



Preventing Injuries in America:

Public Health in Action



Injuries in America

Introduction

The problem of injury in America is complex. Many types of injury—both unintentional and violence-related—exist, and for each type of injury there are many strategies for prevention.

This portion of the Injury Fact Book contains 23 separate sections with detailed information about a range of injuries, from alcohol-related to youth violence. Each injury section includes data that describe the problem, an overview of CDC's research and prevention efforts, and future steps CDC and its partners must take to reduce injuries and their resulting deaths and disabilities.

Alcohol, Injuries and the Emergency Department

The Problem

Excessive alcohol consumption is an important factor in more than 100,000 deaths in the United States each year.

- Between 20% and 30% of the patients seen in U.S. hospital emergency departments (ED) have alcohol problems.
- Nearly half of alcohol-related deaths are the result of injuries from motor-vehicle crashes, falls, fires, drowning, homicides, and suicides.
- Emergency departments do not routinely screen patients for alcohol problems.

CDC's Accomplishments

Conference identified research and program needs

In March 2001, CDC's Injury Center and five federal partners sponsored a conference for researchers, practitioners and other stakeholders to review current knowledge about alcohol problems among emergency department patients. Participants identified critical research gaps, public and private sector support needed to close those gaps, and health care and public policy issues that directly affect service availability. They also developed a research agenda to improve availability and quality of screening and intervention for alcohol problems among ED patients.

Screening and brief intervention shows promise

Preliminary data from a CDC-funded study indicate that emergency department patients receiving screening and brief intervention for alcohol problems reduced their alcohol use. Between June 1999 and December 2000, CDC and the Center for Rural Emergency Medicine at West Virginia University enrolled almost 3,000 patients in a clinical trial to determine the efficacy of screening ED patients for alcohol problems and counseling those who screen positive. Forty-five percent of patients enrolled screened positive for alcohol problems. Researchers followed up with more than 1,100 patients after they had

Excessive alcohol consumption is an important factor in more than 100,000 deaths in the U.S. each year.

been enrolled in the study for three months. Ninety-five percent of patients in the experimental group had received counseling for their alcohol problem. Researchers are currently conducting a 12-month follow-up study to determine if the initial positive changes endure.

Computer-based intervention feasible in emergency departments
CDC funds researchers at the University of Michigan to develop and test an interactive computer-based intervention to prevent alcohol use and misuse among adolescents who come to the ED after an injury. Between October 1999 and March 2001, 640 patients ages 14 to 18 were recruited; most of them had sustained unintentional injuries. Adolescents were randomly assigned to intervention and control groups. Intervention participants attended a virtual party, chose a “party pal” to accompany them, and answered knowledge and behavior-related questions about alcohol use and misuse. Researchers are conducting follow-up telephone interviews with study participants 3 and 12 months after their ED visit to assess their alcohol use and misuse. Interim findings show that the intervention was well-received by adolescents, their parents, ED physicians, and ED staff. The follow-up interviews will show whether or not the intervention was effective in changing alcohol use and misuse among youth.

Future Steps

Alcohol problems, a known risk factor for a wide range of illnesses and injuries, are prevalent among patients in emergency departments. This fact makes the emergency department a logical setting in which to screen and intervene for alcohol problems. While ED-based screening and intervention has shown promise in ongoing studies, we should continue to explore this strategy for preventing alcohol-related injuries. The research agenda developed at the March 2001 conference (described previously) will help direct our efforts.

Just The Facts

Alcohol and Injuries

Alcohol consumption contributes to thousands of injuries and deaths each year in the U.S.:

- In 1998, 15,786 people died in alcohol-related motor vehicle crashes.
- Alcohol contributes to about 40% of residential fire deaths.
- Alcohol use is involved in about 25% to 50% of adolescent and adult deaths associated with water recreation.
- According to the Department of Justice (DOJ), nearly 4 in 10 violent victimizations involve alcohol use.
- In a DOJ study, two-thirds of victims of intimate partner violence reported that alcohol had been a factor.

Alcohol-Related Motor Vehicle Injuries

The Problem

An alcohol-related motor vehicle crash kills someone every 33 minutes and nonfatally injures someone every two minutes.

- In 1999, 15,786 people died in alcohol-related motor vehicle crashes. That's 38% of the year's total traffic deaths.
- Approximately 1.4 million drivers were arrested in 1998 for driving under the influence of alcohol or narcotics. That's just over 1% of the estimated 120 million or more episodes of impaired driving that occur among U.S. adults each year.
- About 3 in 10 Americans will be involved in an alcohol-related crash in their lifetimes.
- Nearly three-quarters of drivers convicted of driving while impaired are either frequent heavy drinkers (alcohol abusers) or alcoholics (alcohol dependent).
- The National Safety Council estimates that alcohol-related motor vehicle crashes cost the nation \$26.9 billion in 1998.

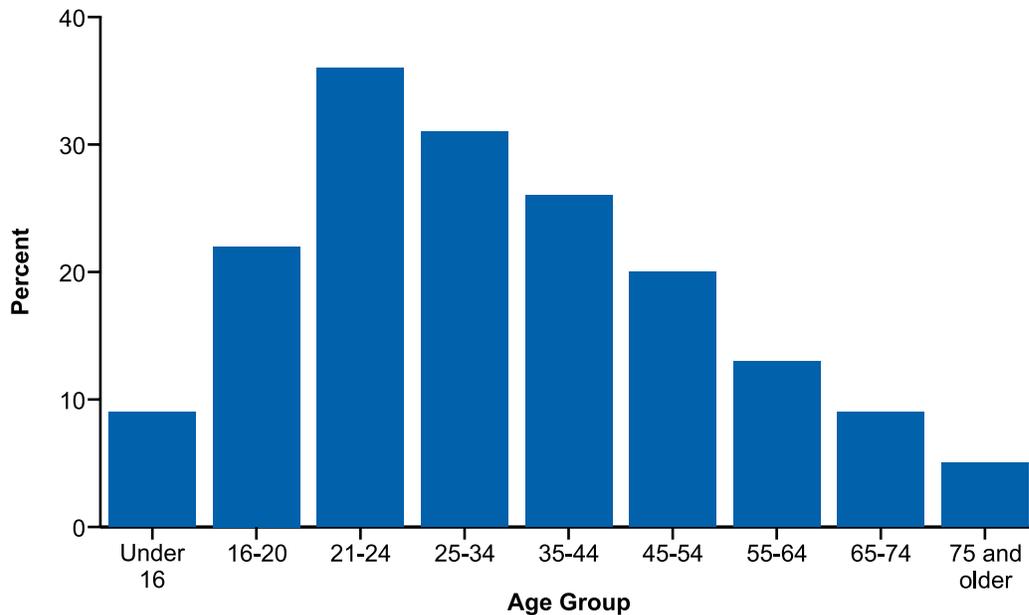
CDC's Accomplishments

CDC evidence supports lower legal blood alcohol level

On October 23, 2000, the President signed a transportation appropriations bill that included language creating a new national standard for the allowable blood alcohol concentration (BAC) for motor vehicle drivers. The bill requires states to enact legislation lowering the allowable BAC to 0.08%. States that do not enact such legislation stand to lose 2% to 8% of federal highway construction funds beginning in 2004. The action occurred after epidemiologists from CDC's Injury Center systematically reviewed studies that evaluated laws lowering the allowable BAC for motor vehicle drivers from 0.10% to 0.08%. Researchers found that these laws reduce fatalities associated with alcohol-impaired driving by about 7%. On the basis of this evidence, the Task Force on Community Preventive Services strongly recommended that state policy makers consider enacting this type of law. The task force recommendation provided support for the new national standard.

