# INJURY FREE Oklahoma

Strategic Plan for Injury and Violence Prevention

IPS

Injury Prevention Service

Oklahoma State Department of Health

Inside cover

Strategic Plan for Injury and Violence Prevention

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# Foreword

Injuries are the leading killer of Oklahoma's children and young adults from 1-44 years of age. After the first year of life, more children die from injuries than all other causes of death combined. Overall, injuries are the third leading cause of death in Oklahoma, following heart disease and cancer, accounting for more than 2,000 deaths each year. Injuries result in more than 55,000 hospitalizations and an estimated 791,907 emergency department visits. The costs of hospitalization, lost work and productivity, lives lost, and disabilities due to injuries total $2.6 billion annually. Oklahoma's death rates due to traffic injuries, drownings, fire/burns, and suicide are higher than national rates.

Great strides have been made in the past 10 years. For example, seat belt use increased from 45 percent in 1994 to 77 percent in 2003. Child restraint use increased from 42 percent in 1994 to 76 percent in 2003. Reported bicycle helmet use among children increased from 4 percent in 1989 to 28 percent in 2002. Smoke alarm prevalence increased from 71 percent in 1989 to 91 percent in 2001. However, there is still much work to be done.

To address preventing injuries, disability, and premature death during the first decade of the 21st century, 16 objectives were developed and divided into eight priority areas with the aim of improving the health of Oklahomans. Work groups of knowledgeable, interested people were organized for each of the priority areas. Each work group was responsible to: 1) research the magnitude of the problem in the U.S. and Oklahoma; 2) determine proven or promising evidence-based prevention strategies; and 3) recommend prevention strategies and an implementation plan. Injury Prevention Service personnel assisted the work groups and drafted each section based on the findings of the groups. The resulting document, Injury-Free Oklahoma, will serve as a resource and guide for injury prevention efforts in Oklahoma.

By working together with community coalitions, public health educators, physicians, nurses, and other medical professionals, we hope to reduce the burden of injury and violence in Oklahoma.

Sue Mallonee, R.N., M.P.H., Chief
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# Infrastructure

Over the last century, life expectancy in the United States has nearly doubled from 45 years of age in 1900 to 76 years of age today.[1] Improvements in sanitation, immunizations, and infectious disease screening have contributed to this increased life expectancy. In spite of the many advancements, injuries continue to be a major public health problem, both in the United States and in Oklahoma.

Injuries are the leading killer of Oklahoma's children and young adults from 1-44 years of age. From 1997-2001, injuries accounted for 55% of ***all*** deaths to children 1-14 years of age, and 81% of ***all*** deaths among adolescents 15-19 years of age. After the first year of life, more children died from injuries than all other causes of death combined. Overall, injuries are the third leading cause of death in Oklahoma, following heart disease and cancer, accounting for more than 2,000 deaths each year. Injuries result in more than 55,000 hospitalizations and an estimated 791,907 emergency department visits. The costs of hospitalization, lost work and productivity, lives lost, and disabilities due to injuries total $2.6 billion annually. Oklahoma's death rates due to traffic injuries, drownings, fire/burns, and suicide are higher than national rates.

*Many people think injuries are unavoidable chance happenings.* In reality, injuries, like diseases, occur in highly predictable patterns. While the circumstances leading to an injury, such as a motor vehicle crash, may not be avoidable, the injuries sustained in that crash can often be prevented or lessened by using seat belts or car seats.

Like other public health problems, injury is a problem that can be diminished considerably if adequate attention and support are directed to it. Epidemiologists and health professionals have successfully applied a public health model to the eradication or amelioration of a variety of plagues. C. Everett Koop, during his tenure as U.S. Surgeon General, identified injury, particularly childhood injury, as "the last great plague of the 20th Century."

To address the many causes of injury in a systematic way, a strong program infrastructure is needed. A state injury prevention program with a solid infrastructure and core funding provides focus and direction.[2] Additionally, injury prevention is a diverse, multi-disciplinary field, affecting all walks of life, many different professions, and almost any setting in which people live, work, or play. Coordinating these disparate agendas and finding common ground among different individuals and organizations are tasks best accomplished by a strong, stable, and comprehensive program. A solid infrastructure benefits the state by helping to reduce the burden of injury.[2]

## OKLAHOMA INJURY PREVENTION SERVICE

The Injury Prevention Service (IPS) was created in 1987 with a federal grant from the Centers for Disease Control and Prevention (CDC). The Commissioner of Health declared hospitalized and fatal burns, drownings/near

drownings, and spinal cord injuries as reportable conditions for special study, and the IPS began statewide surveillance for these conditions that year. In 1992, the Board of Health officially mandated reporting of these conditions and added mandatory reporting of traumatic brain injuries. Data have been collected on fatal occupational injuries since 1997. Data collection for intimate partner violence-related injuries began July 1, 2000 in the Oklahoma City standard metropolitan area and July 1, 2003 in a sample of hospitals statewide. Data collection for suicides and suicide attempts began July 1, 2001. Additionally, since September 2000, the IPS has had a mandatory statewide trauma registry system.

The Injury Prevention Service utilizes the Public Health Approach (Figure 1) in addressing the injury problem. The Public Health Approach starts with defining the problem through surveillance or data collection, using the data to identify risk factors, then developing and evaluating prevention programs, and finally, implementing the programs in communities. The Injury Prevention Service has established a comprehensive injury prevention program that encompasses the core components of a state injury program, including collecting and analyzing injury data; designing, implementing, and evaluating interventions; providing technical support and training; and affecting public policy. [2]

## YEAR 2010 OBJECTIVES

To strengthen and sustain injury prevention efforts in the state, the following objectives relating to infrastructure were included in Oklahoma's Year 2010 objectives for injury and violence prevention.

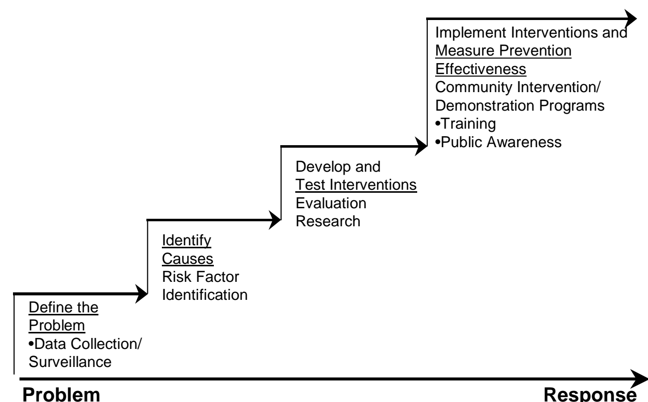
- Increase the use of external cause of injury codes (E codes) on hospital discharge data in Oklahoma to 95 percent.
- Develop and implement a coordinated school health program that includes injury prevention, in elementary, middle, junior high, and senior high schools.
- Increase the proportion of counties that have injury prevention coordinators to 25 SAFE KIDS Coalitions or injury prevention coordinators in county health departments.
- Increase the proportion of county health department clients appropriately counseled about health behaviors, including injury prevention.

### External Cause of Injury Codes (E codes)

Nature of injury codes (N codes) and external cause of injury codes (E codes) are classifications developed by the World Health Organization to use with the International Classification of Disease (ICD) system. N codes describe the nature of an injury and the part of the body injured, but do not explain how the injury occurred. E codes describe how the injury occurred and provide information on the location where the injury occurred. Including E codes in emergency department and hospital inpatient data provides needed information for injury prevention interventions and evaluations.[3]

E codes are mandated for hospital discharge data in Oklahoma, The proportion of E coding for hospital medical records increased

Figure 1. The Public Health Model



from 31% in 1992 to 81% in 2001. Hospital personnel may not be aware of the need for E codes. Unlike N codes, E codes are not linked to the reimbursement process; therefore, E codes may be dropped in abstracting records for transfer to files in favor of the codes for reimbursement.[3] In order to increase the percentage of E coding, the Injury Prevention Service hosted four one-day E code workshops (two in Oklahoma City and two in Tulsa) in 2002. A letter was sent to all medical records directors in the state inviting them to send coders to the workshops. Gerry Berenholz, a national expert on E codes conducted the workshops.

