimental products (e.g., drugs and firearms) • Media promoting health-compromising behaviors
Protective Factors	<ul style="list-style-type: none"> • Family support • Positive family communication • Parent involvement in schooling • Family boundaries (clear rules and consequences, and monitors child's whereabouts) • Adult and sibling role models (parent(s) and siblings model positive, responsible, healthy behavior) • High expectations – parent(s) encourage young person to do well • Time spent with families 	<ul style="list-style-type: none"> • Commitment to school • Caring school climate • School boundaries (clear rules and consequences) • Adult role models (adults model positive, responsible, healthy behavior) • Young person's best friends model positive, responsible, healthy behavior • High expectations – teachers encourage young person to do well 	<ul style="list-style-type: none"> • Support provided by adults • Neighborhood boundaries (neighbors take responsibility for monitoring young people's behavior) • Adult role models (adults model positive, responsible, healthy behavior) • Young person's best friends model positive, responsible, healthy behavior • Availability of youth programs

PROMISING STRATEGIES TO PROMOTE HEALTHY YOUTH DEVELOPMENT

The following section presents promising strategies to promote the health of adolescents. The information presented is based on reviews of the literature and recommendations from experts in the field. The section is organized by behavior, including: 1) alcohol, tobacco, and other drug use, 2) behaviors related to motor vehicle occupant injuries, 3) violent and delinquent behaviors, 4) suicide, 5) risky sexual behaviors, 6) eating behaviors, and 7) physical activity. Each section highlights promising strategies that can be implemented with families, schools, and communities. Successful efforts usually incorporate home, school, and community components. The section concludes with a summary of promising strategies to promote healthy youth development.

Alcohol, Tobacco, and Other Drug Use

Alcohol, tobacco, and other drug use (ATOD) are prevalent health-compromising behaviors among adolescents. Drug use behaviors cause problems during adolescence (e.g., alcohol use by adolescents is associated with car crashes, violence, school problems), as well as problems later in life (e.g., tobacco use is a risk factor for cancer and heart disease, early onset of alcohol use is associated with alcohol-related problems in adulthood).

Family Interventions

Family (parents or guardian, siblings) involvement in ATOD prevention is important for success (Centers for Disease Control and Prevention, 1994; Drug Strategies, 1996; Dusenbury & Falco, 1995; National Institute on Drug Abuse, 1997; Windle, Thatcher Shope, & Bukstein, 1996). Parent involvement in planning prevention strategies and in soliciting support for prevention is an important first step (Centers for Disease Control and Prevention, 1994). Another strategy is establishing parent prevention groups (Windle et al., 1996). The creation of parent groups fosters attitudes and norms that are supportive of prevention. Such groups provide social support for parents. Two other promising strategies for preventing alcohol, tobacco, and other drug use include structured home-based parent-child activities and parenting programs.

Structured home-based parent-child activities. Parents have been connected to school alcohol, tobacco, and other drug use prevention programs through involvement in homework assignments. Important topics to include in homework assignments include information about alcohol, tobacco, and other drugs; discussion of clear and unambiguous family rules and consequences for breaking those rules; listening and communication skills; and information about limiting the availability of alcohol in the home, by keeping alcohol in locked cabinets and monitoring the supply of alcohol. Involving parents in homework assignments increases the likelihood that alcohol, tobacco, and other drug use is discussed at home and may enhance parenting skills (Centers for Disease Control and Prevention, 1994). An example of a successful program that included homework assignments with parents is *Project Northland* (Perry, Williams, Forster, Wolfson, Wagenaar, Finnegan, McGovern, Veblen-Mortenson, Komro, & Anstine, 1993; Perry, Williams, Veblen-Mortenson, Toomey, Komro, Anstine, McGovern, Finnegan, Forster, Wagenaar, & Wolfson, 1996; Williams, Perry, Dudovitz, Veblen-Mortenson, & Anstine 1995). *Project Northland* includes three years of family, school, and community alcohol-use-prevention activities for sixth through eighth grade students. During the first year of the program, a home-based program is administered to sixth grade classes. Students take activity booklets home to work on with their families. The booklets include educational and interactive activities that cover topics such as dispelling myths about alcohol use, peer pressure, media influences, and consequences of alcohol use. In addition, information on setting family rules, the importance of consistent enforcement of rules, and the significance of monitoring are covered. Parent education and involvement is included in all

three years of the program. At the end of three years of programs, eighth grade students exposed to the *Project Northland* programs had significantly lower rates of alcohol use, a higher level of parent-child communication, and improvement in other psychosocial risk factors related to alcohol use (Perry, et al., 1996).

Parenting programs. Reviews of parent programs indicate that enhancement of the following parenting skills are important for the prevention of alcohol, tobacco, and other drug use: 1) improving parent-child relations by using positive reinforcement, listening and communication skills, and problem-solving; 2) providing consistent discipline and rulemaking; 3) monitoring children's activities during adolescence; and 4) strengthening of family bonding (National Institute on Drug Abuse, 1997; Windle, et al., 1996). Several studies have found that parent and family training programs improve parenting skills and reduce problem behaviors among children (National Institute on Drug Abuse, 1997). Examples of successful parenting programs include *Preparing for the Drug-Free Years* (PDFY) and the *Iowa Strengthening Families Program* (ISFP) (National Institute on Drug Abuse, 1997). The PDFY has five competency-training sessions for parents, and one of these sessions is attended by young adolescents and parents together. The ISFP has seven sessions, each attended jointly by youth and their parents. Comparisons of both interventions with control group families show positive effects on parents' child management practices and on parent-child relations. One-year followup results from the ISFP shows improved youth resistance to peer pressure toward alcohol use, reduced affiliation with antisocial peers, and reduced levels of problem behaviors.

School Interventions

Schools can participate in alcohol, tobacco, and other drug use prevention in a variety of ways, including the following: 1) promoting cooperative team learning and interactive teaching; 2) advancing academic achievement and school commitment; 3) providing counseling services for students and families at risk; 4) implementing prevention curricula; 5) training and supporting teachers; 6) utilizing school-wide media; and 7) establishing and enforcing comprehensive school policies (Centers for Disease Control and Prevention, 1994; U. S. Department of Health and Human Services, 1994; Drug Strategies, 1996; Dusenbury & Falco, 1995; National Institute on Drug Abuse, 1997; Windle, et al., 1996).

Innovative approaches to education. Schools can promote their students' health and the prevention of alcohol, tobacco, and other drug use by providing an environment that encourages academic achievement, students' and parents' connection to the school, and connection to the community. Schools should insure that counseling services are available for students and families at risk.

Curricula. Alcohol, tobacco, and other drug prevention curricula should be one part of a kindergarten through grade twelve comprehensive health education curricula, with the most intensive coverage of alcohol, tobacco, and other drug prevention in junior high/middle school and reinforced in high school (Centers for Disease Control and Prevention, 1994; Drug Strategies, 1996). Components of successful curricula include: 1) program development based on behavioral theory and knowledge of risk and protective factors; 2) developmentally appropriate information about drugs, including information on short-term effects and long-term consequences of alcohol, tobacco, and other drugs; 3) the development of personal, social, and resistance skills to help students identify internal (e.g., anxiety and stress) and external (e.g., peer pressure and advertising) pressures to use drugs and gives junior high/middle school students the skills they need to resist pressure while maintaining their friendships; 4) an emphasis on normative education that reinforces that most people their age do not use alcohol, tobacco, or other drugs; 5) structured broader-based skill training, for example goal-setting, stress management, communication skills, general social skills, and assertiveness skills; 6) interactive teaching techniques, for example role playing, discussions, and small group activities to promote active participation of students; 7) at least 10 sessions one year, followed by three to five booster sessions in at least two succeeding years; 8) teacher training and support from program developers or prevention experts; 9) active family and community involvement; and 10) cultural sensitivity (e.g., includes activities that require teacher and student

input and can be tailored to cultural experience of classroom) (Drug Strategies, 1996; Dusenbury & Falco, 1995).

Two examples of programs that have been found to have long-term effects include Project STAR and Life Skills Training (National Institute on Drug Abuse, 1997). Project STAR (Pentz, Dwyer, MacKinnon, Flay, Hansen, Wang, & Johnson, 1989) includes a classroom curriculum, a parent program, mass media, and community involvement. The curriculum component is incorporated in classroom instruction by trained teachers over two years. Research results of this project have shown long-term effects with reductions in marijuana and cigarette use among high school seniors who were exposed to all program components during junior high, compared to those who only received the media and community components. Life Skills Training (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990; Botvin, Baker, Dusenbury, Botvin, Diaz, 1995) consists of three-years of prevention curricula for middle or junior high school students. The first year contains 15 sessions, followed by 10 in the second year, and 5 in the third year. The curricula cover drug resistance skills and information, self-management skills, and general social skills. A long-term followup study indicated that this program had long-term effects on smoking, alcohol, and marijuana use through grade 12 (Botvin, et al., 1995).

