Child TRENDS
RESEARCH BRIEF

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AMERICAN TEENS
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Encouraging Teens to Adopt a Safe, Healthy Lifestyle: A Foundation for Improving Future Adult Behaviors

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Overview *American teenagers as a group are generally healthy. However, some of their behaviors compromise their present and future health and can lead to injuries, which are the leading cause of death for this age group. By envisioning adolescence as an ideal time to promote good physical health, we can save lives and set into motion a lifetime of good health outcomes.*

To identify programs that work, Child Trends summarized experimental studies of health-related behaviors. These are presented in a What Works *table on page 5. Since there are surprisingly few such experimental studies, Child Trends also reviewed more than 230 research studies to identify factors associated with better health-related behaviors and fewer accidents and injuries. Some "Best Bets" – promising practices drawing on this non-experimental and quasi-experimental research and the experience of practitioners – are highlighted.*

Among the programs found to succeed in helping teens adopt a healthy lifestyle are those that take a multifaceted approach to promoting positive health behaviors, incorporating psychosocial and behavioral components, instead of simply distributing information. Programs should also work to achieve desirable health behavior changes that endure over time, not just in the short term. This is a particular challenge among adolescents. Similarly, programs that aim to prevent injury among teens are most effective when they reach adolescent males (who are more likely to engage in such behaviors), address risky behaviors, and are multifaceted.

This brief is divided into two sections. The first addresses issues related to promoting healthy lifestyles among teens, including smoking, exercise and nutrition, and sleep. The second section focuses on preventing unintended injury, including car and bike accidents, and occupational injuries.

This is the second in a series of *Research Briefs* based on a comprehensive review of adolescent development research. The *American Teens* series covers reproductive health, physical health and safety, social skills, education, mental and emotional health, and civic engagement as they relate to adolescents.

Promoting a Healthy Lifestyle

Many of the most common causes of illness and death in the United States are influenced by behaviors such as tobacco use, physical activity, and diet.[34] We know that teens' positive and negative behaviors in adolescence tend to carry over into adulthood.[36] Therefore, the promotion of good health behaviors in adolescence may have positive effects on future health behaviors and play a role in reducing the risk of disease. In this section, we explore the factors that contribute to tobacco use, exercise and nutrition, and sleep, and we look at a number of programs that try to encourage positive behaviors in these areas.

A detailed discussion of the factors leading to these adolescent risky behaviors can be found in the full paper noted at the end of the brief. (Issues

related to adolescents' use of alcohol and drugs and reproductive health behaviors are covered in separate *Research Briefs*.) It is also important to note that the studies examined in this research review address social behaviors related to health and safety, rather than biomedical approaches.

Smoking

Smoking is the leading preventable cause of death in America.[49] But, despite well-documented health risks, tobacco use is common among teens. In 1999, more than one-third of high-school students reported smoking cigarettes on one or more of the 30 days before the survey was taken, and about 17 percent said they smoked cigarettes on at least 20 of the preceding 30 days.[33] In total, 70 percent said they had tried a cigarette. A variety of factors affect the likelihood that teens smoke, including social norms, genetics, peer influences, parental attitudes and behaviors, and demographics.

Policies and Programs to Curb Smoking

The marketing of cigarettes to young people through advertising has been a topic of debate in recent years. Although it is difficult to determine definitively a relationship between media exposure and smoking, some research points to a link between tobacco promotion efforts and teen smoking.[56, 57, 61] Attempts to prevent tobacco sales to minors have been successful in increasing retailer compliance with the law, but do not appear to affect adolescent smoking behavior.[4, 62, 70] Other policy approaches appear more promising. For example, raising the price of cigarettes may reduce teen smoking[14, 15] and restricting smoking on school grounds and in surrounding areas has been found to lower the amount that teens smoke.[54]