Consistent use of E codes would provide a valuable resource for the study of injury rates and patterns and would allow more thorough aggregation of injury morbidity data as well as comparisons of the data at the local, state, and national levels.[3]

**Coordinated School Health Program**

Coordinated school health education is designed to maintain and improve health, prevent disease, and avoid or reduce health-related risk behaviors in children and young adults. Students are given the tools they need to put ideas into practice and lead happy and healthy lives. School health programs can help children and adolescents attain full educational potential and good health by providing them with the skills, social support, and environmental reinforcement they need to adopt long-term, healthy behaviors. They affect the lives of school children and their families. Coordinated school health programs include an injury prevention component. It is known that children are more easily influenced to adapt and assimilate healthy lifestyle behavior changes than older adolescents and adults.[4] It is reasonable to assume that on-going school-based injury prevention education is more likely to be effective than single-exposure presentations. Teaching safety habits to elementary school-aged children may also have effects that extend to older age groups. Students will have continued exposure and, possibly, sustained behavior if injury prevention lessons are taught each year.[5] The early adoption of health skills holds promise for prevention of injuries and deaths, and for significant long and short-term benefits of quality of life and cost savings.

**Local Injury Prevention Coordinators**

In large measure, prevention is a local effort. Therefore, local capacity to develop, implement, and evaluate prevention interventions must be supported.[6] In some county health departments, heath educators and public health nurses conduct injury prevention activities such as distributing car seats, bicycle helmets, and smoke alarms or providing injury prevention information at health fairs. However, these staff have many other responsibilities, as well.

A potential opportunity for expansion of injury prevention efforts at the local level is *Turning Point*, a program designed to build broad community support and participation in public health priority setting and action. Turning Point provides an important vehicle for developing interest in and capacity for injury prevention at the local level.

Since injury prevention is still a relatively new field, training is one way to enlarge the pool of skilled, competent staff, build capacity for injury prevention, and draw talented professionals to the field of injury prevention.[2] Training should be provided to county health department and tribal staff as well as local professionals and individuals such as emergency medical service providers, firefighters, law enforcement officials, physicians, nurses, school and child care personnel, and the business community.

## Injury Prevention Counseling

Physicians and other health care providers (such as county health department physicians and nurses) are important sources of health information.[7] Injury prevention counseling is associated with reported preventive safety practices among children in the United States, however only a small proportion of households with young children report receiving such counseling.[8] County health departments are likely to have several contacts during the year with families who have children, and consequently, will have several opportunities to provide age-appropriate injury prevention counseling. Providing prevention information regarding car seats, seat belts, burns, drowning, falls, poisoning, and bicycle helmets to family members could possibly reduce the number of injuries and deaths.

## IMPLEMENTATION PLAN

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 1. Increase the use of external cause of injury codes (E codes) on hospital discharge data in Oklahoma to 95%. | 1a. Assist Health Care Information in enforcing the rule requiring E codes.<br>1b. Provide feedback to hospitals regarding E code rates by 2004 and yearly thereafter. |
| 2. Develop and implement a coordinated school health program that includes injury prevention and life skills training, in elementary, middle, junior high, and senior high schools. | 2a. Partner with Department of Education, to develop program components by 2005.<br>2b. Work with communities with existing coordinated school health programs to ensure that life skills training is a component of the programs by 2005.<br>2c. Implement and evaluate programs in pilot communities by 2007. |
| 3. Increase the proportion of counties that have injury prevention coordinators to 25 SAFE KIDS Coalitions or injury prevention coordinators in county health departments. | 3a. Secure funding for regional health educators in county health departments to conduct injury prevention activities by 2007.<br>3b. To increase interest in injury prevention and expand the number of staff conducting activities in local communities:<br>• Develop an injury prevention guide for county health department staff by 2004.<br>• Provide technical assistance to Turning Point coalitions in developing and implementing injury prevention programs by 2004.<br>• Partner with the Indian Health Service to conduct injury prevention training workshops for county health department and tribal staff beginning in 2003 and yearly thereafter.<br>• Develop and conduct one-day injury prevention workshops for county health departments and local agencies/organizations beginning in 2004 and yearly thereafter.<br>• Partner with the State and Territorial Injury Prevention Directors' Association and National Association of Injury Control Research Centers to provide training opportunities through the National Injury and Violence Prevention Training Initiative to Oklahomans conducting injury prevention activities by 2006. |

| RECOMMENDATION | IMPLEMENTATION PLAN |
| --- | --- |
| 4. Increase the proportion of county health department clients appropriately counseled about health behaviors, including injury prevention. | 4a. Train available CHD staff (e.g., health educators, child development specialists, etc.) to provide education to clients and the public regarding injury prevention by 2005.<br><br>4b. See 3b above. |

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## MAGNITUDE OF THE PROBLEM

### National

Fire and burn injuries were the sixth leading cause of unintentional injury death in the United States from 1996 to 1998, accounting for more than 3,500 deaths per year.[1-2] This rate is down from the early 1990's, when fire and burn injuries accounted for over 4,000 deaths each year and ranked as the fifth leading cause of unintentional injury death in the United States. [2]

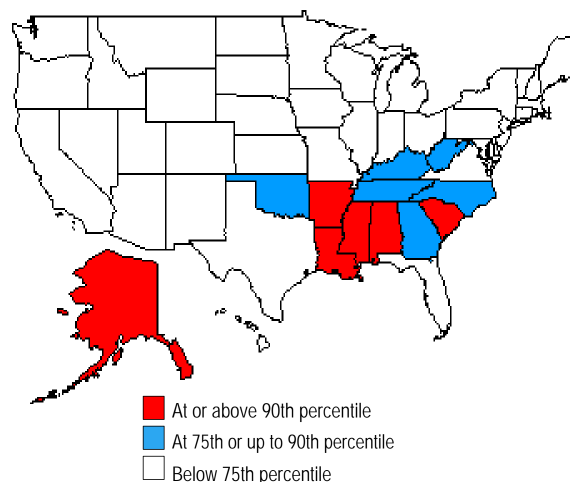
Data collected on fire and burn injuries have shown that they follow certain risk patterns. Children under the age of 5 are at high risk for fire and burn injuries, because their development is incomplete, and therefore, they may not have the capacity to judge dangerous situations. [3-5] Persons aged 65 and older are also at higher risk for fire and burn injuries, because they are more susceptible to smoke inhalation and burns, and are less likely to recover from their injuries. Mobility and sensory impairments also add to an increase in risk for fire and burn injuries among older persons.[3, 5]

In 2000, residential house fires accounted for more than 79% of all fire deaths in the United States.[5-6] Approximately 379,500 residential fires killed about 3,420 people and injured another 17,400 people in the United States in 2000, [6] resulting in someone killed or injured by a house fire every 27 minutes.[5] House fires result in approximately $5 billion of property damage each year.[5-6] For every $1 spent on smoke alarms, $69 can be saved on fire-related costs.[5]

Residential house fire and burn injury death rates are highest in southern portions of the United States and Alaska. These areas have rates that are almost two times higher than the U.S. rates (Figure 1). [1,6]

African Americans and Native Americans are at higher risk for fire-related deaths than any other race or ethnicity. These disparities may be due to lower education levels, higher poverty levels, living in rural settings and higher percentages of persons living in manufactured housing.[5]

Figure 1. Residential Fire and Burn Injury Rates by State



## Oklahoma

In Oklahoma, 6,373 persons were hospitalized in a burn center or died from a burn injury or smoke inhalation from 1988 to 2000. Twenty percent of those injuries were from house fires (1266/6373); 67% were fatal. Children under 5 and seniors 65 and older had the highest annual injury rates (Table 1). More than eight out of every ten Oklahomans over the age of 65 who were injured in a residential fire died from their injuries.

Among persons of all ages, 62% of injuries occurred among males. African Americans had an annual burn injury rate (6.0 per 100,000) that was twice the rate of whites and Native Americans (2.7 and 2.3 per 100,000, respectively). Nine percent of house fire injuries occurred in someone else's home (103/1266).

Residential house fire fatalities have dropped 25% from 1988 to 2000 (Figure 2). The number of deaths was highest in 1988 (83) and decreased to 62 deaths in 2000.

Among survivors, hospital stays ranged from 1 to 235 days. The average length of stay in a burn center was 19 days.

Of those admitted to a burn center, 26% (142/555) had less than a 10% total body surface area (TBSA) burn. Table 2 shows the relationship of severity of burn and outcome. Death among persons with TBSA burns on 80 to 100% of their body is 2.8 times higher than for persons with TBSA burns on less than 10% of their body.