School-wide media. In tobacco prevention, using media with curriculum has been found to be more effective than curriculum alone (U. S. Department of Health and Human Services, 1994). For example, one study at the University of Vermont demonstrated a significant decrease in smoking rates for youth who had been exposed to both school curricula and a mass media campaign when compared to youth who had been exposed to school curricula alone. The authors of this study suggest that students who viewed these media messages, which included nonauthoritarian appeals and avoided direct exhortations and were not directly linked with the school-based program, may have perceived that young people across the nation were receiving the same nonsmoking messages and that nonsmoking was indeed the norm (Flynn, Worden, Secker-Walker, Badger, Geller, & Costanza, 1992). Principles to follow when developing a campaign include: 1) making an appeal to the needs and interests of the target group; 2) using peer models; 3) using image or lifestyle appeals instead of cognitive appeals; 4) providing novelty and humor; 5) avoiding exhortation; and 6) demonstrating preventive skills. A decision of whether to use celebrity spokespersons should be made with caution. Surveys and focus groups should be used to inform the creation of messages.

School policies and environment. The Centers for Disease Control and Prevention recommends a comprehensive school tobacco policy (Centers for Disease Control and Prevention, 1994). Their recommendations can be applied to alcohol and other drug use as well. A comprehensive alcohol, tobacco, and other drug use policy includes: a rationale; prohibitions against alcohol, tobacco, and other drug use by students, all school staff, parents, and visitors on school property, in school vehicles, and at school-sponsored functions away from school property; prohibitions against alcohol and tobacco advertising in school buildings, at school functions, and in school publications; requirements that all students receive instruction on avoiding alcohol, tobacco, and other drug use; provisions for students and all school staff to have access to programs to help them quit using alcohol, tobacco, and other drugs; procedures for communicating the policy to students, all school staff, parents or families, visitors, and community; and provisions for enforcing the policy.

Community Interventions

There are various ways in which communities, that is individuals, groups, and organizations within the community, can contribute to alcohol, tobacco, and other drug prevention. Promising community strategies include restricting the availability of alcohol, tobacco, and other drugs and promoting norms against use by youth.

Community organizing. Community members' participation in prevention activities, in enacting policies and ordinances, and participating in the enforcement of community laws and norms is seen as critical to effective community prevention efforts (Davis & Lurgio, 1996; Windle et al., 1994; U. S. Department of Health and Human Services, 1994; Wagenaar, Gehan, Jones-Webb, Wolfson, Toomey, Forster, & Murray, 1999). Parents, community groups, and agencies must work

together to 1) create a no-use norm for youth; 2) restrict youths' access to these detrimental products; 3) create healthy opportunities for youth; and 4) provide youth with opportunities to create a sense of connection to their community. Tobacco Policy Options for Prevention (TPOP), a randomized community trial designed to test the effects of changes in local policies to limit youth access to tobacco, is one example of such a successful community organizing effort. Seven intervention communities in the state of Minnesota participated in a thirty-two month community organizing effort to mobilize citizens and activate communities around policy efforts aimed at reducing youth access to tobacco. TPOP demonstrated significant reductions in adolescent smoking rates, suggesting that the effectiveness of a policy approach to behavior change might depend on intensive community involvement or, at the very least, local community activation (Forster, Murray, Wolfson, Blaine, Wagenaar, & Hennrikus, 1998).

Media. Media can be used to increase public awareness, attract support, reinforce other prevention activities, and keep the public informed of prevention activities (National Institute on Drug Abuse, 1997). The previous section, school-wide media campaigns, highlights principles for developing effective media campaigns as well as one such mass media program that has proven effective at reducing smoking rates among young persons.

Ordinances and policies. Ordinances and policies can be adopted and enforced to protect youth from tobacco, alcohol, and other drugs. All too often youth find it easy to obtain alcohol, tobacco, or other drugs. Ordinances and policies can be adopted and enforced to restrict both commercial (e.g., stores, bars) and social (e.g., friends, young adults, home) availability.

To restrict youth's access to tobacco, for example, a model law has been proposed which contains the following six provisions (U.S. Department of Health and Human Services, 1994). First, nineteen years of age should be instituted as the minimum age for legal tobacco sales so as to help keep tobacco out of high schools. Further, raising the age to twenty-one would provide a parallel with alcohol laws and would facilitate the enforcement of both laws. Second, a tobacco-sales licensing system should be created similar to that used for alcoholic beverages. Without a licensing system, health and law enforcement officials have no control over who sells tobacco. The licensing system would create a record of outlets, facilitating educational and enforcement activities. In addition, applicants could be required to pass a test to ensure that they understand their legal responsibilities. Third, a graduated schedule of civil penalties for illegal sales should be established. These penalties should include suspension or revocation of retailers's license to sell tobacco because of repeated violations of the age-of-sale law. Fourth, primary responsibility for enforcement should be placed with a designated agency. This agency would be responsible for conducting compliance checks on each outlet. Fifth, civil and local courts should be used to assess fines. Civil enforcement allows violations to be handled through a ticketing or administrative mechanism and avoids the need for court hearings. Local health departments could provide enforcement. Finally, cigarette vending machines should be banned. Less restrictive measures have been shown to be less effective in preventing tobacco sales to minors (Forster & Wolfson, 1998; U. S. Department of Health and Human Services, 1994). At least one study has shown that adoption and enforcement of such laws results in less tobacco use by teens (Forster, Murray, Wolfson, Blaine, Wagenaar, & Hennrikus, 1998).

Similar strategies can be applied to restricting the sale of alcohol to minors. Regular compliance checks of alcohol outlets to enforce the minimum age-of-sale law and administrative penalties which make it more efficient to penalize the servers and owners for selling to underage youth are strategies that are recommended by experts in the alcohol field (Wagenaar & Toomey, 1997; Windle et al., 1996; McKnight). Maintaining the legal drinking age at twenty-one also is highly recommended because numerous studies have found that raising the legal age from eighteen to twenty-one was associated with a significant decline in alcohol use and significant declines in traffic fatalities, suicides, pedestrian deaths, and other unintentional injuries (Wagenaar & Toomey, 1997). In addition, local communities control planning and zoning ordinances and conditional use permits, enabling local control of the sale of alcohol in the interests of public health. Studies have found that reductions in alcohol use can be achieved by restricting the growth of the number or density of alcohol outlets (Wagenaar & Toomey, 1997; Windle et al., 1996).

Restricting youths' access to illegal drugs requires cooperation between community residents and police (Davis & Lurgio, 1996). Strategies that hold promise of ridding neighborhoods of active drug selling activity include police and neighborhood groups working together to identify hot spots of drug selling and using activity, then conducting police sweeps of those hot spots, followed by resident involvement in prevention through the use of patrols and block watch programs (Davis & Lurgio, 1996). Drug house abatement and nuisance abatement have also been found to be effective in ridding neighborhoods of active drug selling activity (Davis & Lurgio, 1996).

Motor Vehicle-Occupant Injuries

Motor vehicle-occupant injuries are a prominent cause of death for children of all ages and the leading cause of death for older children and adolescents (Hoover Wilson, Baker, Teret, Shock, & Garbarino, 1991; Ray & Yuwiler, 1994). Motor vehicle injuries are by far the leading cause of death due to unintentional injuries, both in the United States as a whole and in Minnesota (Ray & Yuwiler, 1994). Three main strategies for the prevention of motor vehicle-related injuries among adolescents include graduated drivers licensing (including a night driving curfew), mandatory seat belt use laws, and drinking and driving prevention strategies.

Family Interventions

We could not locate any evaluations of family interventions that specifically address reducing motor vehicle-occupant injuries. Recently MADD (Mothers Against Drunk Driving) has developed a CD Rom-based program for parents of children near the legal driving age. However, to the best of our knowledge this program has not been evaluated. The program, called "The Key," guides family discussions about the seriousness of being a young driver and the deadly consequences of mixing alcohol and other drugs with driving. The informative and entertaining program is co-hosted by television and film star Connie Selleca and her teenage son, Gibb. The CD-Rom includes five sections: 1) Key Issues, 2) Parenting, 3) Kids & Cars, 4) Teens Only!, And 5) Family Meeting. The family meeting is the most important section of "The Key," where families will have discussions about the information that they have learned and create a "family covenant" that includes expected behaviors for both teens and adults, along with agreed upon consequences.