Experimental evaluations of programs to reduce adolescent smoking present us with some successes and some failures. On one hand, several school-based programs with multiple components that target the main psychosocial factors related to teen smoking, such as teaching skills to resist peer pressure and engaging youth in positive activities, have been successful.[7-9, 18, 74] On the other hand, more traditional programs that simply provide factual information about the dangers of smoking or use fear-inducing strategies have not.[11] But another school-based smoking-prevention program that targeted social influences was also unsuccessful.[55] Clearly, more research is needed to determine what components of school-based programs make them effective. Finally, supplementing school-based anti-smoking programs with carefully constructed anti-tobacco media messages and community activities can reduce teen smoking more than school-based programs alone.[6]

Exercise and Nutrition

Insufficient physical activity and poor nutrition combine to comprise the second leading preventable cause of death in America.[48] Lack of exercise and poor diet play roles in obesity, coronary heart disease, stroke, hypertension, type 2 diabetes, and some cancers.[13, 26, 42, 48, 73]

Despite common knowledge that exercising and eating nutritionally are important, many adolescents are not very active and many do not have a healthy diet. A third of high school students fail to meet current public health recommendations of three or more sessions a week of continuous, moderate-to-vigorous physical activity.[27] The picture for nutrition is more complicated since many dietary components are vital to health, but in general, adolescents consume too much fat, sodium, and sugar and not enough fiber.[25, 51, 69]

Teens' exercise habits are influenced by a number of factors, including social norms, personal abilities and motivations, and family exercise habits and support. Similarly, the factors influencing teens' diets include personal motivation, work habits, parental diets, and family structure.

Policies and Programs to Promote Exercise and Nutrition

It would make sense that the relative availability of healthy and unhealthy foods in school, the community, and at home would influence teens' nutrition. Unhealthy foods are easily available in many schools through vending machines, nearby fast food restaurants, and school stores.[71, 72, 81] Federal policies restrict access to these unhealthy food options in schools, but revised or more stringent restrictions may be needed to improve options in the cafeterias and on school grounds.[29, 72] Teens who take part in the National School Lunch and Breakfast programs appear to consume more milk, fruits, and vegetables, and less sugar than their peers who do not participate, but they also consume more fat.[25, 69]

Most programs to promote exercise and healthy eating have been school-based and, while some have targeted teens, most have focused on younger children.[45, 47, 73] Many programs feature several components, including physical activity and diet, sometimes in combination with anti-smoking efforts. In general, health education alone has not proven effective.[64, 82] Programs that try to change behaviors have been more successful.* [43, 52] However, maintaining desired behavior changes over time remains a challenge. Family- and community-based approaches to promoting exercise and better nutrition may work,[20, 34] but we have little information based on experimental evaluations about these programs as they relate to adolescents.

Sleep

Although the functions of sleep are not fully understood, sufficient sleep is a vital necessity. Insufficient sleep has been associated with a greater risk of car accidents,[53] behavioral and emotional problems,[17, 39, 83, 84] sleeping late and missing class,[83] tiredness during school,[83] and difficulty performing complex tasks and working toward goals.[17] More than a quarter of 12- to 17-year-olds say they do not get enough sleep.[17]

Sleep deprivation among teens is the result of a clash between an increased physiological need for sleep and the time constraints posed by jobs, activities, homework, social involvement, and early school start times.[17, 83] Sleep patterns are also related to other factors, including demographics, social and behavioral problems, mental and physical health, and parental habits.

Policies and Programs to Improve Sleep

Greater awareness of adolescent sleep habits has boosted interest in the link between sleepiness and school start times, which tend to get earlier as teens progress through school.[3, 10] Some schools have changed start times. Initial findings of such reforms in the Minneapolis public schools suggest that the changes may have both positive and negative consequences.[37] To our knowledge, there have been no rigorous experimental evaluations of programs to improve adolescent sleep habits.

Recommendations

Based on our extensive review of research on adolescent health, we recommend that communities:

- Take a multifaceted approach to promoting positive health behaviors, taking into consideration the adolescent, the influence of peers and family members, and the role played by the wider community;
- Incorporate psychosocial and behavioral components into programs, instead of simply providing information;
- Reach out to teens in low-income families, who are more likely than their more well-off peers to exhibit health-compromising behaviors; and
- Work to maintain desirable health behavior changes over time through "booster sessions" and other activities.