Among persons over the age of 14, alcohol and drugs were associated with 349 cases (37%). Alcohol was used in 34% (317/946) of cases, with 71% having a blood alcohol level of 0.08 or higher; drugs were used in 8% (71/946) of cases. Thirty-nine cases were positive for both drugs and alcohol. Five percent of injuries were known to be intentional (67/1266).

Figure 2. Number of Residential Fire-Related Injuries by Year and Outcome, Oklahoma, 1988-2000

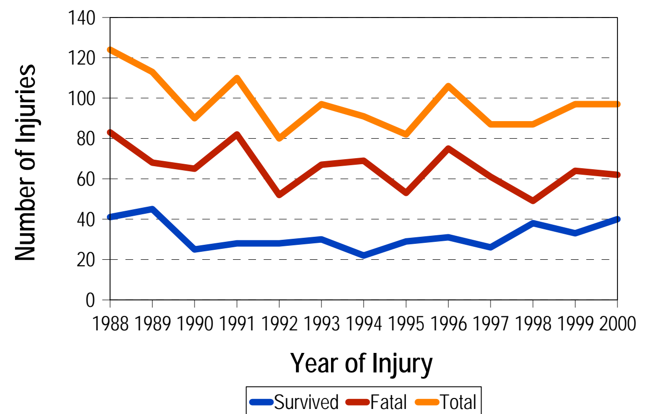



*Table 1. Residential Fire-Related Injuries by Age Group, Outcome and Annual Rate, Oklahoma, 1988-2000*

| Age Group | Number of Injured Persons | Percent of Injured Persons | Annual Rate per 100,000 | Number of Fatal Injuries | Case Fatality Rate |
|---|---|---|---|---|---|
| 0-4 | 208 | 16% | 7 | 156 | 75 |
| 5-14 | 111 | 9% | 2 | 73 | 66 |
| 15-24 | 117 | 9% | 2 | 64 | 55 |
| 25-34 | 161 | 13% | 3 | 80 | 50 |
| 35-44 | 184 | 15% | 3 | 120 | 65 |
| 45-54 | 141 | 11% | 3 | 85 | 60 |
| 54-64 | 101 | 8% | 3 | 69 | 68 |
| 65+ | 238 | 19% | 8 | 201 | 84 |
| Total | 1261 | 100% | 3 | 848 | 67 |

## YEAR 2010 OBJECTIVES

1. **Reduce residential fire deaths to 0.8 deaths per 100,000 population.**
   **Baseline**: 1.4 deaths per 100,000 population were caused by residential fires in 1998 (crude rate)
   **Target setting**: 42 percent reduction
   **Data source**: OSDH Vital Statistics data, 1998 (includes E codes 890, 891, 895, 896)

2. **Increase functioning residential smoke alarms to 100 percent.**
   **Baseline**: 95 percent
   **Target setting**: Total coverage
   **Data source**: Behavioral Risk Factor Surveillance System, Oklahoma State Department of Health, 2000

## PREVENTION STRATEGIES

***Smoke Alarms***: Between 1978 and 1982, residential fire-related deaths decreased much faster than the decline in residential house fires in the United States; this reduction has been at least partially attributed to the increased use of smoke alarms.[7] Smoke alarms have been proven to be an effective, inexpensive means of preventing house fire injury, although battery replacement and maintenance is essential. Smoke alarms have been shown to reduce the potential of death in 86% of fires and the potential of severe injuries in 88% of fires[8] and are consistently shown to reduce death during a house fire by about 50%.[5] Oklahoma has legislation requiring tenant-maintained smoke alarms in all multi-family dwellings with more than 4 units, as well as legislation requiring smoke alarms in all newly constructed residential dwellings or remodeled homes that require a building permit. Some cities (i.e., Ardmore) have passed ordinances that also require smoke alarms in all one- and two-family dwellings. Smoke alarm giveaway programs, intended to increase the number of functioning smoke alarms within the community, have also proven effective.[9-13] After enacting a citywide smoke alarm ordinance and implementing a smoke alarm giveaway program, the prevalence of smoke alarms in one- and two-family dwellings in Ardmore increased from 45% to 60%.

***Sprinkler systems:*** Sprinkler systems, especially when used in conjunction with a smoke alarm, have been proven effective in preventing injury and the spread of fire;[14-17] studies have shown that many people who would not be saved by smoke alarms (i.e., quadriplegics) could have been saved by residential sprinklers in conjunction with a smoke alarm.[14] It is estimated that sprinklers alone could reduce residential fire deaths by 69% and the combination of smoke alarms and sprinklers could reduce residential fire deaths by 82%.[15] In a 10-year study of automatic sprinkler systems in Scottsdale,

*Table 2. Number of Residential Fire-Related Injuries by Percent TBSA* Burned and Outcome, Oklahoma, 1988-2000*

| Percent of TBSA Burned | Survived | Fatal | Total Injuries (%) | Case Fatality Rate |
|---|---|---|---|---|
| 1-9 | 129 | 11 | 140 (25%) | 8 |
| 10-19 | 103 | 5 | 108 (20%) | 5 |
| 20-39 | 87 | 21 | 108 (20%) | 19 |
| 40-59 | 30 | 24 | 54 (10%) | 44 |
| 60-79 | 11 | 33 | 45 (8%) | 73 |
| 80-100 | 2 | 31 | 33 (6%) | 94 |
| SI or Unknown % | 49 | 14 | 64 (11%) | 22 |
| **Total** | **411** | **139** | **552 (100%)** | **25** |

*Total Body Surface Area

Arizona, an 89% decrease in property loss was shown in homes where an automatic sprinkler system was installed compared to those without a home sprinkler system ($1,945 and $17,067, respectively).[16] Currently, less than one percent of one and two-family dwellings and less than 10% of multi-family units have residential sprinklers.[18] Legislation that requires sprinkler systems in all new housing, as well as in older, high risk, multi-family housing units has been suggested and appears promising.[17-19]

***Fire and burn safety education:*** Fire safety education, normally targeted at older persons, preschool or school-age children, as well as the general public appears to be a promising method of preventing fire and burn injuries. Specific messages appear to be more effective than general or multiple messages.[18] Media campaigns should include: 1) information regarding potential fire and burn dangers; 2) recognizing and eliminating environmental hazards in older, high-risk buildings; 3) proper use of flammable items; 4) available burn prevention technologies (i.e., flame resistant clothing); 5) the benefits of smoke alarm and sprinkler systems; and 6) what to do in the event of a house fire. Families with children should discuss calling 911 in the event of an emergency. "Exit Drills In The Home" (E.D.I.T.H.) needs to be included in fire and burn safety education, including planning and practicing two ways out of every room as well as a family meeting point outside the home. Education also needs to include never re-entering a burning home. "Stop, Drop, and Roll" and other burn prevention messages (i.e., "Crawl Low Under Smoke") may also be useful in preventing fire and burn injuries.

The *Oklahoma Elementary School Injury Prevention Education: The Subject-Integrated Safety Curriculum for Teacher* is a comprehensive, grade-specific 25-lesson injury prevention curriculum for children in grades K-5, that includes lessons such as bicycle safety, motor vehicle safety, water safety, burn prevention, and first aid. Evaluation results of the case control study showed a significant increase in seat belt use (15%) and bicycle helmet use (10%) in the program schools compared to no increase in the control schools.[20]

Another educational tool that is available is *Risk Watch*. This is a curriculum developed by the National Fire Protection Association, it is a grade-specific curriculum designed to teach students about injury prevention. A three-year evaluation of the curriculum was completed in 2001, which shows that *Risk Watch* is an effective way to increase preschool through eighth grade students' knowledge on safety issues.[21]

***Flammability standards:*** One method of preventing the ignition of clothing and other materials involves regulation of flammable fabrics. Such passive interventions to prevent fire and burn injuries require minimal action on the part of the user and can be very effective. Flammability standards, such as the Children's Sleepwear Standard and the 1973 Mattress Flammability Standard, requiring manufacturers to produce a fire-safe material, are examples of passive intervention that have proven effective in reducing injury risk among children.[19] After the 1971 standards were adopted, the average number of clothing-related injury burn deaths for children under 14 years of age went from 60 deaths per year to 4.[22] However, in 1997 and again in 1999, the Consumer Products Safety Commission (CPSC) voted to relax the flammability standards among children's clothing. The current relaxed standard excludes children under the age of 9 months from the sleepwear flammability standard and allows non-flame resistant sleepwear for children to be sold if it is tight-fitting. The four Shriners Burn Hospitals in the United States

compared sleepwear-related burn injuries in children during 1995 and 1996 to 1998 and 1999 and found a 157% increase in the number of sleepwear-related burn injuries in children since the CPSC relaxed the standards for sleepwear. When looking at children aged 0 to 9 months, the increase was 167%. [22] Information needs to be distributed to the parents and caregivers of Oklahoma's children on the best way to protect their children under the new relaxed standards. Sleepwear for children must fit the child's current size and not allow growth room because this allows air to get in between the clothing and the child's skin and increase the chance of a burn from fire.