School Interventions

Curricula. The goals of an impaired-driving prevention curriculum have included skill development, passenger safety, drinking and driving prevention, and the promotion of seat belt use. However, curriculum programs should be incorporated with other proven efforts since the extent of the beneficial effects of educational programs has not been established (Hingson & Howland, 1993).

Controlled studies of driver education programs reveal they do not lower crash rates in adolescent drivers, because any positive effects are offset by the effects of encouraging adolescents to become licensed earlier than they otherwise would (Hingson & Howland, 1993).

School policies and environment. The promotion of seat belt use is critical for the reduction of fatal injury due to car crashes (Lescohier & Gallagher, 1996). Schools should require that students who are being transported in private vehicles as part of school activities when arriving or departing school be restrained by a seat belt and shoulder harness (Hoover Wilson, et al., 1991). The installation and use of seat belts on school buses has been a matter of controversy for several years because of complications in the construction of anchoring seat belts in buses. A less expensive alternative strategy has been used, that is the use of high back seats with energy-absorbing materials. The number of children who have died as occupants in school bus crashes has been small, and it is argued that resources might be directed first to assuring better protection of child pedestrians around school buses (Hoover Wilson, et al., 1991).

Community Interventions

Road construction and car design. Advances have been made in road construction and car design that have substantially reduced car crash fatalities (Lescohier & Gallagher, 1996). Safety features for road designs have included divided traffic streams, controlled access, fewer dangerous curves, highly visible traffic signs, wide roadside shoulders, and forgiving roadside fixtures (Lescohier & Gallagher, 1996). Safety features of cars include airbags, padded dash/interiors, collapsible steering columns, frontal “crash” zones, side door strength reinforcing beams, roof crash strength improvements, and imposed handling and braking.

Community organizing, media, & ordinances and policies. A multi-component intervention conducted in Massachusetts, The Saving Lives Program, indicates that interventions organized by multiple city departments and private citizens can reduce driving after drinking, related driving risks, and traffic deaths and injuries (Hingson, McGovern, Howland, Heeren, Winter, & Zakocs, 1996). In 1987 six communities in Massachusetts were funded to implement programs to reduce alcohol-impaired driving and related problems. To reduce drunk driving and speeding, communities introduced media campaigns, speeding and drunk driving awareness days, speed watch telephone hotlines, police training, high school peer-led education, Students Against Drunk Driving chapters, college prevention programs, alcohol-free prom nights, beer keg registration, and increased liquor outlet surveillance. In addition to increase pedestrian safety and seat belt use, communities introduced media campaigns, police checkpoints, and added crosswalk guards. The six program cities were compared to the rest of Massachusetts. Fatal crashes declined 25%, fatal crashes involving alcohol decreased 42%, and the proportions of vehicles observed speeding and teenagers who drove after drinking were cut in half. This study provides support for a multi-strategy approach, combining citizen participation, media, and enforcement efforts.

A combination of legal strategies and grass roots community efforts have been cited as important factors in reducing drunk driving deaths among adolescents (Lescohier & Gallagher, 1996). Effective legal strategies to reduce drinking and driving among adolescents include: 1) maintaining the legal drinking age at 21, 2) criminal laws that intend to deter drunk driving, 3) administrative laws that permit license suspension between time of arrest and trial, 4) increasing price of alcoholic beverages, 5) graduated drivers licensing, 6) administrative license revocation of those found drinking and driving, and 7) reduced or zero-tolerance blood alcohol content for young drivers (Lescohier & Gallagher, 1996; Wagenaar & Toomey, 1997).

Examples of other promising strategies include altering social norms to make alcohol-impaired driving socially unacceptable, limiting alcohol availability among underaged youth, implementing responsible alcohol service training for those who sell and serve alcohol, implementing early alcohol treatment and rehabilitation programs, offering alternative transportation programs for those of legal drinking age, and increasing the perception of risk for arrest for alcohol-impaired driving (MMWR, 1993). MADD, a grass roots organization founded in 1980 by a mother of a victim of a drunk driver and a handful of concerned citizens, initiates actions to bring about tougher laws against impaired driving, stiffer penalties for committing such crimes and a greater awareness on the part of government and the public about the seriousness of driving drunk (www.mad.org, 1999). By 1990 MADD had grown to include more than 400 local chapters and state and regional offices. MADD has nearly three million members and supporters nationwide and abroad, making it the largest victim-advocate and anti-driving while intoxicated activities organizations in the USA and the world. Their national headquarter staff direct training opportunities, seasonal and ongoing education and awareness programs, national fundraising, media campaigns, and federal and state legislative activities. MADD’s website (www.madd.org) states “MADD’s emergence dramatized and personalized the tragedy of alcohol and other drug impairment in traffic fatalities, and its activism has had a broad impact on societal attitudes and behavior relating to drinking and driving.” MADD is an example of a successful grassroots community organizing approach.

Another critical strategy to reduce motor vehicle-occupant injuries is the use of seat belts. The use of lap and shoulder belts is known to reduce the risk for fatal injury by 40-50% and the risk of moderate to critical injury by 45-55% (Lescohier & Gallagher, 1996). Mandatory seat belt laws have

been found to be more effective in increasing the rate of seat-belt use than other programs (Lescohier & Gallagher, 1996). A media campaign, combined with enforcement of seat belt laws, results in an increase in seat belt use (Hoover Wilson et al., 1991).

Lastly, an important recommendation for the reduction of motor vehicle-occupant injury prevention among youth is the use of a graduated licensing system. A graduated licensing system phases in young drivers to full-privilege licensure, limiting initial driving to lower-risk situations (Williams & Preusser, 1997). One important component of a graduated licensing system is a night driving curfew. A disproportionate number of fatal crashes among 16-17-year-old drivers occur between 9 p.m. and 6 a.m. Curfews that limit recreational driving at night without an adult have been found to substantially reduce nighttime crashes (Williams & Preusser, 1997).

Violent and Delinquent Behavior

By many measures, the United States has the highest rates of violence among all industrialized countries (American Psychological Association, 1993). And, in the U.S., the highest rates of violence are among adolescents, most notably among males and African-Americans (Lowry, Sleet, Duncan, Powell, & Kolbe, 1995). In fact, youth are disproportionately overrepresented among both the victims and perpetrators of violence and violent crime in America, the frequency and severity of which have dramatically increased over the last decade (Kellermann, Fuqua-Whitley, Rivara, & Mercy, 1998). Interpersonal violence, therefore, has become one of the leading causes of death and injury among adolescents in the United States. Homicide, for example, is the second leading cause of death for American youth (Ozer, Brindis, Millstein, Knopf, & Irwin, 1998; Miller, Cohen, & Wiersema, 1996). As a result, the prevention of violent and delinquent behavior among adolescents has become a national public health and education priority.

This growing concern about this problem of delinquent and violent behavior among youth has produced hundreds of prevention programs (Kellermann, et al., 1998; Mann-Rinehart, Borowsky, Stolz, Latts, Cart, & Brindis, 1998). Few of them have been evaluated in a rigorous manner (Tolan & Guerra, 1996). Though this prevention field is in its infancy, several promising prevention strategies have begun to emerge (Kellermann, et al., 1998; Tolan & Guerra, 1994; Dryfoos, 1990).

Family Interventions

Family interventions seem to be among the most promising approaches to youth violence prevention to date (Tolan & Guerra, 1994). These interventions should be designed to ameliorate important familial risk factors for delinquent and violent behavior among youth, including erratic or inappropriately harsh parental discipline, poor parental supervision and lack of parental monitoring, poor parent-child bonding, and inadequate social support for parents (Dunst & Trivette, 1988; Farrington, 1995; Tolan & Lorion, 1988).

Parenting programs. Most parenting methods are learned, not instinctive, behaviors which can be improved with instruction. Parenting programs teach mothers and fathers important parenting skills, some of which include how to establish an appropriate and consistent system of rewards and punishment, how to enhance parent-child communication, how to promote parent-child connectedness, and how to effectively solve family problems. Though these programs have not yet proven effective with families with teenage children, they have proven quite effective for families with young children. One such parenting program, Catch 'Em Being Good, a seven session school-based program for parents of first and second graders teaches parents what to expect from their children and how to establish a system of rewards and punishments. The program successfully decreased aggressiveness among the children, especially boys, when combined with teacher training in proactive classroom management (Hawkins, Von Cleve, & Catalano, 1991). Another successful program trained parents, through home visits with skilled therapists, to monitor and correct their child's behavior. The Oregon Social Learning Center's program demonstrated reductions in teen aggressive and antisocial behavior (Patterson, Chamberlain, & Reid, 1982).