An alcohol-related motor vehicle crash kills someone every 33 minutes.

Percentage of Drivers Involved in Fatal Crashes Who Used Alcohol, by Age, 1998



Source: NHTSA Traffic Safety Facts

In June 2001, the Secretary of the Department of Health and Human Services, Tommy G. Thompson, awarded a 2001 Secretary's Award for Distinguished Service to the motor vehicle injury research team. The team was cited for "conducting a systematic review of the effectiveness of 0.08% BAC laws that were helpful in the debate that led to a new national standard for alcohol-impaired driving."

No change in teens' drinking and driving behavior

Between 1991 and 1997, teens' drinking and driving behavior did not change. Consistently, more than one in three students reported that in the past month, he or she had ridden with a driver who had been drinking alcohol, and one in six had driven after drinking alcohol. These findings, from CDC's 1991, 1993, 1995, and 1997 Youth Risk Behavior Surveys, point to a need for stronger incentives to prevent adolescent drinking and driving.

Preventing repeat offenses among youth who drive while impaired

On July 10, 2000, the Jefferson County, Alabama, family court system began entering youths convicted of first-time alcohol- and drug-related traffic offenses into the READY Program, a new pilot program sponsored by the CDC-funded Injury Control Research Center at the University of Alabama at Birmingham. READY—Realistic Education on Alcohol and Drugs for Youths—is an intensive, 10-hour intervention to keep teens from becoming

repeat offenders. It is modeled after a successful program launched in California in the late 1980s. Anecdotal evidence indicates the recidivism rate for drug- and alcohol-related traffic violations among that program's participants was 6%, compared with a 22% average recidivism rate for California overall. While eight other states have implemented similar programs, Alabama is the only program with an evaluation component that will estimate recidivism among participants.



In 1998, more than one-third of U.S. traffic deaths were related to alcohol.

Future Steps

Over several years, Injury Center scientists conducted a rigorous, systematic review of literature about community-based efforts to decrease alcohol-impaired driving. They analyzed evaluations of those efforts and identified five effective interventions:

- Random breath testing/sobriety checkpoints
- Reducing legal blood alcohol concentration to 0.08%
- Minimum legal drinking age laws
- Server training programs
- “Zero tolerance” laws for young drivers

These research findings are scheduled for release in late 2001 in a supplement of the *American Journal of Preventive Medicine*. In 2002, they will be published in the *Guide to Community Preventive Services*. The Guide, a publication of an independent task force, provides public health decision makers with recommendations about interventions to promote health and safety and to prevent disease, injury, disability, and premature death. In addition to sharing information about what works to prevent impaired driving, CDC must support communities in implementing proven interventions.

Just The Facts

Children and Drinking Drivers

A CDC study published in the May 3, 2000, issue of the *Journal of the American Medical Association* found that nearly two-thirds of children under 15 who died in alcohol-related crashes between 1985 and 1996 were riding with the drinking driver. More than two-thirds of the drinking drivers were old enough to be the parent of the child who was killed. The study also found that fewer than 20% of the children killed were properly restrained at the time of the crash and that restraint use decreased as the driver's blood alcohol concentration increased.

Bicycle-Related Injuries

The Problem

Each year in the United States, more than 500,000 people are nonfatally injured while riding bicycles.

- In 1999, 750 bicyclists died in crashes. More than one-quarter were children ages 5 to 15.
- More than 95% of bicyclists killed were not wearing helmets.
- An estimated 140,000 children are treated each year in emergency departments for head injuries sustained while bicycling.

CDC's Accomplishments

CDC's Injury Center has taken a four-point approach to the problem of bicycling injuries:

1. Convening groups to develop and implement a national bicycle safety plan;
2. Evaluating the effectiveness of existing safety and injury prevention programs;
3. Funding pilot programs to determine how to influence those hardest to reach with bicycle safety messages;
4. Encouraging development of state and local bicycle helmet use laws and evaluating their effectiveness.

A national plan for bicycle safety

Increasing safety and reducing injury were the focus when a panel of bicycling enthusiasts, safety advocates, and public health professionals met in July 2000 to draft a national action plan for bicycle safety. CDC, the National Highway Traffic Safety Administration (NHTSA), the Federal Highway Administration, and the Pedestrian and Bicycle Information Center sponsored the meeting. The national plan will guide policy makers, safety specialists, educators, and the bicycling community in developing programs to increase safety for bicyclists and reduce bicycle-related injuries. The plan, published by NHTSA in 2001, addresses five practical issues:

Each year in the U.S., more than 500,000 people are nonfatally injured while riding bicycles.

- Road sharing
- Enhanced bicycle safety education
- Increased use of bicycle helmets
- Enhanced law enforcement to promote bicycle safety
- Bicycle facilities and community planning for bicycle safety

Multifaceted programs increase helmet use

By the end of 2000, helmet use in 15 communities had risen from 40% to 55%, exceeding the Healthy People 2000 goal. These communities in California, Colorado, Florida, Oklahoma, and Rhode Island had conducted CDC-funded programs to increase bicycle helmet use among children 5 to 12 years old. The programs included helmet giveaways and educational interventions. In the programs' first two and a half years, community staff distributed approximately 60,000 helmets and provided educational interventions to 104,000 children in schools and communities.

CDC research influences Healthy People 2010 goals

Findings from CDC research contributed to the Healthy People 2010 working group's recommendation that all 50 states enact helmet use laws. CDC scientists evaluated state helmet use laws in Georgia and Oregon and found that such laws can increase helmet use. CDC also found that local enforcement of those laws is highly effective. In one community, enforcement increased helmet use from 0% to 45%. The improvement was sustained over two years.