***Building Codes:*** A number of studies found that children from low-income families have significantly higher rates of injury resulting from house fires.[23-25] A study by Istre, et al. shows that injuries rates are eight times higher for persons in the lowest median income tract (below $20,000 per year) than persons in the highest median income tract (above $80,000 per year). [24] The higher prevalence of environmental hazards, such as faulty heating and electrical systems, appears to be a contributing factor. Improper or faulty electrical and heating equipment have been shown to be nine times more common in low-rental census tracts than in high-rental census tracts. [26] Most cities have ordinances, based on model building codes that establish standards for both new and existing dwellings. Inspection and enforcement of existing building codes can be effective in eliminating fire hazards often present in these older, high-risk dwellings. Local fire departments may also assist in onsite inspections of buildings within city or county limits.

***Fire-safe cigarettes:*** One of the most common ignition sources of house fires is a cigarette dropped on a flammable source such as furniture or bedding. Nationally, cigarettes are the single leading cause of residential fire deaths by a wide margin.[27-29] A fire-safe cigarette is a cigarette less likely to burn or smolder and result in fire. In 1984, the Cigarette Safety Act established a study group, which showed that a fire-safe cigarette was possible. In 1990, the United States Congress, to further research fire-safe cigarettes, established another technical study; a final report to Congress was made available in late 1993. The report concluded there are fire-safe cigarettes on the market. In 2000, New York State passed the first law in the country requiring that only fire-safe cigarettes be sold in the state. The law calls for cigarettes that self-extinguish to be sold statewide by 2003.[30]

## RECOMMENDED STRATEGIES FOR THE PREVENTION OF RESIDENTIAL FIRE INJURIES

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 1. Continue statewide surveillance of burn injuries. | 1a. Provide state funding to continue surveillance of fire and burn injuries by 2005. |
| 2. Increase the number of functioning smoke alarms in single and multi-family dwellings. | 2a. Make smoke alarms available in all county health departments for persons in need by 2006. |
| | 2b. Utilize existing state health department programs that make home visits to check smoke alarm status for high-risk groups they serve by 2005. |
| | 2c. Educate Oklahoma emergency medical personnel (EMSA, REACT, etc.) on the importance of checking smoke alarm status while they are in the home and reporting findings on run reports by 2005. |
| | 2d. Disseminate reminders to smoke alarm program participants to remind them to test their smoke alarms by 2006. |
| | 2e. Increase awareness among Oklahoma property owners of multi-family dwellings regarding their responsibility to provide working smoke alarms in their rental properties and advise of monetary penalties by 2006. |
| | 2f. Screen clinic patients for smoke alarm status in all county health department programs by 2005. |
| | 2g. Increase collaboration with local fire departments and Turning Point coalitions to develop and implement smoke alarm programs by 2005. |
| 3. Increase the number of sprinkler systems in family dwellings. | 3a. Implement a statewide educational campaign targeting homebuilders regarding the efficacy of sprinkler use in all newly constructed family dwellings by 2005. |

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 3. Increase the number of sprinkler systems in family dwellings. (continued) | 3b. Educate legislators on the benefits of residential sprinkler systems in new or remodeled single or multi-family dwellings by 2005. |
| 4. Expand and implement residential fire and burn prevention and safety education programs. | 4a. Evaluate existing fire and burn prevention and safety educational programs; develop and support prevention and educational programs proven to be most effective by 2006. |
| | 4b. Implement statewide multi-media campaigns targeting high-risk fire and burn injury behaviors such as cigarette smoking, use of alcohol, improper use of gasoline, and failure to maintain smoke alarms by 2005. |
| | 4c. Educate state legislators on the benefits of fire prevention materials such as flammability standards for clothing and furniture by 2006. |
| | 4d. Utilize existing targeted groups such as American Association of Retired Persons and Area Wide Aging Agency to further educate high risk Oklahomans about fire and life safety by 2005. |
| | 4e. Implement a statewide educational campaign targeting seniors and their family members, which outlines clothing-related fire and burn risk factors (i.e., cooking and smoking) by 2006. |
| | 4f. Train available county health department staff to provide education to clients and the public regarding fire education and life safety by 2005. |

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# Traffic

## BACKGROUND

**National Data.** Motor vehicle travel is the primary means of transportation in the United States. Although there have been sharp declines in motor vehicle-related deaths since 1925,[1] traffic crashes remain a leading cause of injury death in the U.S. resulting in more than 40,000 deaths each year, an estimated 500,000 hospitalizations, and 4 million emergency department visits.[2] It is estimated that an American is injured in a traffic crash every 14 seconds, and every 13 minutes someone is killed.[3] The economic cost of motor vehicle crashes in 2000 totaled $230.6 billion.[4]

Traffic crashes are the leading cause of death for persons 1-34 years of age. Certain age groups are at higher risk for dying in a motor vehicle crash, including children, teenagers, and older adults.[5] Although child deaths in crashes have declined since 1975, motor vehicle crashes still cause about 1 of every 3 injury deaths among children.[5] Among children 4-12 years old, crash injuries are the leading cause of death.[6] Among children 0-14 years of age, Native American children have the highest death rates (3.42 per 100,000 compared to 1.83 and 1.58 for African Americans and whites, respectively).[5] The risk of motor vehicle crash (MVC) is higher among 16-19 year olds than among any other age group. Per mile driven, teen drivers 16-19 are 4 times more likely than older drivers to crash. In 2001, teens represented 10% of the US population, but accounted for 15% of MVC deaths.[7] Crash rates are high largely because of young drivers' immaturity combined with driving inexperience. The immaturity is apparent in young drivers' risky driving practices like speeding and tailgating. At the same time, teenagers' lack of experience behind the wheel makes it difficult for them to recognize and respond to hazards. Crashes involving young drivers typically are single-vehicle crashes, primarily run-off-the-road crashes, that involve driver error and/or speeding. They often occur when other young people are in the vehicle with the young driver, so teenagers are disproportionately involved in crashes as passengers as well as drivers.[8] Older persons have higher rates of fatal crashes than all but the youngest drivers, especially per mile driven.[8] This is largely due to their increased susceptibility to injury, particularly chest injuries and medical complications. Since 1975, deaths of older passenger vehicle occupants has increased by nearly 60%.[9]

**Oklahoma Data**. From 1999-2000, injuries were the 3rd leading cause of death and the leading cause of years of potential life lost before age 75 (YPLL-75) in Oklahoma;[5] traffic injuries accounted for 11% of all YPLL-75 and 29% of injury deaths. Oklahoma ranks 10th in motor vehicle fatality death rates per 100,000 licensed drivers and 16th in fatalities per 100,000 population.[9] According to Oklahoma Vital Statistics data, from 1992 to 2001, 6,833 residents were killed in traffic-related events. Of those deaths, 3,707 (54%) were motor vehicle occupants, 568 (8%) pedestrians, 229 (3%) motorcyclists, and 41

(1%) bicyclists. There were 2,283 deaths that were unspecified; it is likely those deaths were occupant deaths. The Oklahoma motor vehicle fatality rate was 32% higher than the U.S. rate (11.7 and 8.8 per 100,000 population, respectively).[5] In Oklahoma, traffic death rates among rural populations were 74% higher than death rates for urban populations (27.7 and 15.9, respectively). Sixty-four percent of persons who died in traffic crashes were not using a seat belt. From 1992 to 2001, 157 children 0-9 years of age died as a result of a motor vehicle crash; 91 deaths were among children 0-4 years of age.