Home visitation has been an important component of many successful early childhood interventions to prevent youth violence. It has often been used in combination with early education programs, including preschool programs. During the first few years of a child's life, home visits are made on a weekly to monthly basis by nurses or other trained staff to teach parents important parenting skills, provide emotional support, and make referrals to outside agencies when and where appropriate. Examples of successful interventions that utilized a home visitation component include the Perry Preschool program, which demonstrated long-term reductions in physical fighting and juvenile delinquency (Berrueta-Clemens, Schweinhart, Barnett, Epstein, & Weikart, 1984; Schweinhart, Barnes, & Weikart, 1993), and the Syracuse Family Development Program, which showed long-term reductions in juvenile delinquency (Lally, Mangione, Honig, 1988).

Although expensive, family therapy has also proven effective at curbing child behavior problems (Shadish, 1992; Elliott, Ageton, & Canter, 1979). Family therapy uses skilled counselors to work with multiple members of a family to improve family functioning and reduce juvenile delinquency.

School Interventions

Many successful prevention programs are based in schools (Dryfoos, 1990). Examples of effective school-based delinquency and violence prevention programs include early childhood education programs, innovative approaches to education, and violence prevention curricula. Schools are a particularly attractive setting for youth health promotion for many reasons. Most adolescents attend school regularly and, while in school, constitute a "captive audience." Further, schools are an important social environment in which adolescents can learn, practice, and be reinforced with respect to their behavior (Parcel, Kelder, & Basen-Engquist, in press). Thus, for this discussion, it is also important to consider creating school policies and changing elements of the school environment in order to hinder the development of violent and delinquent behavior among adolescents.

Early childhood education. Both short- and long-term effects on violent and delinquent behavior have been noted with early childhood education programs. The Perry Preschool program, a high-quality two-year preschool enrichment program that also included a home visitation component, has received national recognition for its long-term impact not only on juvenile delinquency, but also on school achievement and teen pregnancy. This program provided an organized educational experience directed at the intellectual and social development of disadvantaged young children who participated, in most cases, for two years when they were three and four years of age (Berrueta-Clemens, Schweinhart, Barnett, Epstein, & Weikart, 1984; Schweinhart, Barnes, & Weikart, 1993).

Innovative approaches to education. Certain characteristics of schools are associated with high rates of delinquency, including large school size, lack of structure, lack of individual attention, low teacher expectations, and inconsistent discipline by teachers and school staff (Dryfoos, 1990). Several interventions have addressed these factors in an effort to reduce school violence. To that end, the interventions have employed one or more innovative educational approaches, including 1) interactive teaching techniques; 2) proactive classroom management, through which teachers create and reinforce positive learning environments; 3) cooperative team learning and student team teaching, where students work in heterogeneous teams and are recognized for group performance; and 4) participatory decision making and joint problem solving among teachers, staff, students, and parents. The Positive Action through Holistic Education (PATHE) program was able to reduce delinquent behavior and improve school performance among middle and high school students through participatory decision making and student team teaching (Kimbrough, 1985). The School Team Approach successfully used cooperative team learning and joint problem solving among parents, students, school staff, and community residents, to reduce school crime and disruptive student behavior (Grant & Cappell, 1983).

Curricula. Among the many approaches to violence prevention, this may be the most popular. However, few curricula have been rigorously evaluated, and those that have been evaluated have produced, at best, mixed results (Powell & Hawkins, 1996). Violence prevention curricula can be divided into two categories, those that teach problem-solving and social skills and those that use a more didactic approach, teaching adolescents about the negative consequences of violent and

delinquent behavior. Providing Alternative Thinking Strategies (PATHS) is an example of the former approach (Howell & Bilchick, 1995) and Law Related Education is an example of the latter (Colorado Juvenile Justice and Delinquency Prevention Council, 1987). Both have produced short-term effects on delinquent behavior. Experts believe that violence prevention curricula should incorporate elements from both strategies. Program content should include information on the negative short- and long-term consequences of violence as well as teach students anger management, social perspective taking, problem solving, peer negotiation, conflict management, peer resistance, active listening, and effective communication skills. Programs should also clearly communicate, monitor, and enforce expected behavioral norms (Drug Strategies, 1998).

Prevention scientists also agree that these school-based programs should use a comprehensive, multifaceted approach that involves family, peer, media, and community components, since prevention programs are more likely to be effective if their messages are reinforced in different settings. Curricula should begin in the primary grades and continue to be reinforced across grade levels. Experts suggest at least ten to twenty sessions in the first year followed by five to ten booster sessions in the succeeding two years. Programs should be developmentally tailored, culturally sensitive, and use interactive, instead of didactic, teaching techniques. Further, teachers should be trained to insure that the curricula will be implemented as intended by the program developers. And, last, schools should consider making physical and administrative changes to promote a positive and peaceful school climate that fosters, supports, and reinforces the non-violent behavior promoted in these programs (Drug Strategies, 1998; Dusenbury, Falco, Lake, Branningan, & Bosworth, 1997; U. S. General Accounting Office, 1995).

Two other examples of violence prevention curricula that have begun to show promise include PeaceBuilders and Second Step. PeaceBuilders, a school-based violence prevention program for children in grades K-5 described as more a “way of life” than a school curriculum, has demonstrated a significant reduction in fighting-related injuries, school suspensions, and community crimes. PeaceBuilders is a comprehensive school climate program that emphasizes praising others, avoiding negative comments, being aware of injustices, righting wrongs, and seeking out “wise people.” Second Step, a school-based violence prevention program for children in grades P-8, has shown significant reductions in physical aggression as well as increased prosocial behavior in the classroom. Second Step includes extra components on mentoring, family involvement, techniques for resisting gang pressure, and dealing with bullies (Drug Strategies, 1998; National Center for Injury Prevention and Control, 1997).

School policies and environment. Because policies establish standards of behavior, instituting school-based prevention policies can help foster clear and specific norms against violent and delinquent behavior. School policies should: 1) be developed with students, parents, school staff, and community residents; 2) include a clear, positive statement about the behaviors the school expects students to exhibit (e.g., respect for others); 3) have clear consequences for infractions (e.g., community service); 4) incorporate intervention plans for when violent acts occur; and 5) be well-communicated to students, staff, parents, and community members. Positive policies that demonstrate respect for students appear to be more effective than punitive measures in achieving peaceful norms (Drug Strategies, 1998).

It is also important to consider that the school environment could either heighten or interfere with the potential for violent and delinquent behavior. Adolescents are more apt to fight or commit a crime in places where there is less chance of being caught or where entrance and escape are easy. Schools should assess their current environment and decide if further security measures are necessary. Some schools have found establishing volunteer school watch programs, installing metal detectors, and improving school lighting, for example, helpful. Regardless of the changes made, school administration should be clear that increased security measures do not reflect their mistrust of students, but are, instead, meant to protect them (Drug Strategies, 1998).

Community Interventions

Youth development opportunities. Two examples of promising prevention strategies that fall under the category of youth development opportunities include after-school recreation programs and mentoring programs.

Most juvenile offending occurs between the hours of two and six in the afternoon, or the hours just after school gets out before most parents are home from work (LeBoef & Brennan, 1996). After-school recreation programs seek to fill this high-risk time with more productive prospects for youth, including opportunities to participate in organized sports and entertainment, to build social and life skills, and to interact with responsible, caring adults. Evaluations of these programs have produced mixed results which favor short-term over long-term benefits in reducing delinquent and violent activity among youth. However, after-school recreation programs that aggressively recruit young people and maintain high participation rates may be considered a promising strategy to prevent violent and delinquent behavior among adolescents. Jones and Offord, for example, evaluated the effects of an after-school recreation program that targeted low-income children ages five to fifteen in a public housing project in Ottawa, Ontario. These youth were actively recruited to participate in structured afterschool courses for improving skills in sports, music, dance, scouting, and other nonsport areas. The results of this evaluation showed high participation rates and demonstrated a decrease in the number of juvenile arrests as well as a decrease in the number of security reports due to juveniles in the housing project (Howell & Bilchick, 1995).