Marketing and education not enough to increase helmet use

In 1997, CDC researchers worked with the Texas Department of Health to evaluate the effectiveness of education and marketing in increasing helmet use in an isolated community. The study found short-term increases in helmet use, but no long-term improvements. Teens in the study community were particularly resistant to wearing a helmet, regardless of the approach employed. The findings indicate that widespread distribution of helmets, even when accompanied by education, is not adequate to get youths to wear helmets. Practitioners must explore other strategies such as parental supervision or local and state helmet use laws.

Promoting helmet use among hard-to-reach teens and young adults

Middle school, high school, and university students have the lowest helmet use rates and frequently disobey traffic laws while cycling. In October 2000, the Injury Center began supporting researchers in Phoenix to conduct a three-year program to increase bicycle safety and helmet use among these populations. Results of the program's evaluation are expected in 2003.

Future Steps

Future activities to increase bicycle safety and decrease bicycle-related injuries include continued work with national bicycle and safety organizations to implement strategies identified in the national plan for safe bicycling. These strategies include:

- Increasing bicycle helmet use among all Americans.
- Conducting national campaigns to educate bicyclists about the need to always wear helmets and to encourage drivers to share the road with bicyclists.
- Evaluating the effectiveness of state and local legislation and policies regarding bicycle helmet use.

- Developing state and local coalitions to advance working relationships between groups that promote bicycling, groups that promote physical activity, and groups that promote and develop livable communities with safe environments for bicyclists.
- Identifying effective community strategies to increase bicycle helmet use and bicycle safety and promoting widespread adoption of such strategies.



Bicycle helmets reduce the risk of brain injury by as much as 88%.

Just The Facts

Bicycle Helmets Prevent Injury and Death

If every bicycle rider wore a helmet, that action alone would prevent an estimated 150 deaths and another 100,000 nonfatal head injuries each year.

Bicycle helmets reduce the risk of serious head injury by as much as 85% and the risk of brain injury by as much as 88%. Helmets have also been shown to reduce the risk of injury to the upper and mid-face by 65%.

Unfortunately, only about one-quarter of children ages 5 to 14 wear helmets when riding bicycles. The percentage of teen cyclists who wear helmets is close to zero. Children and adolescents most commonly complain that helmets are not fashionable or “cool,” that their friends don’t wear them, and that helmets are uncomfortable (usually too hot). Riders also say they do not think about the importance of bicycle helmets, nor about the need to protect themselves from injury, particularly if they are not riding in traffic.

Child Maltreatment

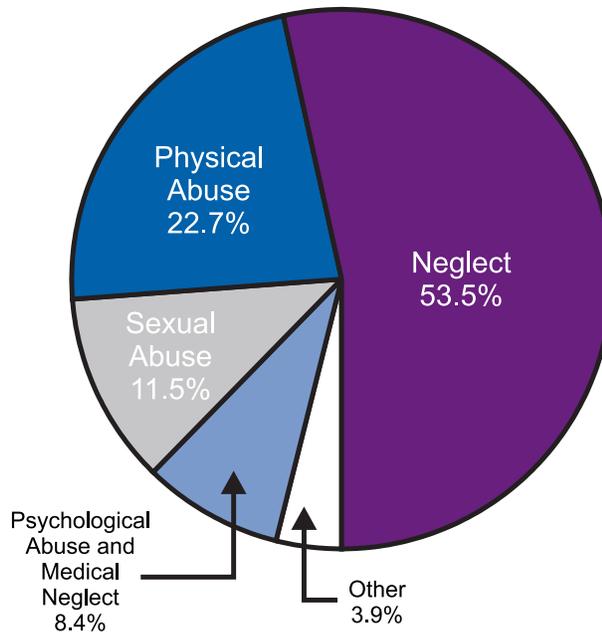
The Problem

In 1998, more than 900,000 children in the United States experienced or were at risk for child abuse and/or neglect. An estimated 1,100 children died from such maltreatment.

- Head trauma—often the result of violent shaking—is the leading cause of death and disability among abused infants and children.
- Child Protective Services agencies received an estimated 2.8 million referrals alleging child maltreatment, two-thirds of which met criteria for investigation. Of the cases investigated, nearly one-third resulted in a finding of proven or probable maltreatment.
- Child maltreatment increases the risk of suicide and of becoming either a victim or perpetrator of intimate partner violence.
- Males who are abused or neglected or who witness violence between their parents in childhood are at increased risk of perpetrating intimate partner violence in adulthood.
- Studies have suggested links between child maltreatment and alcoholism, drug abuse, depression, smoking, sexual promiscuity, and certain chronic diseases.
- Women with a history of childhood sexual abuse are at higher risk than nonvictims of being sexually assaulted in adulthood.

In 1998, 1,100 children died from child abuse or neglect.

Types of Child Maltreatment



Source: Administration for Children and Families

CDC’s Accomplishments

Innovative program stops sexual abusers before they strike
The Injury Center is evaluating a promising program called STOP IT NOW!, underway in Vermont and Philadelphia. This unique intervention—which features a web site, e-mail system, and community action campaign—targets potential sexual offenders. It aims to stop sexual abuse from occurring rather than intervening afterwards, as most programs have done thus far. Recently, a young man e-mailed STOP IT NOW! for help. He wrote, “I am a 25-year-old male and have just realized that I am attracted to my little brother’s best friend who is seven years old. I don’t want to molest anyone, but my sexual desires for young boys keep growing and growing and I don’t know what to do.” STOP IT NOW! staff referred the young man to a specialist in sex offender treatment in his area. This program can help fill a critical gap in child sexual abuse prevention.

Recommendations to help communities better serve the abused

A partnership among CDC and several other agencies funded six community projects to implement recommendations from the National Council of Juvenile and Family Court Judges. These recommendations, published in *Effective Intervention in Domestic Violence & Child Maltreatment Cases: Guidelines for Policy and Practice*, are designed to improve the way the court system handles cases of abused women and children, to increase the effectiveness of the child protective system, and to enhance services for victims of domestic violence. Project goals include holding batterers accountable for their actions, increasing protection of abuse victims, and decreasing the number of children who are removed from their non-abusive mothers. Results are expected in 2004.

Assessing attitudes and beliefs about child maltreatment

CDC is funding an analysis of attitudes, beliefs, and behaviors relating to child maltreatment in various cultural and ethnic populations. Information that describes how communities feel about outcomes of abuse, characteristics of abusers, risk and protective factors for abuse, and efforts to prevent it will help practitioners develop prevention messages that are more meaningful to the groups they serve.



The National Women's Study finds that 51% of lifetime rapes occur before age 18 and 29% before age 12.