The traffic fatality rate for males was almost twice that for females (27.5 and 14.2 per 100,000 population, respectively). Fatality rates were highest among teenagers, young adults, and males 75 years of age and older (Figure 1). Thirty-eight percent of persons older than 14 years of age and tested for blood alcohol concentration (BAC) had a positive BAC. More than half of persons 25-44 years of age had a positive BAC (Figure 2). Additionally, more than half of Native Americans had a positive BAC (59%) compared to 39% for African Americans and 36% for whites.

Severe nonfatal neurologic injuries may result in lifetime disability and costly injuries; a total of 10,336 persons suffered a traumatic brain injury (TBI) in a traffic crash from 1992-2001, including 100 children. Only 29% of persons with TBI were known to be using a seat belt or car seat. During 1994, acute care hospitalization charges for persons with TBI in Oklahoma were estimated at $37.7 million (unpublished data).

From 1988-2001, 974 individuals in Oklahoma were hospitalized for a traumatic spinal cord injury (SCI) resulting from a traffic event. The gender-specific rate of traffic-related SCI among males was over twice that for females (3.1 and 1.5, respectively). Eighty-five percent of traffic-related SCI were among vehicle occupants. Of those, the majority were occupants of cars (63%), followed by pickups (25%), vans (4%), sports-utility vehicles (3%), and other or unknown vehicles (6%). Among persons who suffered an MVC-related SCI in which they

Figure 1. Rate of Traffic Deaths by Age Group and Gender, Oklahoma, 1992-2001

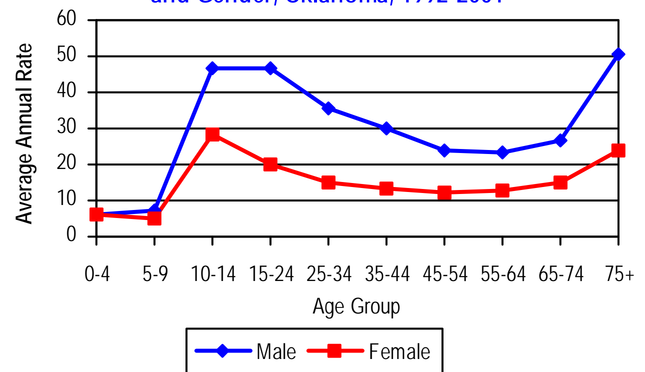
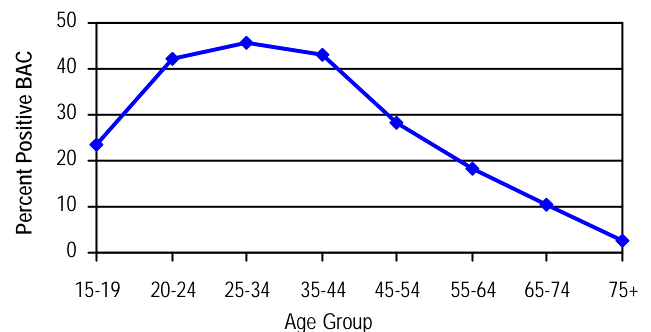



Figure 2. Traffic Deaths by Age Group and Percent Positive BAC, Oklahoma, 1992-2001




were motor vehicle occupants, only 28% were wearing a seat belt at the time of the crash.

**Legislation.** During the past decade, laws were passed in Oklahoma with a potential to impact traffic injuries and deaths.

- ✓ *Zero Tolerance.* No measurable alcohol for drivers under age 21, 47 O.S. § 11-906.4. Enacted in 1996 with passage of SB 1230, effective November 1, 1996.

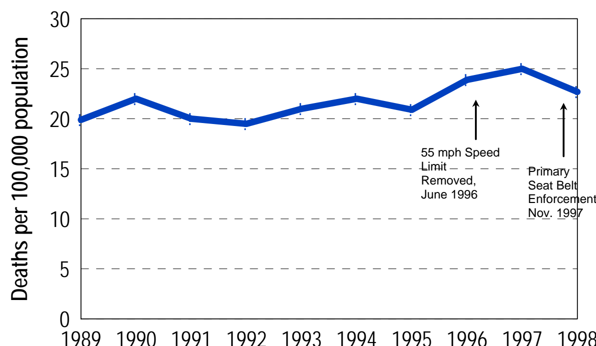
- ✓ *Lowering of blood alcohol content necessary to convict for DUI to .08*, 47 O.S. § 11-902. Enacted in 2001 with passage of SB 437, effective July 1, 2001.
- ✓ *Removal of the 55 mile per hour (mph) speed limit*, 47 O.S. § 11-801. Enacted in 1996 with passage of SB 685, effective June 12, 1996.
- ✓ *Primary enforcement of seat belt law* (can only ticket for adult front seat occupants not wearing seatbelts), 47 O.S. § 12-417. Enacted in 1997 with passage of HB 1443, effective November 1, 1997.
- ✓ *Child passenger restraint law,* 47 O.S. § 11-1112. Originally enacted in 1983 with passage of HB 1005, effective November 1, 1983. Modified to apply to children under 60 lbs. by SB 465, effective July 1, 1995. Modified to apply to children "At least 4 but younger than 13 years of age" by SB 891, effective November 1, 2000.

The impact of legislation over the past decade has not been empirically analyzed, however, removal of the 55 mph speed limit, may correlate to an increase in traffic deaths, while primary enforcement of the seat belt law may correlate with a decrease in traffic deaths (Figure 3).

## HEALTHY OKLAHOMANS YEAR 2010 OBJECTIVES FOR TRAFFIC SAFETY

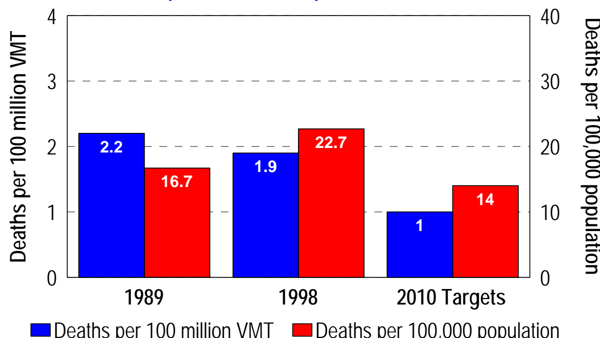
To guide prevention efforts over the next 10 years, the following objectives were modeled after National Healthy People 2010 objectives to be the framework for the Injury Free Oklahoma: Strategic Plan for Injury and Violence Prevention for reducing traffic deaths and injuries. Baseline data was identified for each objective and target setting was modeled after National Healthy People 2010. Developmental objectives indicate areas do not have baseline data and need to be placed on the agenda for data collection. They address subjects of sufficient importance that investments should be made over the next decade to measure their change.

Figure 3. Traffic Deaths and Legislation, Oklahoma, 1989-1998*




*Oklahoma Vital Statistics, 1989-1998.
Includes E codes 810-819, 958.5, 968.5, and 988.5.

Figure 4. Historical and 2010 Targets Traffic Deaths per 100 million VMT* and Deaths per 100,000 Population**, Oklahoma




*Oklahoma Crash Facts 1998, Office of Highway Safety.
**Oklahoma Vital Statistics, 1998.

1. **Reduce deaths and injuries caused by motor vehicle crashes (MVC) (Figure 4).**

**1a. Deaths per 100,000 population**

**1998 Baseline:** 22.7* **2010 Target:** 14.0

**1b. Deaths per 100 million vehicle miles traveled**

**1998 Baseline:** 1.9* **2010 Target:** 1.0
**Crude rate*

**Data sources:** OSDH Vital Statistics data, 1998 (includes E codes 810.0-819.9, 958.5, 968.5, 988.5) for deaths per 100,000 population; *Oklahoma Crash Facts*, Oklahoma Department of Public Safety, 1998, for deaths per 100 million vehicle miles traveled.