Preventing Injury

Unintentional injuries are those that result from what are deemed to be accidental causes, including motor vehicle crashes, bicycle crashes, sports mishaps, work hazards, burns, and falls.† [79, 85] In this section, we first explore what causes injuries in general and three types of injuries in detail: motor vehicle crashes, bike crashes, and work hazards.‡ We then examine prevention programs.

Age, sex, behavioral problems, drug and alcohol use, risk-taking behaviors, and sports participation are some of the factors related to injuries among teens. In 1998, injury-related deaths comprised more than half of all deaths among 10- to 14-year-olds and nearly four of every five deaths among adolescents ages 15 to 19.° [2, 65] Nonfatal injuries are also common among teens. National estimates indicate that over the course of a year, about 7 percent of 10- to 13-year-olds and 11.5 percent of 14- to 17-year-olds experience a serious injury that requires hospitalization, absence from school, or stitches or other surgery.[65] The toll these injuries take varies depending on how severe they are, but can range from minimal disruption of daily activities to an extended or even lifelong disability.

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* See, for example, the Child and Adolescent Trial for Cardiovascular Health (CATCH), a multicomponent, school-based program involving health education, behavioral approaches, and school environmental modifications.

† This brief does not touch on injuries suffered from acts of violence.

‡ These three injury types don't encompass all unintentional injuries, but they provide an in-depth picture of what the research shows with regard to three important causes of unintentional injury among teens.

° Authors' calculation based on national death count data from the Centers for Disease Control and Prevention.

Injuries from Car and Bike Accidents

Reckless driving, driving at night, driving after drinking alcohol, and not wearing seatbelts increase the likelihood of car crashes and injuries. And teens who drive with friends as passengers may be at greater risk of a car accident than those who drive alone or with other people.[59]

Studies on bicycle injuries suggest that wearing a helmet decreases the risk of injury in a crash.[46, 75, 76] Despite this common advice, 85 percent of high school students never or rarely wear helmets.[33] Adolescents who own helmets, who believe that helmet use increases safety, and who are less concerned about helmet discomfort or negative reactions from friends are more likely than their peers to wear a helmet.[24, 40] Furthermore, adolescents whose parents, siblings, or friends wear helmets are more likely to use helmets themselves.[16, 28, 40]

Injuries at Work

As more and more teens work, there is growing attention to occupational injuries among this age group. Males, teens who work in food-service jobs, and adolescents who use drugs and alcohol are more likely to suffer injuries at work, as are teens who are exposed to physical hazards, have large workloads, and are minimally supervised at work.[21, 23, 38]

Policies and Programs to Prevent Injury

A number of policies and programs have attempted to promote safety habits and prevent injuries in adolescents. The critical influence of driver education seems to depend on the age at which youths get their driver's licenses. Offering driver education courses as a way to receive an early license that otherwise would not be available appears to increase the number of adolescents behind the wheel and lead to a rise in the overall rate of motor vehicle crashes.[44] On the other hand, imposing driver's education as a new requirement at an age when teens previously could get a license without such a program may reduce the number of teens with a license at a young age and lead to a drop in the rate of accidents.[77] Furthermore, delaying full licensing among adolescents[78] and restricting night driving[59, 60] may lower the risk of accidents among adolescent drivers, but further research is needed to fully evaluate these claims.[22]

Some school-based programs to prevent drinking and driving or riding with a driver who has been drinking appear to be successful.[49, 66, 67] Community programs that feature a variety of activities to discourage drinking and driving – such as mass media campaigns, awareness days, and law enforcement changes – have also shown promising results.[31, 80] From a policy standpoint, lowering the legal blood alcohol level for young drivers may reduce motor-vehicle-related fatalities.[30, 68, 86] While few programs to promote teen seatbelt use have been evaluated, seatbelt laws may encourage seatbelt use and reduce the rate of fatalities.[19, 32]

Turning to bicycle safety, multicomponent helmet-promotion campaigns – including education, helmet giveaways or coupons, awareness campaigns, and legislation – have shown promising results for children and young adolescents.[1, 12, 50, 63] Programs that only give away helmets have been less successful.[41, 63] More rigorous experimental evaluations are needed, though, to provide conclusive evidence of program effectiveness.