Future Steps

The full extent of the child maltreatment problem in this country is not known. Current data systems only capture information about child maltreatment that is severe enough to come to the attention of the child protective services system. As a result, many cases of child abuse go unreported and unnoticed. We must develop data collection and tracking systems at the national, state, and local levels to more accurately document the scope of the problem and identify changes over time.

Many communities have implemented programs to prevent child maltreatment, but few have been evaluated to determine if they are effective. CDC's Injury Center is systematically reviewing these programs and creating a database of those that work. The database will include information about target populations, location, activities, evaluation methods, outcomes, and other details to help communities replicate successful programs.

Just The Facts

Types of Maltreatment

The Child Abuse Prevention and Treatment Act identifies four major types of maltreatment: physical abuse, neglect, sexual abuse, and emotional abuse. While state definitions may vary, operational definitions include the following:

Physical Abuse

Infliction of physical injury as the result of punching, beating, kicking, biting, burning, shaking or otherwise harming a child.

Child Neglect

Failure to provide for the child's basic needs. Neglect can be physical, educational, or emotional.

Sexual Abuse

Fondling a child's genitals, intercourse, incest, rape, sodomy, exhibitionism, and commercial exploitation through prostitution or the production of pornographic materials.

Emotional Abuse (Psychological/Verbal Abuse/ Mental Injury)

Acts or omissions by the parents or other caregivers that have caused, or could cause serious behavioral, cognitive, emotional, or mental disorders.

Child Passenger Safety

The Problem

Motor vehicle injuries are the greatest public health problem facing children today. In fact, they are the leading cause of death among children at every age after their first birthday.

- Every 90 seconds, a child is killed or injured in a motor vehicle in this country. In 1999, more than 2,100 children under 16 were killed and more than 320,000 were injured while riding in a motor vehicle.
- Nearly half of children under 5 who were killed in motor vehicle crashes were riding unrestrained. Child safety seats would have saved many of them. Child safety seats reduce the risk of death by about 70% for infants and by about 55% for toddlers ages 1 to 4.
- Only about 6% of children ages 4 to 8 ride in booster seats, the recommended safety seat for this age group.

CDC's Accomplishments

Interventions to increase child safety seat use

Over several years, Injury Center scientists conducted a rigorous, systematic review of literature about community efforts to increase the use of child safety seats. They analyzed evaluations of those efforts and identified four interventions that were proven effective:

- Laws mandating the use of child safety seats (all 50 states currently have such laws)
- Stricter enforcement of those laws
- Programs that distribute child safety seats and educate parents about their use
- Programs that provide education about and incentives for child safety seat use

These research findings appeared in CDC's Morbidity and Mortality Weekly Report in May 2001, and they are scheduled for release in late 2001 in a supplement of the American Journal of Preventive Medicine.

Every 90 seconds, a child is killed or injured in a motor vehicle.

In 2003, they will be published in the Guide to Community Preventive Services. The Guide, a publication of an independent task force, provides public health decision makers with recommendations about interventions to promote health and safety and to prevent disease, injury, disability, and premature death.

Drinking, driving, and child passenger safety

Exploring an opportunity for prevention, CDC researchers analyzed data about crashes involving a drinking driver in which child passengers were killed. Their findings revealed that of the 5,555 children under 15 who were killed in alcohol-related crashes between 1985 and 1996, nearly two-thirds were riding in the vehicle with the drinking driver. More than two-thirds of the drinking drivers were old enough to be the parent of the child who was killed.

The study also found that more than four-fifths of the children killed were unrestrained at the time of the crash. As the driver's blood alcohol concentration increased, child restraint decreased. These findings appeared in the *Journal of the American Medical Association* on May 3, 2000, and in a *Washington Post* editorial supplement on November 27, 2000.

No change in number of deaths among children ages 4 to 8

In a recent study, CDC scientists found that the number of children ages 4 to 8 who died in motor vehicle crashes remained stable—about 500 per year—between 1994 and 1998. Only one-third of children killed were restrained at the time of the crash. Only about half were riding in the back seat, the recommended seating position for children ages 12 and younger. This research points to a need to increase efforts to promote passenger safety for children in this age group.



Children ages 4 to 8 should ride in booster seats.

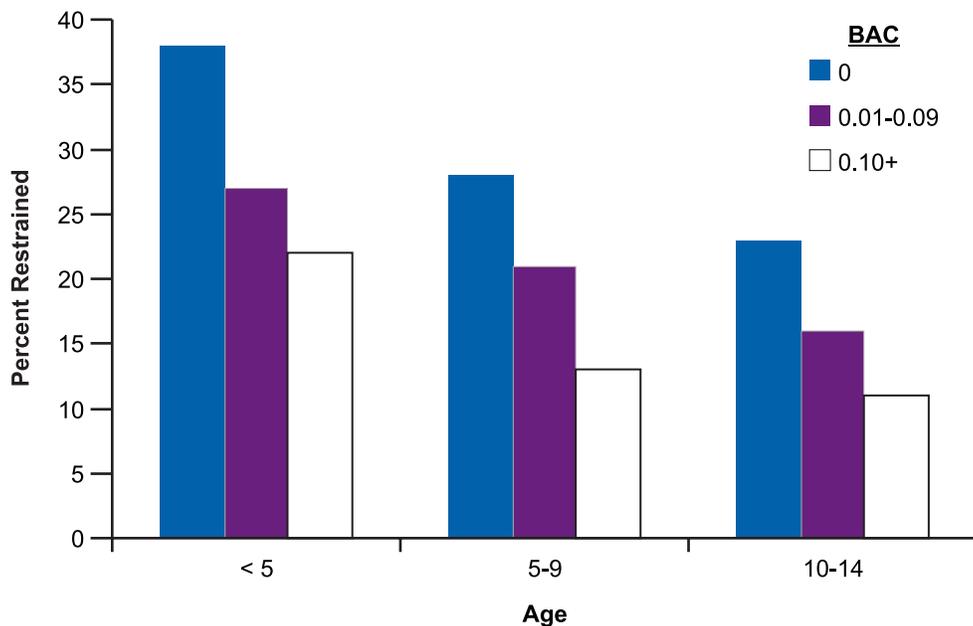
A boost for children ages 4 to 8

In October 2000, CDC began supporting programs led by the health departments in Colorado, Kentucky, and New York to increase booster seat use among children ages 4 to 8. The state grantees are collecting baseline data; assessing barriers to booster seat use; building partnerships with state and local organizations; developing, implementing, and evaluating community-based interventions; and comparing findings with data collected in similar communities. After program staff complete their evaluations, CDC and the State and Territorial Injury Prevention Directors' Association will share results with other state health departments and community organizations. The data generated through these programs will help guide future efforts to increase booster seat use.