**1c. Reduce nonfatal injuries caused by motor vehicle crashes to 1,189 nonfatal injuries per 100,000 population.**

**Baseline:** 1,505 nonfatal injuries per 100,000 were caused by motor vehicle crashes in 1998 (crude rate)
**Target setting:** 21% reduction
**Data source:** Oklahoma Crash Facts, Department of Public Safety, 1998

**1d. Reduce deaths and injuries caused by alcohol- and drug-related motor vehicle crashes.**
Alcohol/drug MVC deaths per 100,000 population
**Baseline:** 5.1* **2010 Target:** 4.0
Alcohol/drug MVC injuries per 100,000 population
**Baseline:** 143.0* **2010 Target:** 65.0
**Crude rate*
**Data source:** Oklahoma Crash Facts, Department of Public Safety, 1998

**1e. Reduce the proportion of adolescents in grades 9-12 who report they rode during the previous 30 days with a driver who had been drinking alcohol.**

**Baseline Data:** Developmental objective.
**Possible data source:** OSDH Youth Risk Behavior Survey, 2002

**1f. Increase the use of seat belts to 92% (Figure 5).**

**Baseline:** 70% usage in 2002.
**Target setting:** National objective
**Data source:** Oklahoma Seat Belt Observation Study: Summer 2000, Institute for Public Affairs, University of Oklahoma

**1g. Increase the use of car seats to 100% (Figure 5).**

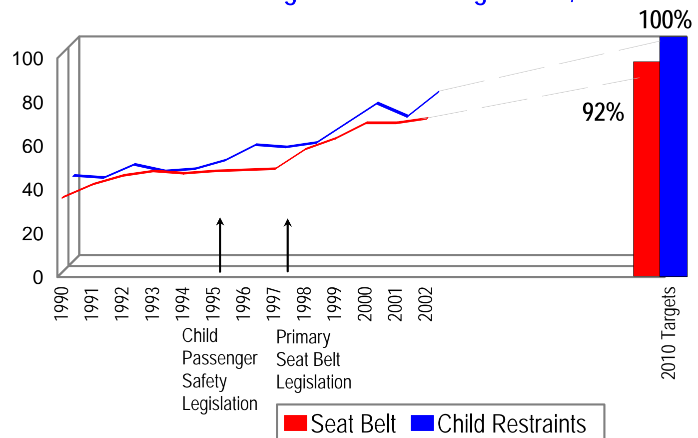
**Baseline:** 77% usage in 2002.
**Target setting:** Total coverage
**Data source:** Oklahoma Seat Belt Observation Study: Summer 2000, Institute for Public Affairs, University of Oklahoma

**2. Reduce nonfatal neurologic injuries.**

**2a. Reduce nonfatal head injuries to 54.2 hospitalizations per 100,000 population.**

**Baseline:** 75.2 hospitalizations for nonfatal head injuries per 100,000 population in 1999 (crude rate)
**Target setting:** 28% reduction
**Data source:** Traumatic Brain Injury Surveillance System, Injury Prevention Service, 1999 (includes ICD-9-CM codes 800.0-801.9, 803.0-804.9; 850.0-854.1; 959.01)

Figure 5. Historial and 2010 Targets
Seat Belt and Child Passenger Restraint Usage Rates, Oklahoma




*Oklahoma Seat Belt Observation Studies and Oklahoma Car Seat Observation Studies (1990-2000).

**2b. Reduce nonfatal spinal cord injuries to 2.0 hospitalizations per 100,000 population.**

**Baseline:** 3.6 hospitalizations for nonfatal spinal cord injuries per 100,000 population in 1999 (crude rate)
**Target setting:** 44% reduction
**Data source:** Traumatic Spinal Cord Injury Surveillance System, Injury Prevention Service, 1999 (generally includes ICD-9 codes 806, 952, but must have a neurologic deficit)

**2c. Increase the use of helmets by bicyclists less than 15 years of age to 50 percent.**

**Baseline:** 19 percent of bicyclists wore helmets in 2000
**Target setting:** 163% increase
**Data source:** Behavioral Risk Factor Surveillance System, Oklahoma State Department of Health, 2000

**3. Reduce pedestrian deaths and injuries.**

**3a. Reduce pedestrian deaths to 0.7 deaths per 100,000 population.**

**Baseline:** 1.4 pedestrian deaths per 100,000 occurred in 1998 (crude rate)
**Target setting:** 50% reduction
**Data source:** OSDH Vital Statistics data, 1998 (includes E codes 810-819 (.7).

**3b. Reduce nonfatal pedestrian injuries to 14.1 nonfatal injuries per 100,000 population.**

**Baseline:** 19.0 nonfatal pedestrian injuries per 100,000 occurred in 1998 (crude rate)
**Target setting:** 26%
**Data source:** Oklahoma Crash Facts, Department of Public Safety, 1998

## PREVENTION STRATEGIES

There are several prevention strategies that have been proven effective through research and evaluation to reduce traffic deaths and injuries. These strategies are briefly described below.

***Seat belt use —*** Seat belts are estimated to reduce the risk of death among front seat car occupants by 45% and the risk of moderate to critical injury by 50%.[10,11] Among occupants of light trucks, seat belts are estimated to reduce fatal injury by 60% and moderate to critical injury by 65%. In addition, the data suggests that seat belts may reduce hospital admissions by 65 percent and hospital charges by 67 percent. Between 1975 and 1999, it is estimated that 123,000 lives were saved by seat belt use.[10,11] To be most effective, seat belts should be worn properly: over the shoulder, across the chest, and low across the hips. Seat belts, when properly worn, have been shown to protect against fetal harm among pregnant women.[12,13] Oklahoma's current law requires seat belts to be worn by the driver and front-seat passengers (see Car Seat Use for information about children). Oklahoma has a primary enforcement law meaning that an officer can stop and cite a driver if the driver or front seat passenger are not buckled. Overall seat belt use in Oklahoma among drivers and front seat passengers increased from 40 percent in 1992 to 70 percent in 2002. Seat belt usage was highest among automobile occupants (76%) compared to pickup occupants (58%).

***Car seat use —*** Motor vehicle injuries are a prominent cause of death and disability for children of all ages. The trauma causing most deaths and disabilities occurs a fraction of a second after a crash, when an unrestrained child strikes the vehicle interior. In addition to injuries in crashes, many children are injured during non-crash incidents such as striking the vehicle interior

during a sudden stop, turn, or swerve and are most common among unrestrained children 1-4 years of age. Research has found that the correct use of car safety seats may reduce fatal injury by 70% among infants less than one year of age, and 47% for toddlers (1-4 years of age) in passenger cars.[14,15] Among infants and toddlers in light trucks, car safety seats are found to reduce fatal injury by 58% for infants and 59% for toddlers.[15] Oklahoma law requires that all children less than 4 years of age be buckled in an approved car seat. Children 4-12 years of age are required to be buckled in a car seat or seat belt regardless of their seating position in a vehicle. Car seat use in Oklahoma increased from 44% in 1992 to 78% in 2002.

*Booster seats* — Once a child outgrows a convertible car seat that fits children 40 pounds and 40 inches (approximately 3 years of age), parents often use a seat belt to restrain the child. However, seat belts are designed for persons 4'9" tall and weighing approximately 80 pounds (approximately 9 years of age). Belt-positioning booster seats lower the risk of injury in crashes by 59% compared to the use of vehicle seat belts.[16]

*Car seat inspection clinics* — Studies have indicated that as many as 4 out of 5 car seats may be installed incorrectly.[17] Children may be severely injured or killed if they are improperly restrained. Common errors include facing the seat the wrong direction, using the wrong car seat for a child's height and weight, not buckling the car seat in tightly enough with the vehicle seat belt, and putting a rear-facing infant seat in front of an air bag. Car seat inspection clinics where trained child passenger safety technicians inspect car seats for correct installation, make necessary corrections, and educate parents and caregiver, are available through several Oklahoma organizations including, the Oklahoma SAFE KIDS Coalition, county health departments, and Emergency Medical Services Authority in Oklahoma City and Tulsa.

*Car seats for children with special needs* — Children with disabilities who are not able to sit in an approved car seat should also be properly secured. There are protective restraints available for children with special needs such as premature or low birth weight infants, small children in hip spica casts, larger children who have full body casts, and children with poor trunk and head control.