Very few studies have looked at safety in the workplace for teens. We have found only one published evaluation of an occupational safety program for adolescents which suggests that introducing less hazardous equipment and training workers in on-the-job safety may be useful.[5] Future studies should experimentally evaluate ways to lower exposure to hazards at work, enhance safety knowledge and awareness, discourage on-the-job substance use, increase supervision, and enforce worker protection laws.

Recommendations

Based on our review of studies on adolescent safety and injury, we recommend that communities:

- Reach adolescent boys, who have a greater risk of unintentional injury than teen girls; and
- Reduce risky behaviors, which are critical components in adolescent injury;
- Take a multifaceted approach in programs and policies that aim to prevent injury, focusing on adolescents themselves, the influences of friends and family members, and the role of the broader community.

Summary Table: Review of the Research Literature and Implications for Targeted Activities to Promote a Healthy and Safe Lifestyle and to Prevent Injury Among Adolescents

	Experimental Research Studies			Non-Experimental Research Studies
AREAS FOR TARGETED INTERVENTION ACTIVITIES	**WHAT WORKS**	**WHAT DOESN'T WORK**	**MIXED REVIEWS**	**"BEST BETS"**
Tobacco Use	- Multicomponent, school-based programs (like Life Skills Training and Project Toward No Tobacco Use) that address peer pressure and other social influences to use tobacco, anxiety management, self-esteem building, communication skills, development of personal relationships, and/or misperceptions about norms and about the consequences of tobacco use. [However, further research is needed to explain the apparent success of these programs given the failure of similar programs (see "What Doesn't Work" column).] [7-9, 18, 74] - Community program components that supplement school-based programs with media messages and other community activities. [6]	- Fear-based strategies that simply provide factual information about the dangers of tobacco use. [11] - Local interventions to prevent tobacco sales to minors by increasing measured retailer compliance with the law. [4, 62, 70] - Pure "social influences" programs (like the Hutchinson Smoking Prevention Project), designed to counteract the social influences to use tobacco by enhancing resistance skills and correcting exaggerated perceptions of how common tobacco use is. [55]		*Individual Level* - Promote positive attitudes toward non-smoking and non-smokers. - Treat and prevent adolescent depression and anxiety and childhood conduct problems. *Family Level* - Enhance parental monitoring and consistent discipline, as well as parental anti-smoking attitudes. - Reduce parental smoking through prevention and cessation programs. *Peer Level* - Reduce tobacco use among peers via the other approaches detailed here. *Environmental & Policy Level* - Eliminate tobacco industry advertisements that target minors. - Raise tobacco prices.
Physical Activity and Nutrition	- Multicomponent, school-based programs designed to promote cardiovascular health through school environmental changes (e.g. training of PE teachers and food service personnel and modification of PE curriculum and content of school meals) and classroom curricula that addresses psychosocial factors and behavioral skills relevant to physical activity, nutrition, and other components of cardiovascular health. [43, 52]	- Simply conveying health information in an attempt to increase knowledge. [64, 82]		*Individual Level* - Enhance perceived ability to be physically active (self-efficacy). - Assist adolescents in setting and working toward a specific behavior-change goal. *Environmental & Policy Level* - Provide sports and exercise opportunities. - Make healthy foods more accessible and unhealthy foods less accessible.
Sleep			- Changing school start times (preliminary results suggest both positive and negative consequences). [37]	*Individual Level* - Treat and prevent adolescent depression. - Reduce tobacco use through prevention and cessation programs. - Address other behavioral and emotional problems, including rebelliousness and stress. - Alleviate—or improve management of—time pressures resulting from the demands of school-work, employment, and other activities.
Unintentional Injuries, Risk Behaviors and Safety Habits—Overall, and Motor Vehicle-Related	- School-based programs designed to prevent risky drinking and driving behaviors by increasing awareness of the risks associated with drinking and driving and by preparing adolescents with ways to deal with drinking and driving situations and the pressures commonly encountered in these situations. [can decrease serious traffic offenses and occurrence of riding with a drunk driver] [49, 66, 67] - Community organizing programs in which communities, with or without the help of a hired community organizer, initiate a variety of activities to prevent motor vehicle crashes and related outcomes or behaviors. Possible community activities include mass media campaigns, awareness days, modifications to alcohol retailer policies and practices, and law enforcement changes. [can decrease drinking and driving behavior.] [31, 80]	- Students Against Driving Drunk (SADD), at least when not fully implemented. [36]	- Driver Education. [Effect depends on driver education's influence on age at licensure.] [44, 77]	*Individual Level* - Prevent risky behaviors (such as substance use and reckless driving) and promote safety habits (such as use of seatbelts and of helmets). - Address childhood aggression; prevent and treat conduct problems. - Instill in adolescents a realistic sense of their ability to drive after drinking. - Enhance the value that adolescents place on safety concerns. *Policy Level* - Delay full licensure among adolescents (graduated driver licensing) and place restrictions on driving at night (curfew laws). - Lower the legal blood alcohol concentration limit for young drivers.
Unintentional Injuries, Risk Behaviors and Safety Habits—Bicycle-related			- Bicycle helmet giveaway programs as stand-alone efforts, not incorporated as one component of a broader bicycle helmet promotion effort. [41, 63]	*Individual Level* - Increase bicycle helmet use, via the approaches detailed below. - Implement multicomponent bicycle helmet education programs that include components such as education in bicycle safety and in the importance of helmets, distribution of coupons for use toward a helmet purchase, and events designed to raise awareness regarding bicycle helmets. *Family and Peer Level* - Promote bicycle helmet use among parents and peers. *Policy Level* - Implement bicycle helmet laws [extent of enforcement and public awareness of the law may be important].
Occupational Injuries				*Individual Level* - Reduce on-the-job substance use; avoid long hours. *Environmental Changes at Work* - Reduce exposure to hazards at work, and increase worker training in on-the-job safety. - Increase supervision at work.