One of the most potent predictors of nonviolent behavior among adolescents is a relationship with a stable, competent adult (Howell & Bilchick, 1995). Mentoring programs endeavor to establish such a relationship in which mentors offer sustained support, guidance, and concrete assistance. Most mentoring programs have not been rigorously evaluated. But it can be said that this approach holds some promise. Importantly, the impact of mentoring programs depends on the nature and quality of the mentoring relationship. Inherent challenges in these programs include making an appropriate match between the adult and young person, defining expectations of the mentoring relationship, and maintaining a schedule of regular contact over an extended period of time (Kellermann, et al., 1998). One example of a mentoring program that has proven quite effective at curbing violent and delinquent behavior among adolescents is the Quantum Opportunities Program. This intensive mentoring program matched at-risk young African-American adolescents with paid mentors who stayed with the students through four years of high school, including summers. The program required students to participate in academic-related activities, community service projects, and cultural enrichment and personal development activities outside school hours. Large financial incentives were provided for students to encourage participation, completion, and long-range planning. The results of the pilot program suggest that participants were less likely to be arrested during the juvenile years, more likely to have graduate from high school, and less likely to become a teen parent when compared to the control group (Hahn, Leavitt, & Aaron, 1994).

Community organizing. With the help of local police departments, more than three thousand communities nationwide have organized neighborhood watch programs in order to reduce local crime and violence as well as build neighborhood and community cohesion. These programs, which usually involve a combination of block watches, home security inspections, and neighborhood improvement efforts, have proven effective. For example, a Youth Crime Watch Program in Dade County, Florida, which instituted a crime reporting system, held anticrime rallies, and worked with students to instill pride in school and community, was able to dramatically reduce school crimes, including assaults on staff, robberies, and sexual offenses (National Crime Prevention Council, 1987).

Media. Many studies have established a strong relationship between violence in the media and the development of violent behavior among children and adolescents. Exposure to violence on television, in the movies, and in video games, seems to increase the acceptance of aggressive behaviors and heighten desensitization to violence among young persons (Lowry, et al., 1995). These studies suggest that reducing adolescent violence will require decreasing the amount of violent content in the media, reducing the exposure of children and adolescents to such content, and encouraging parents to monitor and discuss violent content with their children (Centerwall, 1992).

Ordinances and policies. Easy access to alcohol, drugs, and firearms is associated with increased rates of violence (Dahlberg, 1998; Lowry, et al., 1995). All of the recent and dramatic increases in homicides among youth can be attributed to an unprecedented rise in firearm homicides (Kellermann, et al., 1998). And most violent acts occur after either the perpetrator or victim has been drinking alcohol or using drugs (Lowry, et al., 1995). Though a limited number of evaluations have been done to assess the effects of policies that reduce access to firearms, alcohol, and other drugs on the levels of adolescent violence, as they are among the most difficult to do, this approach does merit careful consideration and might, indeed, prove the most valuable in reducing violent and delinquent behavior, as well as its lethal consequences, among adolescents.

It is also important to note that many law enforcement agencies are beginning to take a more proactive, rather than reactive, approach to crime control, concentrating their time and effort on high-risk places, activities, and individuals, instead of simply responding to 911 calls. Some of the methods employed in proactive policing include increased police patrols in crime hot-spots; problem-oriented policing; nuisance abatement, that is, regularly making arrests for small infractions; increased seizures of illegally carried handguns; and proactive arrests of serious repeat offenders. Proactive policing is an approach that has proven effective in many cities across the nation. In Boston, for example, systematic tracing of illegal firearms, gang-focused interventions, and aggressive enforcement of the terms of parole have produced a significant decrease in gun violence among youth (Kennedy, Piehl, & Braga, 1996).

SUICIDE

Suicide rates for teens and young adults increased dramatically from 1950 to 1990. Whites and boys have higher rates of suicide, and firearms are by far the most common method of suicide (Kachur, Potter, James, & Powell, 1995). Although boys have a higher rate of suicide completion, girls have a higher rate of suicide attempts (Rosewater & Burr, 1998). Between 1962-1994, firearm-related suicide increased for youth aged 15-19 years, with the overall rate for this group rising 290% (Ikeda, Gorwitz, James, Powell, & Mercy, 1997). There is a lack of rigorous research in the area of prevention of youth suicide. The strategies listed below are recommendations from the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, 1994) and other prevention scientists (Rosewater & Burr, 1998; Ploeg, , 1996). Given the lack of evaluation research demonstrating the effectiveness of any one of these programs, the Centers for Disease Control and Prevention recommend using a multi-faceted approach to suicide prevention.

Family Interventions

Parenting programs. It is recommended that programs or materials be developed to help parents recognize warning signs for suicide (Centers for Disease Control and Prevention, 1994). The educational materials should include information about where to go for help, such as mental health resources at the school or in the community. In addition, parents should be encouraged to restrict their teenagers' access to lethal means, including firearms and drugs. Parents should be encouraged not to have firearms in the house at all; if there are firearms in the house, parents should create multiple impediments to their use (e.g., in a locked cabinet with a trigger lock installed on the firearm).

School Interventions

Curricula. Ploeg and colleagues (1996) conducted a review of suicide prevention curricula and found that curricula may have both beneficial and harmful effects. Most of the suicide prevention curriculum that were reviewed had the following goals: 1) to heighten awareness of the problem of suicide; 2) to promote case finding through description of warning signs and encouragement of disclosure; 3) to provide information about mental health resources; and, in a minority of programs,

4) to improve the coping abilities of youth. The authors concluded that there is insufficient evidence to support curriculum-based suicide prevention programs. In most studies, knowledge related to suicide improved; however there were both beneficial and harmful effects on attitudes related to suicide. One study found an increase in hopelessness and maladaptive coping for males following the intervention. The Centers for Disease Control and Prevention (1994) and Pleog and colleagues (1996) suggest that the prevention of risk factors for suicide could be covered in a comprehensive health curriculum and then should be evaluated for their effectiveness in reducing risk factors for suicide.

Health services. It is recommended that teachers, counselors, and coaches be educated to recognize warning signs for suicide and to identify high-risk youth (Centers for Disease Control and Prevention, 1994). High-risk youth should be referred to appropriate mental health services at school or in the community. Mental health counseling and services must be made available so that appropriate referrals can be made for those identified as at-risk youth.

School policies and environment. In the case that a suicide occurs, it is recommended that an intervention plan be set up to focus on friends and relatives of the person who had committed suicide (Centers for Disease Control and Prevention, 1994). These programs are designed to prevent or contain suicide clusters and to help adolescents cope effectively with the feelings of loss that follow the sudden death of a peer.

Community Interventions

Media. It is recommended that community gatekeepers (e.g., clergy, police, merchants, recreation staff, physicians, nurses) be educated to identify and refer youth who are at risk for suicide (Centers for Disease Control and Prevention, 1994). The use of media is one way to educate such persons. In addition, the media should minimize coverage of suicides, especially in media teens are exposed to.

Health services. In many cities, crisis centers and hotlines have been set-up with trained volunteers and paid staff to provide telephone counseling and other services for suicidal persons. Such programs also may offer a drop-in crisis center and referral to mental health services. Community mental health services need to be linked with other prevention efforts and appropriate services made available to youth (Centers for Disease Control and Prevention, 1994).

Ordinances and policies. Restricting access to lethal means of committing suicide may be the most promising underused strategy (Centers for Disease Control and Prevention, 1994). Communities can work towards restricting access to lethal means, including restricting youth access to firearms and restricting the number of tablets per prescription for sedatives and hypnotics. Suicide rates have been noted to decrease after enactment of restrictive firearm control laws, regulation of carbon monoxide content in domestic gas, and regulation of the number of potentially lethal pills dispensed per prescription (Rosewater & Burr, 1998).

RISKY SEXUAL BEHAVIOR

Sexual intercourse among adolescents, after having increased dramatically during the 1970s and 1980s, has begun to decline (Ozer, Brindis, Millstein, Knopf, & Irwin, 1998). In 1995, 50% (down from 55% in 1990) of girls and 55% (down from 60% in 1990) of boys aged 15 to 19 reported ever having had intercourse. And, since 1980, the number of male and female adolescents using contraception, especially at the time of first intercourse, has increased. In 1995, about 75% (up from 62% in 1988) of adolescents reported using some form of contraception the first time they had sex (Abma, Chandra, Mosher, Peterson, & Piccinino, 1997; Sonenstein, Ku, Duberstein Lindberg, Turner, & Pleck, 1997). But the U.S. continues to have the highest teenage pregnancy rate of any western, industrialized nation, about 80% of which are unintended, and the highest rates of childbirth and elective abortion among adolescents (Brown & Eisenberg, 1995; Hardy & Zabin, 1991). And, sexually transmitted diseases (STDs) remain the most common and destructive infectious diseases

among adolescents. It is estimated that about 25% of sexually active teenagers between the ages of 13 and 19 become infected each year (Alan Guttmacher Institute, 1994; Centers for Disease Control and Prevention, 1993). Numerous programs have been developed to reduce the negative consequences of high-risk sexual behavior among adolescents. Some focus on preventing the first or subsequent pregnancies; others on sexually transmitted diseases, particularly HIV; and still others address both. Some programs focus solely on promoting abstinence; others on promoting both abstinence and contraceptive use.