Kids in the back for a safer ride

CDC is funding the Center for Risk Analysis at the Harvard School of Public Health to develop, implement, and evaluate the "Kids in the Back/Niños Atras" program. This three-year, community-based intervention aims to increase the number of children 12 and younger who ride properly restrained in the back seat of motor vehicles, the safest place for them. Project investigators will organize a community coalition, develop communication materials to educate the public about the importance of having children ride in the back seat, and provide incentives or rewards to motivate parents and children to adopt this safety behavior. The intervention will be implemented in Holyoke, Massachusetts; the towns of Lawrence and Brockton, Massachusetts, will serve as comparison communities.

Restraint Use Among Child Passenger Fatalities by Child's Age and the BAC of Their Driver, United States, 1985-1996 (N=3,246)



Source: JAMA, May 3, 2000 — Vol. 283, No. 17

Future Steps

Studies have shown that, depending on age, 15% to 40% of children regularly ride unrestrained in motor vehicles. CDC and its partners must increase the number of communities that implement proven strategies to increase restraint use among children. In addition, CDC must support efforts to develop and test new ways to improve child passenger safety, including identifying programs that work to promote the use of booster seats.

Just The Facts

Why Booster Seats?

Having outgrown child safety seats designed for younger passengers, children ages 4 to 8 frequently ride unrestrained or strapped in adult seat belts. Children who are less than 4 feet, 10 inches tall and who weigh less than 80 pounds do not fit safely in adult lap and shoulder belts—unless they use booster seats. Booster seats raise a child's sitting height to fit a standard lap and shoulder belt. Public health and traffic safety organizations recommend that children in this age group be restrained properly in booster seats. However, only 4% to 6% of children 4 to 8 currently ride in booster seats.

Dog Bite Injuries

The Problem

Every 40 seconds, someone in the United States seeks medical attention for a dog bite-related injury.

- During 1979–1998, dog attacks killed more than 300 Americans.
- Nearly 800,000 people sought medical care for dog bites in 1994; half of them were children under 18.

CDC's Accomplishments

Characterizing deaths from dog attacks
Injury Center researchers examined data about deadly dog attacks that occurred during 1979–1998. They found that at least 25 breeds of dogs had been involved in the fatal attacks. However, pit bull-type dogs and Rottweilers were involved in more than half of the deaths for which the breed was known. Of the 227 fatal attacks for which data were available, more than two-thirds of attacks involved a single dog, and more than half involved dogs that were unrestrained on their owner's property. The findings of this study provide insight into the circumstances surrounding deadly dog attacks that may help shape prevention efforts.



In 1994, an estimated 4.7 million Americans were bitten by a dog.

Campaign to educate Georgians about dog bites
With support from CDC, the Georgia Division of Public Health will conduct a dog bite prevention campaign in Chatham, Bullock, and Effingham Counties. These counties will provide a mix of rural, suburban, and urban populations, making community-wide educational outreach activities easier to conduct. The campaign will use educational materials and media outreach to teach children, parents, dog owners, health care providers

Every 40 seconds, someone in the U.S. seeks medical attention for a dog bite-related injury.

and other adults about the risk of dog bite-related injuries and about strategies for preventing such injuries. Project staff will evaluate whether the campaign changes people's beliefs and actions and reduces the number of dog bite-related injuries occurring in the three counties. Results of this research can guide future efforts to prevent dog bites and associated injuries and deaths.

Future Steps

Injuries from dog bites affect everyone. To develop effective strategies to reduce the painful and costly burden of dog bites, CDC must learn more about situations that put individuals at risk, identify dog-related factors associated with higher rates of attacks, and determine the elements of successful interventions. To that end, CDC and its partners must:

- Establish coordinated systems for reporting and tracking dog bites, related injuries, and associated medical care costs.
- Expand efforts to gather more accurate national data about dog bites.
- Conduct additional research to more effectively identify factors that increase or decrease a person's risk of dog bite-related injury.

CDC must also develop, implement, and evaluate prevention programs. Potential prevention strategies include programs promoting responsible dog ownership; training programs to increase desired canine behavior; programs to teach children how to act around dogs; enhanced animal control programs; and education for veterinarians and the general public.

In addition, we must look at the effectiveness of legislation to regulate dangerous or vicious dogs. Such legislation may entail registering those dogs with local health or animal control authorities, restricting how owners can confine dangerous dogs, requiring both owners and dogs to undergo training and further assessment, requiring dogs to be spayed or neutered, and mandating permanent identification of dangerous dogs.

Just The Facts

Children at Greatest Risk for Dog Bites

Children are at greater risk of injury and death from dog bites. Many children do not know how to behave around a dog. Children's small size and inability to fend off an attack may put them at additional risk.

- In 1994, approximately 2.5% of U.S. children under 14 years old were bitten compared with 1.6% of adults over 18 years old.
- In 1997–1998, 27 people died from dog bites; 19 of them were children under 15.
- Children, especially boys ages 5 to 9, have the highest incidence rate for emergency department visits resulting from dog bites.

Falls Among Older Adults

The Problem

Every hour an older adult dies as the result of a fall.

- In 1998, more than 9,600 persons 65 and older died from fall-related injuries, making falls the leading cause of injury death among this age group.
- Hip fractures are among the most serious fall-related injuries. Half of older adults who suffer a hip fracture never regain their previous level of functioning, and many are unable to live independently after their injury.
- Approximately 300,000 older adults suffer fall-related hip fractures each year.
- In 1994, the estimated cost of fall-related injuries was \$20.2 billion. By 2020, it may reach \$32.4 billion.

CDC's Accomplishments

A tool kit for fall prevention

CDC's Tool Kit to Prevent Senior Falls has been distributed to more than 5,000 organizations working to prevent injuries among older adults. Recipients have used the contents of the Tool Kit in fall prevention programs and distributed the materials to clients at senior centers, hospitals, and health departments; they have also used the materials in professional presentations and for teaching nursing and health care students. The Tool Kit, published in 1999, contains fact sheets, health education materials including a brochure, and a home assessment checklist designed to reduce falls and related injuries among older adults. Materials are based on research conducted and sponsored by CDC since the late 1980s. In 2001, CDC made available Spanish versions of the brochure and the checklist from the Tool Kit. Although there are no outcome results to report as of yet, recipients have responded favorably to the materials in the Tool Kit, requesting additional copies.

Guide to comprehensive fall prevention programs

In 2001, the Injury Center published a compendium of selected community-based programs to prevent falls among older adults. This document, *U.S. Fall Prevention Programs for Seniors: Selected Programs Using Home Assessment and Modification*, describes 18 fall prevention programs that include education, exercise, and home assessment and modification. The document's appendix contains examples of materials from several programs.