What Works?

The *What Works* table, based on a review of more than 230 adolescent health and safety programs, identifies which programs and approaches to prevent negative health behaviors or injury and promote positive health behaviors are likely to succeed.

The headings on the left identify the areas targeted for intervention:

- The "What Works" column describes programs in this area that have been found to be effective through experimental evaluations.
- The "What Doesn't Work" column lists interventions or activities that have been tried and found to be ineffective with experimental evaluations.
- The "Mixed Reviews" column highlights elements that have been shown, through experimental evaluations, to be effective in some, but not all, programs or for some groups of adolescents but not all teens. Where there are empty spaces in the table, it means that little evidence has been found for or against programs in that particular area.
- Finally, the "Best Bets" column describes promising findings from research studies that take account of other factors related to health and safety, such as parent and peer health and safety behaviors, and adolescent mental health, but that have not been tested with experimental designs. It also includes results from quasi-experimental studies and wisdom from practitioners working in the field.

For a more detailed version of this table, with links to research and program descriptions, consult Child Trends' Web site at www.childtrends.org

Next Steps For Research

We know a lot about why healthy behavior and safe habits are important during adolescence. We have less information about what causes or determines healthy behavior and what can be done to promote positive behavior among teens. In order to guide and inform the promotion of healthy behavior and injury prevention in adolescence, future research should:

- *Focus specifically on adolescents.* We have more information about promoting health and safety among younger children and adults than among teens. While we can make some tentative inferences from research on other age groups, it is important to test hypotheses and program strategies among adolescents to provide information that more clearly applies to this developmental stage.
- *Conduct high-quality longitudinal and experimental research to identify what leads to positive health and safety habits and effective programs.* For many of the behaviors we've discussed, the majority of research is cross-sectional, meaning that it was collected at one point in time and is not experimental, so it can't be used to determine causality. Longitudinal and experimental studies would provide more informative results.
- *Address causes of behavior and program approaches at a variety of levels in an adolescent's life.* Generally, research on health and safety among adolescents overlooks such areas as the role of the community and even the value of specific programs.

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