Some of these prevention programs for youth are designed to improve sexual knowledge, attitudes, and skills; others to improve access to contraception; and still others to improve education, life skills, and life opportunities more generally. A few prevention programs have combined one or more of these intervention components. Both the etiologic studies and program evaluations suggest that there are no simple approaches or easy answers to preventing pregnancy or sexually transmitted diseases among young people. Indeed, the most effective approach might be to combine one or more of the following promising prevention strategies in an effort to address both the more proximal and distal antecedents of high-risk sexual behavior among adolescents (Kirby, 1997).

Family Interventions

Structured parent-child home-based activities. Sex is an uncomfortable subject for many parents to discuss with their children. In order to help facilitate this discussion, many programs have been developed, including homework assignments in school sex education classes requiring parental assistance and video programs with written materials to be completed at home. In the short-term, these programs do increase parent-child communication about sex, as well as comfort with that communication (Kirby, 1995). Few studies have examined the effects of these programs on adolescent sexual activity. Among the two that have, it seems that despite the widespread belief that increased parent-child communication about sexuality will decrease adolescent sexual risk-taking behavior, there is little evidence to suggest that this is true (Nicholson & Postrado, 1991; Miller, Norton, Jenson, Lee, Christopherson, & King, 1993). But this should not diminish the importance of parent-child communication and parent-child relationships. Instead, it should highlight the need to develop and evaluate new intervention approaches (Kirby, 1997).

School Interventions

Early childhood education. Many of the risk factors for adolescent pregnancy develop during childhood, including early school failure and early behavior problems (Moore, Miller, Gleib, & Morrison, 1995). Early childhood education programs endeavor to modify these fundamental risk factors in an attempt to reduce teen pregnancy rates. An often cited successful example of such a program is the Perry Preschool program, a high-quality two-year preschool enrichment program that has received national recognition for its long-term impact not only on teen pregnancy, but also on school achievement and juvenile delinquency. This program provided an organized educational experience directed at the intellectual and social development of disadvantaged young children who participated, in most cases, for two years when they were three and four years of age (Berrueta-Clemens, Schweinhart, Barnett, Epstein, & Weikart, 1984; Schweinhart, Barnes, & Weikart, 1993).

Curricula. Curriculum-based sex education programs can be divided into two categories, abstinence-only and abstinence-plus programs. Evaluations of abstinence-only programs, or programs that stress abstinence as the only acceptable means of preventing pregnancy and STDs, suggest that these prevention programs are, on the whole, not successful at delaying the onset of intercourse (Christopher & Roosa, 1990; Jorgensen, Potts, & Camp, 1993; Kirby, Korpi, Barth, & Cagampang, 1995; Roosa & Christopher, 1990; St. Pierre, Mark, Kaltreider, & Aikin, 1995). However, this evidence may not be conclusive, given methodological limitations inherent in these evaluations that could have obscured program effects. Postponing sexual activity should still be an important component of prevention strategies (Kirby, 1997).

Evaluations of abstinence-plus programs, or programs that discuss both abstinence and contraception as acceptable means of preventing pregnancy and STDs, have shown somewhat more

promising results. For example, some of these programs have resulted in a significant delay in the onset of intercourse, reduced frequency of intercourse, decreased numbers of sexual partners, and increased use of contraceptives (Ekstrand, Siegel, Nido, Faigeles, Cummings, Battle, Krasnovsky, Chiment, & Coates, 1996; Howard & McCabe, 1990; Jemmott, Jemmott, & Fong, 1992; Kirby, Barth, Leland, & Fetro, 1991; Levy, Perhats, Weeks, Handler, Zhu, & Flay, 1995; Main, Iverson, McGloin, Banspach, Collins, Rugg, & Kolbe, 1994; Schinke, Blythe, Gilchrist, & Burt, 1981; Smith, 1994; St. Lawrence, Jefferson, Alleyne, & Brasfield, 1995). Two examples of abstinence-plus programs that have proven successful include *Becoming a Responsible Teen* (St. Lawrence, 1994) and *Be Proud! Be Responsible!* (Jemmott, et al, 1994). *Be Proud! Be Responsible!* consists of six fifty-minute lessons that provide information, motivation, and skills necessary to change adolescents' behaviors and reduce their risk of contracting HIV and other sexually transmitted diseases. Its curriculum has a strong inner-city and sense-of-community approach and examines how HIV and AIDS have affected inner-city communities (U. S. Department of Health and Human Services, 1998). *Becoming a Responsible Teen* was developed in conjunction with a local advisory panel of teenagers. Its curriculum combines information with skills training on correct condom use, assertiveness and refusal skills, self-management, problem solving, and risk assessment in an effort to prevent HIV and AIDS (U. S. Department of Health and Human Services, 1998).

Many experts agree that effective sex education curricula share nine common characteristics. First, effective curricula focus clearly on reducing one or more sexual behaviors that lead to unintended pregnancy or HIV/STD infection. Second, they utilize behavioral goals, teaching methods, and materials that are appropriate to the age, sexual experience, and culture of the students. Third, effective curricula are based upon theoretical approaches that have been demonstrated to be effective in influencing other health-related risky behaviors. These theoretical approaches can best be described as social learning theories and include, for example, social cognitive theory (Bandura, 1986) and the theory of reasoned action (Fishbein & Ajzen, 1975). Fourth, they last a sufficient length of time to complete important activities adequately. Effective programs seem to fall into two categories, those that last fourteen or more hours and those that last a smaller number of hours, but are implemented in small group settings with a leader for each group. Fifth, effective curricula employ a variety of teaching methods designed to involve the participants and have them personalize the information. Sixth, they provide basic, accurate information about the risks of unprotected intercourse and methods of avoiding unprotected intercourse. Seventh, effective curricula include activities that address the social pressures on sexual behaviors. Eighth, they provide modeling and practice of communication, negotiation, and refusal skills. Finally, effective curricula select teachers or peers who believe in the program and then provide training for those individuals (Kirby, 1997).

Health services. In addition to providing affordable and accessible primary health care services for students, some school-based clinics dispense contraceptives. When well-staffed and well-run, these school-based clinics share most characteristics of an ideal reproductive health program, including having a convenient location, reaching both females and males, providing comprehensive health services, being confidential, using staff trained to work with adolescents, providing free services, and being able to integrate education, counseling, and medical services. A large number of sexually experienced students do obtain contraceptives from these school-based clinics, when available. And there is no evidence to suggest that this provision of contraceptives either hastens the onset or increases the number of partners or frequency of adolescent sexual activity. However, there does not appear to be a marked increase in the school-wide use of contraceptives, and, as a result, the provision of contraceptives alone does not appear to decrease school-wide pregnancy or birth rates (Edwards, Steinman, Arnold, & Hakanson, 1980; Kirby, Waszak, & Ziegler, 1991; Kirby, Resnick, Downes, Kocher, Gunderson, Potthoff, Zelterman, & Blum, 1993; Kisker, Brown, & Hill, 1994; Newcomer & Duggan, 1996). One of the earliest and most well-known school-based clinic programs is the St. Paul Maternal and Infant Care Project, in operation since 1973. These clinics provided comprehensive primary health care as well as reproductive health services, including sexuality education and counseling, physical examinations, and pregnancy testing. Students seeking contraception were referred to a nearby hospital clinic to receive contraceptive supplies, which were provided by the hospital free of charge. Two evaluations of the St. Paul school-based clinics have

produced mixed results that favor an increase in contraceptive use rates, but not a decrease in teen pregnancy rates (Edwards, Steinman, Arnold, & Hakanson, 1980; Kirby, Resnick, Downes, Kosher, Gunderson, Potthoff, Zelterman, & Blum, 1993).

More than 300 schools nationwide without school-based clinics have begun to make condoms available through school nurses, counselors, teachers, vending machines, and baskets (Kirby & Brown, 1996). The number of students who do obtain contraceptives from these school condom-availability programs, when available, varies according to school size and method of distribution. Again, there is no evidence to suggest that these programs either hasten the onset or increase the frequency of sexual activity among adolescents. But there are mixed results as to the impact of school condom availability upon actual condom use among students (Kirby, 1997). One study in Seattle schools found that making condoms available through vending machines and baskets in school clinics enabled students to obtain relatively large numbers of condoms but did not lead to increases in either sexual activity or condom use (Kirby, Brener, Brown, Peterfreund, Hillard, & Harrist, 1999). Despite the mixed results, providing access to contraceptives should not be overlooked as an important component of programs which aim to prevent the negative consequences of high-risk sexual behavior among adolescents. Programs do need to promote consistent and correct use of contraception, since more than three-fourths of youth do initiate sexual activity before they complete their teen years (Kirby, 1997).