National Resource Center on Aging and Injury

The CDC-funded National Resource Center on Aging and Injury at San Diego State University applies technology to evaluate and share information about preventing unintentional injuries among older adults. By 2000, one year after funding began, the center had established a repository of more than 1,000 resource items; developed an interactive web site (www.nrc-ai.org) with a searchable database; and provided information to more than 636,000 people, including health care professionals, caregivers, and other individuals working to reduce injuries among older adults.

Evaluating fall prevention strategy in long-term care settings

CDC is funding a randomized controlled trial with Vanderbilt University of the Tennessee Fall Prevention Program (TFPP), a statewide program to train nursing home staff in safety practices. This research project will evaluate whether the program reduces serious injuries from falls among nursing home residents. If effective, the TFPP will provide a model for feasible, cost-effective injury prevention programs in long-term care settings.

Multifaceted program to prevent falls

In October 2000, CDC began funding the California State Health Department to design, implement, and evaluate a community-based fall prevention program for older adults. This program will include four elements: education, exercise to increase strength and balance, home assessment and modification, and medication review. Results of the program's evaluation will help guide future efforts to develop multifaceted fall prevention programs.

Just The Facts

Who Is at Greatest Risk?

- **Women are three times more likely than men to be hospitalized for fall-related injuries.**
- **Older adult men are 22% more likely than women to die as a result of a fall. This may be because men 65 and older have more chronic conditions than do women of the same age or because they engage in risky behaviors, such as climbing on ladders.**
- **Frail adults—those with impaired strength, mobility, balance, and endurance—are twice as likely to fall as healthier persons of the same age, and they sustain more severe injuries when they fall.**
- **Hospitalization rates for hip fractures are higher among white women than among black women. This difference is thought to be due in part to the higher prevalence of osteoporosis among whites.**

Comprehensive fall- and fire- prevention program underway in five states
Also in 2000, CDC began funding Arkansas, Maryland, Minnesota, North Carolina, and Virginia to implement and evaluate a program to teach older adults how to prevent fires and falls. Remembering When: A Fire and Fall Prevention Program for Older Adults is based on a curriculum developed by CDC's Injury Center, the National Fire Protection Association, the U.S. Consumer Product Safety Commission, and other partners. It uses lesson plans, brochures, fact sheets, game cards, and other educational materials to present 16 life-saving lessons.

Future Steps

Fall-related death rates among older adults are increasing. CDC must continue to develop and evaluate strategies to prevent falls among this growing segment of the U.S. population. Efforts should include:

- Working with federal and nonprofit partners to develop a national action plan and research agenda for reducing falls and related injuries among older adults.
- Evaluating the effectiveness of promising strategies for preventing fall-related injuries, such as hip pads, improved vision, and improved lighting.
- Identifying the factors that make older adults less likely to adopt proven fall prevention strategies.
- Developing a national education campaign for older adults and their caregivers that describes who is at increased risk for falls, why they are at risk, and what they can do to prevent falls and related injuries.
- Evaluating strategies to reduce falls in health care settings, including long-term care facilities.



Exercises that improve strength and balance can reduce the risk of falls.

Intimate Partner Violence

The Problem

More women than men experience intimate partner violence. In a national survey, 25% of female participants reported being raped or physically assaulted by an intimate partner at some time in their lives. In contrast, only 8% of male participants reported such an experience.

- Nearly two-thirds of women who reported being raped, physically assaulted, and/or stalked since age 18 were victimized by a current or former husband, cohabiting partner, boyfriend or date.
- Intimate partner violence is a major cause of violence-related injuries. One in three women injured during a physical assault or rape required medical care.
- Women are more likely than men to be murdered in the context of intimate partner violence. In 1998, 32% of all female homicide victims were murdered by an intimate partner. In contrast, 4% of male murder victims were killed by an intimate partner.



Many terms are used to describe intimate partner violence: domestic abuse, spouse abuse, battering, domestic violence, courtship violence, marital rape, and date rape.

In a national survey, 25% of female participants reported being raped or physically assaulted by an intimate partner.

CDC's Accomplishments

Promoting consistency in a diverse field

In late FY 2000, CDC published Intimate Partner Violence Surveillance: Uniform Definitions and Recommended Data Elements to improve and standardize data collected on violence against women. Without these standards, researchers have used varying terms to describe acts of violence against women. These inconsistencies have contributed to confusion and a lack of consensus about the magnitude of the problem. Consistent data allows researchers to better gauge the scope of the problem, to identify high-risk groups, and to monitor the effects of prevention programs. Uniform Definitions is quickly becoming the recognized standard for data collection in the field. Five CDC-funded states—Kentucky, Michigan, Minnesota, Oklahoma and Oregon—are establishing tracking systems for intimate partner violence and testing Uniform Definitions and Recommended Data Elements. These pilot tests will help CDC assess states' capacity to identify existing data sources that include some or all of these elements, identify opportunities to link data sources, and develop and implement more comprehensive systems.

Exploring social norms about violence against women

The Injury Center is exploring opportunities to create communities in which violence against women is unacceptable and intolerable. In October 2000, formative research began to identify social norms that support or discourage intimate partner violence and sexual violence. This research will increase knowledge about modifiable risk factors and the consequences of intimate partner and sexual violence. It will also identify target audiences, techniques for information sharing and prevention strategies. The research findings will guide CDC's development of a comprehensive campaign with elements that can be implemented at both national and local levels. The campaign to change social norms that support violence will use carefully crafted messages delivered through public service announcements, television spots, educational materials, and other communication methods.

Just The Facts

What Is Intimate Partner Violence?

Intimate partner violence is actual or threatened physical or sexual violence or psychological and emotional abuse directed toward a spouse, ex-spouse, current or former boyfriend or girlfriend, or current or former dating partner. Intimate partners may be heterosexual or of the same sex.