*Graduated licensing* - Graduated driver licensing (GDL) systems are designed to phase in beginning drivers to full driving privileges through a three-stage process as they mature and develop their driving skills, instead of the traditional approach in which a young driver gets unrestricted driving privileges after passing a test.[18,19,20] Evaluations of these systems have demonstrated crash reduction impacts of up to 16% among Oregon males,[21] 5-9% in Maryland and California,[19] 9% in Canada[21] and 8% in New Zealand.[22] In North Carolina, the number of fatal crashes among 16 year-old drivers dropped by 57% from 1996-1999, and the number of nonfatal injury crashes dropped by 27%.[23] In Michigan overall crash risk for 16 year-olds was reduced by 25%.[24] Model GDL systems have a minimum age of entry (usually 15 1/2) and require one to two full years to complete a 3-tiered licensing program: learning stage, intermediate stage, and full licensure. Graduated licensing ensures that the initial driving experience is accumulated under lower-risk conditions, usually imposing a nighttime driving restriction and passenger limits for young novice drivers. In a 1994 report to Congress, National Highway Traffic Safety Administration (NHTSA) showed that driver's education alone did not significantly reduce crashes among teenagers.[25] Other subsequent reports indicate that, in fact, it

may even be detrimental.[26] Currently, NHTSA recommends integrated driver's education training, taught progressively, into graduated licensing systems.

***Addressing the needs of mature drivers*** – As people age, their ability to drive a motor vehicle may be compromised by a variety of functional impairments. Because the number of older drivers is increasing, there is a need to develop screening procedures for license renewal and regulatory control that are fair, accurate, and can be administered cost-effectively. The National Highway Traffic Safety Administration has a research project entitled "Model Driver Screening and Evaluation Program."[27] The Model Program has identified tools for evaluation of drivers' functional capabilities.

The Oklahoma Department of Public Safety has a mature drivers program with a Medical Advisory Board. The DPS may place restrictions upon a driver at a physician's request. In Oklahoma, there are no additional tests required for license renewal (including vision tests) beyond the initial drivers license test. Physicians need to be aware of the medical conditions that interfere with driving abilities and be willing to make recommendations for driving restrictions. Primary-care physicians may be reluctant to make such recommendations. Referrals to *geriatric specialists trained in assessing driving abilities and making recommendations for restrictions* are needed. Mature individuals may also need retraining to improve their driving skills after a serious illness. In Oklahoma, there is one rehabilitation facility in the state that can assess driving abilities through road testing, and provide needed retraining when functional abilities for driving are inadequate. Currently, medical insurance does not cover this type of assessment because impaired driving ability is not considered a medical necessity. *Adequate transportation systems for the elderly* may be the most promising strategy to prevent older persons from driving when they are no longer able. The NHTSA, Federal Highways Administration (FHWA), the Federal Transit Administration, the Administration on Aging, and the National Institute on Aging have jointly proposed programs to assess transportation for the elderly. Simple methods proposed to regulate problem older drivers tend to place unnecessary limitations on drivers who do not pose safety problems and the development of appropriate assessment measures based on empirical evidence are needed.[28]

**Preventing Alcohol and Drug Impaired Driving**

***Lowering the legal blood alcohol concentration (BAC) limit*** —Scientific evidence shows that driving skills begin to deteriorate markedly at 0.05 BAC. Lowering the legal BAC limit has proven successful in reducing alcohol-related MVC injuries in many states. Some states that have enacted 0.08 laws have experienced a 5% greater post-law decline in the proportion of alcohol-related fatal crashes than neighboring states without 0.08 laws. Since 2001, Oklahoma's legal BAC limit is 0.08.

***Maintaining minimum legal drinking age laws*** — Minimum legal drinking age laws specify an age below, which the purchase and consumption of alcoholic beverages is not, permitted. In Oklahoma, a person must be 21 years of age to purchase alcohol. Increasing the minimum age for alcohol purchase to 21 has been shown to decrease the number of fatal alcohol-related MVCs among teenagers.

***Zero Tolerance Drinking Laws for Persons Less than 21 Years of Age*** — Laws establishing a lower legal BAC for persons less than 21 years of age are strongly recommended.[29] Oklahoma currently has a "zero tolerance" law, which prohibits drivers

less than 21 years of age from driving with any measurable amount of alcohol (usually above 0.02) in their system. A zero tolerance law allows law enforcement officials to require a breath test from a driver less than 21 years of age if the officer has probable cause to believe the driver has been drinking. If the driver refuses the test or the test reveals any measurable alcohol level, then the driver is subject to sanctions, including loss of his or her driver's license. In 1997 following enactment of the zero tolerance law in Oklahoma, alcohol involvement in crashes among 15-19 year-olds dropped by 16% from 3,173 in 1997 to 2,659 in 2000 (Oklahoma Office of Highway Safety, Oklahoma's 2003 problem identification. 2002 edition.).

***Sobriety Checkpoints*** – Sobriety checkpoints are designed to systematically stop drivers to assess their level of alcohol impairment. The goal is to deter alcohol-impaired driving by increasing the perceived risk of arrest.[29] Sobriety checkpoints have been effective in reducing alcohol-impaired driving, alcohol-related crashes, and associated fatal and nonfatal injuries in a variety of settings and among various populations.[29]

***Server training and designated driver programs —*** Server training programs teach waiters, waitresses, and bartenders how to identify customers who are already intoxicated so they can avoid serving intoxicated customers. High-quality, face-to-face training, when accompanied by strong management support, is effective in reducing the level of intoxication among patrons.[29]

***Identification and referral of impaired drivers through emergency department protocols –*** Alcohol/drug-impaired persons treated for injuries in an emergency department as a result of a motor vehicle crash are identified and referred for substance abuse treatment. A brief screening and intervention protocol is conducted in the emergency department.[30] Many people who drive while intoxicated interact with the health care system through Emergency Medical Services (EMS). The rationale of this intervention is to identify persons with alcohol abuse/dependence problems who may be at further risk for alcohol-related crashes. There is evidence that high-risk patients will be responsive to the intervention.[31,32,33,34,35] However, further research will be needed to determine the effects on drinking and driving.

***Driving while intoxicated tracking systems —***National Highway Traffic Safety Administration and the National Commission Against Drunk Driving has recommended that states develop comprehensive driving while intoxicated (DWI) tracking systems at the case level to improve the documentation of repeat DWI offenders. Inadequate data and tracking systems often allow chronic repeat offenders to circumvent the judicial system, and avoid DWI penalties and sanctions. Additionally, improved DWI tracking systems and data collection will improve the ability to evaluate the effectiveness of DWI countermeasures.[36]

### Preventing Bicycle Injuries Among Youth and Adolescents

***Bicycle helmet campaigns —*** Bicycle helmets have been found to be 85 to 88 percent effective in reducing or preventing brain injuries.[37] If every person wore a helmet while riding, one life would be saved every day, and one brain injury would be prevented every 4 minutes.[38] Organized, community-wide bicycle injury prevention programs focusing on increasing bicycle helmet use have shown promise.[39] Successful helmet interventions have used a broad scope that combines media announcements, bike rodeos, and free or discounted helmets. Additionally, bicycle

| RECOMMENDATION | IMPLEMENTATION PLAN |
| --- | --- |
| 2. Increase the proper use of child passenger restraints for children who are transported in vehicles to 100%. (continued) | 2b. Seek funding to provide free or low-cost car seats and parental education on the proper use of the car seats to families meeting the eligibility criteria for the Women's, Infants, and Children (WIC) program through county health departments by 2005. |
| | 2c. Conduct car seat inspection clinics and provide training to certify child passenger safety (CPS) technicians and trainers in county health departments on an ongoing basis. |
| | 2d. Provide ongoing technical updates for certified child passenger safety technicians on an ongoing basis. |
| 3. Decrease traffic injuries due to impaired drivers. | 3a. Promote enforcement of the current drinking and driving laws and the penalties for DUI on an ongoing basis. |
| | 3b. Partner with the Oklahoma Office of Highway Safety, the Oklahoma Highway Patrol, the Association of Chiefs of Police, the American Automobile Association, and other agencies to conduct an educational campaign through the media and junior and senior high schools on the prevention of driving under the influence of alcohol and drugs by 2005. |
| | 3c. Support the enforcement of DUI/DWI penalties, Oklahoma's ALR (administrative license revocation) law, DRAM shop laws, minimum drinking age laws, and zero tolerance laws on an ongoing basis. |
| | 3d. Prepare a White Paper on the problems with the current state of DUI/DWI enforcement in Oklahoma addressing the DUI/DWI data tracking systems by 2005. |
| | 3e. Conduct an education campaign through the media and senior citizens groups to reduce traffic injuries due to older drivers with medical conditions that impair their ability to drive by 2005. |
| | 3f. Prepare reports from trauma registry data on traffic injuries and the involvement of drug and alcohol impaired driving on an ongoing basis. |

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In April 1999, the Oklahoma Legislature adopted House Joint Resolution 1018 creating the Adolescent Suicide Prevention Task Force. The purpose of the Task Force was to study the problem of youth suicide in Oklahoma and to develop a comprehensive state plan for youth suicide prevention and intervention. The Task Force developed the *Oklahoma Youth Suicide Prevention Plan* and submitted the *Plan* to the Governor and Legislature in October 2000. During the 2001 legislative session, the Oklahoma Legislature passed House Bill 1241 which created the Youth Suicide Prevention Act and the Youth Suicide Prevention Council. The bill directs the Board of Health to establish a system for collecting information concerning suicide attempts among persons of all ages who were hospitalized or treated and released.