Community Interventions

Health services. As part of their comprehensive reproductive health program, family planning clinics provide contraception and, sometimes, education and counseling. Large numbers of sexually active teens, especially females, do seek family planning services, and most utilize these services at family planning clinics (Moore, Sugland, Blumenthal, Gleib, & Snyder, 1995). Many of these females receive oral contraceptives which have higher efficacy ratings for pregnancy prevention when compared to condoms or other non-prescription contraceptives which can be purchased elsewhere. The contraceptives that these clinics dispense presumably prevent many adolescent pregnancies that would have occurred if these services did not exist or were significantly curtailed. However, there is little research to support this conclusion, and the actual impact of family planning clinics on adolescent pregnancy rates has not yet been accurately estimated (Anderson & Cope, 1987; Brewster, Billy, & Grady, 1993; Forrest, Hermalin, & Henshaw, 1981; Lundberg & Plotnick, 1990; Moore, Blumenthal, Sugland, Hyatt, Snyder, & Morrison, 1994; Olsen & Weed, 1986; Singh, 1986; Weed & Olsen, 1986). Program evaluations of the education and counseling components of family planning clinics demonstrate that brief interactions between clinic personnel and clients do little to effect sexual behavior, but that more extended programs may have a positive effect on adolescent use of contraception (Kirby, 1997). Winter and Breckenmaker (1991), for example, successfully tailored a clinic delivery system to meet the specific needs of adolescents. Teen clients exposed to the modified clinic delivery system, which included splitting the initial clinic visit into two appointments and adding one-on-one educational sessions with teen counselors to the first of these two visits, demonstrated higher contraceptive use rates and lower pregnancy rates. Evaluations of other clinic-based interventions suggest that more adolescents will use family-planning clinics when clinics: 1) are more numerous, flexible, diverse, innovative, and visible; 2) have special outreach programs; 3) serve minors without requiring parental consent; 4) provide free services; 5) do not require appointments; 6) provide prenatal care and abortion services; 7) maintain an active relationship with schools; and 8) enlist the support of religious institutions and other community organizations (Chamie, Eisman, Forrest, Orr, & Torres, 1982; Kisker, 1984).

Youth development opportunities. Marion Wright Edelman, once the president of the Children's Defense Fund, has often been quoted as saying, "the best contraceptive is a real future (Edelman, 1987)." Given the seeming intractability of teen pregnancy rates and the strong relationship between educational and career plans and adolescent pregnancy (Moore, Miller, Gleib, & Morrison, 1995), many have proposed that one of the most promising approaches to reducing teen pregnancy may be to improve the educational and career opportunities for youth. Several evaluations of these youth development programs support this claim. Preliminary findings from the

Children's Aid Society's Program in New York City, for example, demonstrated higher high school graduation rates, lower alcohol use rates, later initiation of intercourse, greater use of condoms if sexually experienced, and lower pregnancy rates (Kaye & Philliber, 1995). This comprehensive program includes classes in family life and sex education, medical and health services, employment and career awareness, academic assessments and tutoring, guaranteed college admission, self-esteem enhancement through the arts, and participation in individual sports and counseling. Two other programs, the *Youth Incentive Entitlement Pilot Projects*, which guaranteed jobs to economically disadvantaged black youth, and the *Teen Outreach Program*, which included weekly classroom discussions of topics related to life options as well as volunteer community service, have also demonstrated significant reductions in teen pregnancy rates (Allen, Philliber, & Hoggson, 1990; Olsen & Farkas, 1990).

EATING BEHAVIORS

Adopting healthful eating patterns in childhood and adolescence prevents both short- and long-term health problems and contributes to optimal growth, health, and intellectual development (Centers for Disease Control and Prevention, 1996). Many children and adolescents do not follow the Dietary Guidelines for Americans or the Food Guide Pyramid recommendations. Thus, on average, young persons consume too much fat, saturated fat, and sodium; and do not consume enough fruits, vegetables, or calcium (Alaimo, McDowell, & Briefel, 1994; Devaney, Gordon, & Burghardt, 1995; Kann, Warren, & Harris, 1995; McDowell, Briefel, & Alaimo, 1994; Tippett, Mickle, & Goldman, 1995). About 4.7 million or eleven percent of American youth ages six to seventeen years old are seriously overweight, which, in turn, increases their risk for negative short- and long-term health outcomes, including cardiovascular disease and diabetes (Troiano, Flegal, Kuczmarski, Campbell, & Johnson, 1995). Moreover, many young persons in the United States practice unsafe weight-loss methods, and the prevalence of eating disorders among adolescents has increased in recent decades. Between one and three percent of adolescent and young adult females are affected by anorexia nervosa and bulimia nervosa, both of which can cause many severe mental and physical health disorders (American Psychiatric Association Task Force on DSM-IV, 1994; Herzog & Copeland, 1985). Nutrition intervention programs endeavor to help young persons develop lifelong healthy eating patterns.

To be most effective at improving the dietary health of children and adolescents, many experts believe that nutrition education programs should be combined with physical education programs (Centers for Disease Control and Prevention, 1996; Lytle & Achterberg, 1995; Neumark-Sztainer, 1996). For example, nutrition education programs should stress the importance of combining regular physical activity with sound nutrition as part of a healthy lifestyle. And physical education programs, in turn, should include guidance in healthful food selection (Centers for Disease Control and Prevention, 1997). The following summary of promising prevention strategies concentrates on the nutrition component of these prevention programs, some of which have, indeed, integrated components of physical education.

Family Interventions

Structured parent-child home-based activities. Involving the family in nutrition education programs provides opportunities not only to educate family members about healthful food choices, but also to reinforce healthful eating patterns among adolescents. To involve parents and other family members in nutrition education, programs can send nutrition information and school cafeteria menus home with students; ask parents to send healthy snacks to school; offer nutrition education workshops and screening services; and assign nutrition education homework that students can do with their families (Centers for Disease Control and Prevention, 1996). The *Home Team* program of the Minnesota Heart Health Program is one successful example of the latter. Third grade students participating in the *Home Team* intervention component, a five week activity packet for children

and their families, of the Minnesota Heart Health Program demonstrated more behavior change, including reduced dietary fat, than those participating in the Minnesota Heart Health Program alone (Perry, Luepker, Murray, Kurth, Mullis, Crockett, & Jacobs, 1988).

School Interventions

Most nutrition education programs are school-based. The Society for Nutrition Education, the American Dietetic Association, and the American School Food Service Association, as well as the Centers for Disease Control and Prevention, recommend that a comprehensive school-based nutrition program include 1) an effective nutrition education curriculum; 2) a school environment that provides opportunity and reinforcement for healthful eating and physical activity; 3) involvement of parents and community; and 5) screening, counseling, and referrals for nutrition problems as part of school health services (Centers for Disease Control and Prevention, 1997; Society for Nutrition Education, The American Dietetic Association, American School Food Service Association, 1995).

Curricula. The Centers for Disease Control and Prevention recommend implementing nutrition education programs from preschool through secondary school as part of a sequential, comprehensive school health education curriculum designed to help students adopt healthy eating behaviors. This curriculum should give students the necessary knowledge and skills they need to make healthful food choices. It should also be developmentally appropriate, culturally relevant, fun, interactive, and involve families and communities (Centers for Disease Control and Prevention, 1996).

The most effective of these programs have emphasized a behavioral approach over a cognitive, or knowledge-based, approach to nutrition education, especially with younger children and adolescents (Coates, Jeffery, & Slinkard, 1981; Killen, Telch, Robinson, Maccoby, Taylor, & Farquhar, 1988; Luepker, Perry, & McKinlay, 1996; Resnicow, Cohn, & Reinhardt, 1992). For example, *Child and Adolescent Trial for Cardiovascular Health (CATCH)* used modeling, goal setting, reinforcements, and incentives in a school-based program to successfully modify eating and physical activity among children and young adolescents (Perry, Parcel, & Stone, 1992; Perry, Stone, & Parcel, 1990). These changes in diet and activity were maintained until at least eighth grade (Nader, Stone, Lytle, Perry, Osganian, Kelder, Webber, Elder, Montgomery, Feldman, Wu, Johnson, Parcel, & Luepker, in press). And the *Gimme Five* curriculum used skill building in healthful food preparation, goal setting, and social support to increase preference for fruit and vegetable consumption (Domel, Baranowski, & Davis, 1993).