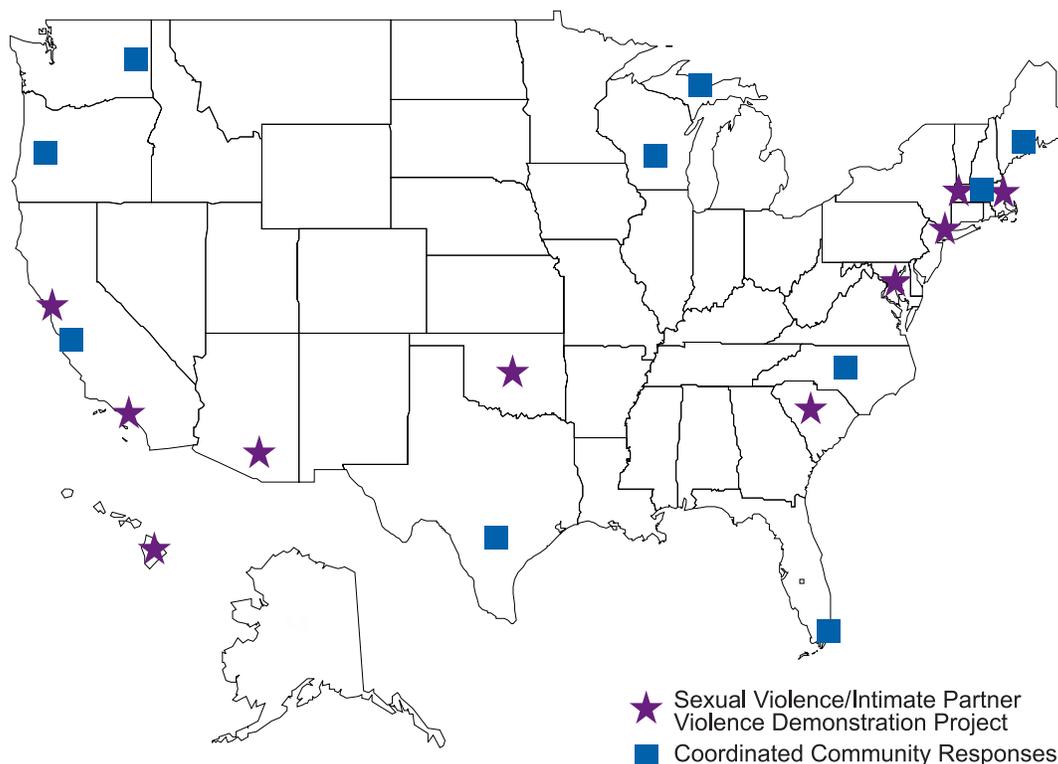
Web site supports research and prevention
The CDC-funded National Violence Against Women Prevention Research Center recently launched its web site (www.violenceagainstwomen.org). The Center consists of faculty and students at the Medical University of South Carolina, the University of Missouri–St. Louis, and Wellesley College in Massachusetts. It supports research into preventing violence against women and fosters partnerships among researchers, advocates, practitioners, and public policy makers. To identify what research would most benefit target populations, the Center also created focus groups of advocates and researchers. The Center’s web site will serve as a clearinghouse about prevention strategies and help keep both researchers and practitioners abreast of training opportunities, policy decisions, and recent research findings.

Network increases information sharing
The Violence Against Women Electronic Network (VAWnet) helps practitioners share data and lessons learned about VAW prevention and intervention efforts. The CDC-funded network improves communication among state domestic violence and sexual assault coalitions and allied organizations. It offers hands-on technical assistance and provides forums for discussing applied research, public policy, and a variety of other issues. The network also features a database promoting state-to-state electronic networking and a library of resources about violence against women.

Technical assistance enhances states’ use of funds

CDC’s Injury Center offers technical assistance to state health departments and sexual assault coalitions to help them more effectively use funds received through the Violence Against Women Act. The funds—designed to help states educate communities about sexual assault and develop programs to prevent it—support educational seminars, hotlines, training programs for professionals, development of informational materials, and special programs for underserved communities. With CDC’s support, states and territories have strengthened their infrastructure to address sexual violence, provide more extensive services to survivors of sexual assault and rape, and implement prevention and education programs. For example, CDC staff assisted in developing, implementing and evaluating an intimate partner violence training program for California health officials who work with Mexican and Mexican American migrant farm workers. The program won the President’s Award for Excellence.

Map of Sexual Violence/Intimate Partner Violence Demonstration Projects and Coordinated Community Responses



Community-wide responses to intimate partner violence
 CDC now funds 10 projects to develop and evaluate coordinated, community-wide programs to prevent intimate partner violence. Although specific program components differ by community, each multifaceted program involves such activities as risk assessment, community education, victims' services, and tracking cases of intimate partner violence. Data gathered from the project evaluations will help guide other communities in developing effective programs to prevent and control this public health problem.

Projects address needs of diverse populations
 CDC also funds 10 projects to prevent intimate partner violence and sexual violence among various racial and ethnic populations, including African Americans, American Indians and Alaska Natives, Hispanic Americans, and Asian Americans and Pacific Islanders. The projects were selected based on their capacity to identify and respond to the special needs of the target groups. Project staff will develop and evaluate programs for children, victims and perpetrators; programs to prevent dating violence among school-aged youth; or programs that link victims with community-based service providers. Components of each of the projects will vary.

Survey to assess prevalence and incidence of intimate partner violence

The Injury Center and several partners have developed two surveys to help states better assess the problem of intimate partner and sexual violence and resulting injuries, as well as related attitudes and norms. Data gathered will guide policy decisions and allow for comparison of statistics across states. The surveys are currently being pilot tested. After testing, Injury Center staff will submit the surveys to be considered as optional modules in the Behavioral Risk Factor Surveillance System. If accepted, the modules will be offered to all states to help collect and analyze state-level data.

Survey provides national data

CDC, along with the Department of Justice, supported the National Violence Against Women Survey. This survey provided national estimates of intimate partner violence, sexual violence and stalking in the U.S. CDC is developing plans for an ongoing national survey. Following pilot tests, the survey could be implemented regularly to provide up-to-date information. More accurate data about the problem of intimate partner violence will help practitioners improve prevention programs and generate additional support for their efforts.

Assessing risk factors, prevention strategies, and outcomes

With funds from CDC, several universities are conducting research to expand knowledge in the field of intimate partner violence.

- The University of California–Los Angeles is studying social and cultural factors associated with male batterers in Mexico and Southern California. Researchers will identify the type, frequency and severity of violence committed by men in mandated batterer treatment programs. They will also examine social and cultural variables associated with violent behavior.
- Johns Hopkins University is studying risk factors for injuries from intimate partner violence among urban women. Researchers will examine links between intimate partner violence and relationship stability, intense jealousy, substance abuse, weapon availability, employment status, marital status and age.
- The University of Pittsburgh is testing the feasibility of implementing an intimate partner violence screening protocol and referral network in primary care settings. This project would help identify and treat female patients who are potential victims of intimate partner violence.

- Harborview Medical Center at the University of Washington is using data from the Seattle School District, the Seattle Police Department and the Women’s Wellness Study to assess the association between witnessing spousal violence and poor academic, behavioral and health outcomes among children.
- Researchers at the University of North Carolina are studying dating violence, including gender stereotypes, conflict management skills and social norms that support or lead to violence. Findings will contribute to the development of gender-appropriate interventions to prevent dating violence.