Some nutrition education programs have begun to incorporate self-assessment of eating patterns as an important intervention tool for older adolescents in middle and high school. *The Secrets of Success (SOS)* program focused on having students prepare and analyze their own food records as well as design their own plans to improve their food selection. This program demonstrated an increased consumption of the recommended daily minimum number of servings from each food group (Howison, Niedemyer, & Shortridge, 1988).

Experts recommend that nutrition education programs aimed at preventing eating disturbances among adolescents be implemented beginning in middle school. The curriculum material for these programs can be integrated into existing curricula and might include, in biology classes, information on the effects of starvation and yo-yo dieting on the body, and, in art and history classes, a discussion of how the bodies of men and women have been portrayed over time. To supplement this curriculum, schools should consider providing small group work and individual counseling for adolescents at high-risk, as well as a referral system to connect high-risk adolescents with community health services (Neumark-Sztainer, 1996).

School policies and environment. The Centers for Disease Control and Prevention also recommend that schools adopt a coordinated nutrition policy that promotes healthy eating through classroom lessons and a supportive school environment. Such a policy should address: 1) nutrition education classes; 2) school lunch and breakfast; 3) classroom snacks; 4) use of food to reward or discipline; and 5) food sold in vending machines, at school stores, snack bars, sporting events, and special activities. It should incorporate input from students, parents, teachers, coaches, school

administration officials, and other school staff. And it should meet local needs, as well as be adapted to the health concerns, food preferences, and dietary practices of different ethnic and socioeconomic groups (Centers for Disease Control and Prevention, 1996).

Because the school cafeteria provides a place for students to practice healthful eating, coordinating school food service with other components of a nutrition education program helps reinforce positive messages on healthful eating. School food service can offer healthful foods in the school cafeteria that reinforce classroom lessons, involve students in the planning and preparation of the school menu, and display nutrition information about foods (Centers for Disease Control and Prevention, 1996). Several successful programs, for example, have modified school food service in conjunction with school-based nutrition education (Arbeit, Johnson & Mott, 1992; Resnicow, Cohn, & Reinhardt, 1992; Resnicow, Cross, & Wynder, 1991; Simons-Morton, Parcel, Baranowski, Forthofer, & O'Hara, 1991). For example, *Go for Health*, a school-based nutrition education program, was able to reduce the total fat, saturated fat, and sodium in school meals, which, in combination with nutrition and physical education components, led to a reduction in the amount of fat and salt students consumed (Parcel, Simons-Morton, O'Hara, Baranowski, & Wilson, 1989; Simons-Morton, Parcel, Baranowski, Forthofer, & O'Hara; 1991).

Community Interventions

Media. Local neighborhoods, through providing a diverse array of opportunities, barriers, role models, and reinforcements, influence adolescent eating patterns. A handful of community-based nutrition intervention trials have been conducted in this country, some of which have demonstrated a positive impact on young persons. For example, the Class of 1989 study, part of the Minnesota Heart Health Program, showed an increase in healthier food choices among younger as well as older adolescents. As part of this community intervention, students were exposed to media messages promoting heart-healthy eating, exercise, and smoking prevention. Community screening for heart disease was also offered, and restaurant menus and grocery store items were labelled with heart-healthy options (Kelder, Perry, & Klepp, 1993; Kelder, Perry, Klepp, & Lytle, 1994; Kelder, Perry, Lytle, & Klepp, 1995; Perry, Kelder, Murray, & Klepp, 1992).

Some of the newer nutrition education programs have begun to partner with the mass media to promote healthful eating patterns. For example, the Harvard School of Public Health has formed a partnership with the Nickelodeon cable network to incorporate nutrition education messages into pre-existing programming, including Eureka's Castle, a puppet show for preschool-aged children. Though the impact of these programs has not yet been assessed, mass media, including television programs, should not be overlooked as an educational tool (Lytle & Achterberg, 1995).

PHYSICAL ACTIVITY

The Surgeon General's report on physical activity and health emphasizes that regular participation in moderate physical activity is an essential component of a healthy lifestyle (U. S. Department of Health and Human Services, 1996). Participation in physical activity declines with age during adolescence. The International Consensus Conference on Physical Activity Guidelines for Adolescents recommends that "all adolescents . . . be physically active daily, or nearly every day, as part of play, games, sports, work, transportation, recreation, physical education, or planned exercise, in the context of family, school, and community activities" and that "adolescents engage in three or more sessions per week of activities that last 20 minutes or more at a time and that require moderate to vigorous levels of exertion" (Sallis & Patrick, 1994). School and community programs have the potential to help children and adolescents establish lifelong, healthy physical activity patterns (Centers for Disease Control and Prevention, 1997). The following is a summary of a report developed by the Centers for Disease Control and Prevention in collaboration with experts from universities and from national, federal, and voluntary agencies and organizations (Centers for Disease Control and Prevention, 1997). The recommendations are based on an in-depth review of research,

theory, and current practice in physical education, exercise science, health education, and public health.

Family Interventions

Structured parent-child home-based activities. It is recommended that parents and guardians be encouraged to support their children's participation in enjoyable physical activities and be physically active role models. Teachers can include parents in homework assignments that involve the family in learning about physical activity options and about strategies for promoting physical activity among their children. Schools can inform parents of the physical activity options that are available as extracurricular activities.

School Interventions

School policies and environment. The Centers for Disease Control and Prevention recommend that schools and communities establish policies that promote physical activity among young people. A comprehensive school policy would require: 1) establishing comprehensive, daily physical education for students in kindergarten through grade twelve; 2) incorporating comprehensive health education for students in kindergarten through grade twelve; 3) devoting adequate resources to promote physical activity, including budget and facilities; 4) hiring physical education specialists to teach physical education in kindergarten through grade twelve, elementary school teachers trained to teach health education, health education specialists to teach health education in middle and senior high schools, and qualified people to direct school and community physical activity programs and to coach young people in sports and recreation programs; and 5) insuring that physical activity instruction and programs meet the needs and interests of all students (Centers for Disease Control and Prevention, 1997).

The Centers for Disease Control and Prevention also recommend that school spaces and facilities be made available to young people and community organizations before, during, and after the school day, on weekends, and during school vacations. Schools should provide a variety of extracurricular physical activity programs including competitive and noncompetitive programs and clubs. Community resources can be used to expand school programs by providing programs on school grounds. To prevent injury and illness, trained adult supervisors, the use of protective clothing and equipment, water availability to drink, and protection from extreme weather are all important. In addition, opportunities to promote physical activity among school personnel is recommended so that they serve as healthy role models to the students (Centers for Disease Control and Prevention, 1997).

Community Interventions

Youth development opportunities. It is recommended that communities provide all young persons access to a diverse array of developmentally appropriate community sports and recreation programs (Centers for Disease Control and Prevention 1997). Communities should provide a variety of facilities and settings to promote physical activity, including, for example, safe parks, biking and walking trails, and recreation centers.

HOW DO WE RESPOND?

Research shows us that health-compromising behaviors cluster and that there are overlapping risk and protective factors that affect the occurrence of these behaviors (Barton, Watkins, & Jarjoura, 1997; Dryfoos, 1990; Hawkins et al., 1992; Komro et al., 1997; Resnick, Bearman, Blum et al., 1997; Scales & Leffert, 1999). In addition, this report clearly shows that promising prevention strategies are similar across various health-related behaviors. The similarity and variety of the strategies and approaches presented in this report illustrate the importance of a comprehensive community-wide approach for the promotion of healthy youth development. A review of the strategies are presented below.

Structured parent-child home-based activities and other types of parent programs, such as parenting classes or home visits, have been successful in enhancing the home environment and social relations within the home. Promising strategies within the school include: school policies that promote health and the creation of a health-enhancing environment; comprehensive health curricula in kindergarten through grade 12; health-enhancing school-wide media; innovative approaches to education that emphasize the active participation of students and parents; quality early childhood education opportunities; and the availability of health services. Promising community strategies include: citizen involvement through community organizing, youth development opportunities, health-enhancing media messages, ordinances and policies promoting health, and the availability of health services.

In addition to the specific components highlighted below, effective prevention initiatives base their activities on theory and knowledge of risk and protective factors; include multi-components; involve multiple sectors of the community; actively involve youth, parents, teachers and other school staff, and community members; devote adequate resources; involve trained and supported staff; and have a population-based and long-term orientation.

The last three decades of research, in particular, have yielded a wealth of information about promising and effective health promotion strategies to keep youth safe and healthy. Implementing these strategies at home, in school, and in our communities will ensure the health of the young people of our nation.