Scientists, public health professionals, advocates and others in the field must increase efforts to stop intimate partner violence from occurring. To this end, CDC should support efforts to evaluate interventions for intimate partner violence prevention and communicate sound, science-based recommendations about programs and practices that work. At the same time, we must support and enhance victims’ services, including developing and implementing culturally appropriate services for diverse populations.

Future Steps

The full extent of nonfatal and fatal intimate partner violence in the United States is not known. While the FBI provides data about deaths perpetrated by intimate partners, not all incidents are reported to police, and those that are reported may not be identified or recorded as intimate partner violence. Similarly, victims seeking medical care for intimate partner violence-related injuries may not disclose that their partners hurt them. Even if they do, the information may not be recorded in the medical record. To better document the scope of the problem of intimate partner violence and identify trends in incidence and prevalence, we must improve the quality of data collection at national, state, and local levels.

Motor Vehicle Crashes

The Problem

In 1999, more than 3 million Americans were injured and more than 42,000 were killed in motor vehicle crashes.

- Of those who died, 5,586 were teens and 2,055 were children; nearly 8,000 were 65 and older.
- More than half of the people involved in fatal crashes were not wearing seat belts.
- Alcohol was involved in 38% of fatalities.
- Aggressive driving—such as speeding, excessive lane changes, following too closely, and running red lights—was associated with one-third of traffic crashes and two-thirds of fatal crashes.

CDC's Accomplishments

Interventions to increase safety belt use

Over several years, Injury Center scientists conducted a rigorous, systematic review of literature about community-based efforts to increase the use of safety belts. To date, they have evaluated three interventions. Each was effective:

- Safety belt use laws
- Primary enforcement laws rather than secondary enforcement laws
- Enhanced enforcement of seat belt laws

These research findings appeared in CDC's Morbidity and Mortality Weekly Report in May 2001. They will also appear in a chapter of the Guide to Community Preventive Services, a publication of an independent task force that provides public health decision makers with recommendations about interventions to promote health and safety and prevent disease, injury, disability, and premature death. The chapter is scheduled for publication in 2003.

Exploring injury-related pain following a motor vehicle crash

Injuries sustained during low-speed, rear-end car crashes have become a national and international problem, costing society billions of dollars

In 1999, more than 3 million Americans were injured and more than 42,000 were killed in motor vehicle crashes.

annually. CDC-funded researchers at the Medical College of Wisconsin are examining what happens to the head and neck to cause pain during low-speed, rear-end crashes. Current scientific literature about this topic is diverse and confusing. Findings from this research will help guide development of interventions to prevent acute and chronic pain resulting from low-speed, rear-impact crashes.

Retrofit device to prevent whiplash injuries

Researchers at Harborview Medical Center in Seattle are testing a device to reduce the whiplash motions that an occupant may experience during a rear-end motor vehicle crash. The device is a relatively inexpensive seat cushion that can be retrofitted to an existing motor vehicle seat. The retrofit cushion would more closely fit the shape of the occupant, thus reducing head and torso motions during a crash and absorbing a greater amount of energy from the crash. This research may lead to engineering solutions that reduce the number and severity of neck and upper back injuries resulting from rear-impact crashes.

Reducing anger behind the wheel

CDC is funding Colorado State University to evaluate an intervention to reduce anger among drivers. "High anger" drivers report having more motor vehicle crashes during their lifetimes and more minor crashes in the past year than do "low anger" drivers. The intervention now being evaluated teaches high anger drivers to use relaxation and other coping skills to reduce their anger. Results so far have shown that drivers who participated in the intervention reduced their frequency of risky driving behavior. This effect was maintained one month after intervention.

Future Steps

CDC must continue its efforts to develop and evaluate both behavioral and engineering solutions to prevent motor vehicle-related injuries and deaths.

Just The Facts

Seat Belt Laws: Primary Versus Secondary Enforcement

A primary enforcement seat belt law allows police officers to stop and cite a driver for not wearing a safety belt; the officer needs no other reason for stopping the driver. With a secondary enforcement law, an officer may cite a driver for not wearing a safety belt only after stopping him or her for some other violation, such as speeding, running a stop sign, or passing illegally.

Older Adult Drivers

The Problem

In 1999, more than 7,000 Americans 65 and older died and another 246,000 suffered nonfatal injuries in motor vehicle crashes.

- Drivers 65 and older have higher crash death rates per mile driven than all but teen drivers.
- Rates for motor vehicle–related injury are twice as high for older men as for older women.
- Motor vehicle–related deaths and injuries among older adults are rising. During 1990–1997, the number of deaths rose 14% and the number of nonfatal injuries climbed 19%.
- The over-65 age group is the fastest growing segment of the population. It is estimated that more than 40 million older adults will be licensed drivers by 2020.

CDC's Accomplishments

Why older adults stop driving

Scientists at CDC's Injury Center worked with the University of California, San Diego, to survey older drivers living in community settings to find out why they stop driving. Medical conditions and poor vision were the most common reasons for stopping. This research provides useful insight into why older drivers decide that they are no longer fit to drive, which can help inform development of programs to reduce motor vehicle–related injuries among this population.

Older drivers less likely than younger drivers to kill others in a crash
Injury Center researchers analyzed fatality data to determine whether older drivers were more likely than younger drivers to be involved in crashes that killed someone else. They found that, in fact, older drivers were involved in fewer of these crashes than were drivers 16 to 34 years old. This study helps dispel the myth that older drivers present a threat to others on the road.

Drivers 65 and older have higher crash death rates per mile driven than all but teen drivers.

An agenda for transportation safety for older Americans
CDC scientists recently helped update the 1988 Transportation Research Board's report *Transportation in an Aging Society*. They joined a diverse group of experts at a conference to develop a national agenda and strategic plan for transportation safety and mobility for older Americans over the next 25 years. The agenda and plan, expected to be completed in 2001, will address such issues as making roads, cars, pedestrian facilities, and transportation services easier for older adults to use; and assessing and regulating drivers.

Future Steps

Basic questions remain unanswered in this field. CDC must work with a variety of partners—for example, clinicians, advocacy groups, transportation experts, and older drivers themselves—to determine under what conditions older adults choose to stop driving and under what conditions they should stop driving.

Issues to consider include:

- What medical conditions, if any, increase the risk of a crash;
- How much older adults drive and what their transportation needs are;
- Why older adults decide to stop driving;
- Whether they stop driving at the appropriate time and for the right reasons;
- Whether screening tests can successfully identify high-risk older drivers;
- How to practically measure older adults' functional ability to drive;
- Alternatives to driving that would be both practical and acceptable to older adults.



Adults ages 70 and older wear safety belts more often than any age group except young children.

This information will enable policy makers and public health practitioners to make informed decisions and develop effective strategies to reduce the number of injuries and deaths among this age group.