Effective July 1, 2001, suicides and hospitalized suicide attempts became a reportable condition in Oklahoma. Data is collected to determine the magnitude of the problem. A report on the findings will be prepared and distributed. Injury surveillance data will provide critical information to assess the need for specific injury prevention policies and programs. This data will also be important for evaluating the effectiveness of intervention programs.

Figure 3. Suicide Death Rates by Race, Oklahoma, 1997-2001

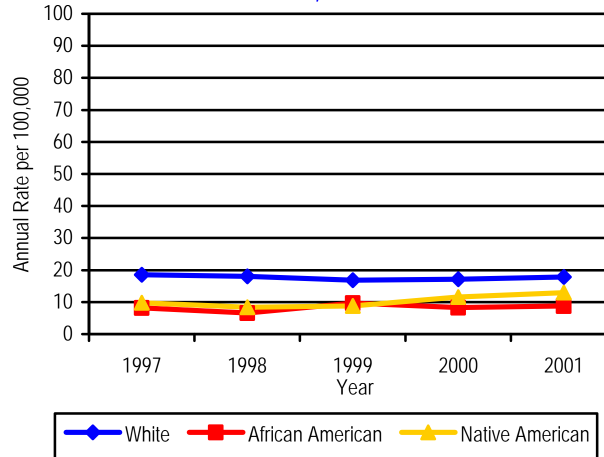


Figure 4. Suicides by Age and Percent Positive Blood Alcohol Concentration, Oklahoma, 1997-2001

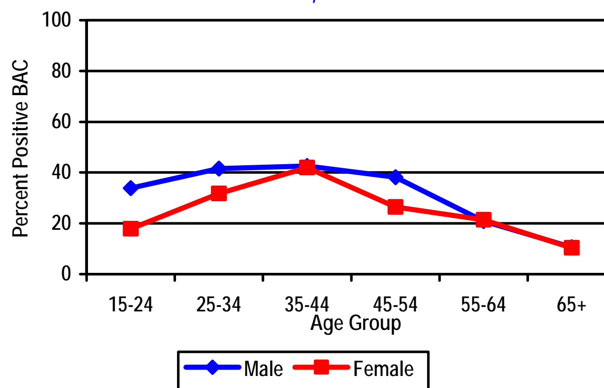


*Table 1. Suicides by Age Group and Method, Oklahoma, 1997-2001*

| Age Group* (in years) | Firearms | Hanging | Drugs/Poison | CO & Other Gases | Other | Total** |
|---|---|---|---|---|---|---|
| ≤ 14 | 9 (45%) | 10 (50%) | 0 ( 0%) | 0 (0%) | 1 (5%) | 20 |
| 15-24 | 240 (67%) | 89 (25%) | 25 (7%) | 12 (3%) | 7 (2%) | 361 |
| 25-34 | 247 (57%) | 102 (24%) | 59 (14%) | 24 (6%) | 22 (5%) | 430 |
| 35-44 | 298 (56%) | 92 (17%) | 118 (22%) | 28 (5%) | 27 (5%) | 535 |
| 45-54 | 241 (61%) | 44 (11%) | 88 (22%) | 23 (6%) | 25 (6%) | 398 |
| 55-64 | 157 (73%) | 13 ( 6%) | 35 (16%) | 14 (7%) | 9 (4%) | 214 |
| 65+ | 336 (85%) | 22 ( 6%) | 27 ( 7%) | 12 (3%) | 12 (3%) | 397 |
| **Total** | **1529 (65%)** | **372 (16%)** | **352 (15%)** | **113 (5%)** | **103 (4%)** | **2356** |

Source: OSDH Vital Statistics
*Age unknown for 1 firearm suicide.
**Percents may not add up to 100 due to rounding.

| RECOMMENDATION | IMPLEMENTATION PLAN |
| --- | --- |
| 3. Improve access and coordination with mental health care services. (continued) | 3e. Increase interaction and dialogue between the OSDH and state aging agencies/organizations by 2005 by implementing recommendations in *Guide to State Health Departments and State Aging Agencies Working Together.* |
| 4. Establish and implement screening programs. | 4a. Partner with schools, youth organizations, local mental health programs, and mental health associations to implement professionally designed mental health screening instruments to identify youth with mental illnesses associated with suicidal behaviors by 2005. |
| | 4b. Partner with schools, local physicians, and mental health providers to implement the Adopt-a-Doc/Nurse model in schools by 2005. |
| 5. Implement training programs for recognition of at-risk behavior among older persons. | 5a. Collaborate with medical and nursing schools to place greater emphasis on recognition and effective treatment of depression by 2005. |
| | 5b. Partner with CONTACT to develop an evaluation of their community outreach program (i.e., Gatekeeper model) designed to reach at risk older persons by 2006. If results are effective, implement similar programs in other communities. |
| | 5c. Incorporate suicide prevention training into caregiver training programs by 2005. |
| 6. Establish coordinated school health programs that include life skills training. | 6a. *See #2a-2c in Infrastructure*. |

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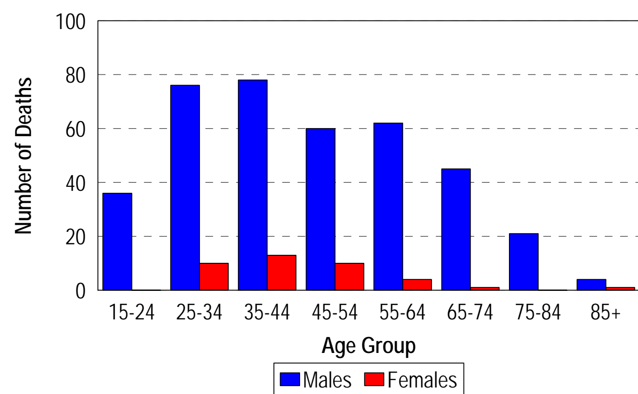
According to the National Institute for Occupational Safety and Health (NIOSH), approximately 85% of hired agricultural crop workers in the United States are foreign-born, and 90% of this group are from Latin America (Hispanic populations).[22] Hispanics are at higher risk than the general population for injuries, illnesses and environmental hazards due to lack of education, health care and English proficiency. Limited English proficiency may have contributed directly to work-related injuries and fatalities.[23]

## Oklahoma Occupational Fatalities

In July 1997, the Commissioner of Health declared occupational fatalities a reportable condition for special study. Since that time, the Injury Prevention Service has collected data from multiple reporting sources including the Office of the Chief Medical Examiner, Oklahoma State Department of Health Division of Vital Records, Occupational Safety and Health Administration, Oklahoma Department of Labor, Workers' Compensation Court, statewide hospital injury surveillance system, and a newspaper clipping service. Supplemental information has also been obtained from the Department of Public Safety, the Oklahoma Department of Mines, the Oklahoma Lake Patrol, fire departments, police and sheriff departments, and emergency medical services.

Although data collection began July 1, 1997, the following analysis includes persons injured during the four-year period from January 1, 1998 through December 31, 2001 in order to reflect seasonal trends. A total of 432 work-related deaths were identified in Oklahoma (average of 108 deaths per year; annual work-related death rate: 6.7 deaths per 100,000 workers). Ages of persons who died ranged from 13 to 90 years of age, with a mean age of 46 years (Figure 1). Males outnumbered females 9 to 1, with males accounting for 91% (392/432) of the work-related deaths.

Figure 1. Work-Related Fatalities by Gender and Age,* Oklahoma, 1998-2001




*A 13-year old male worker also died.

*Table 1. Causes of Work-Related Fatalities, Oklahoma, 1998-2001*

| Type of Incidents | Deaths | Percent |
|---|---|---|
| Motor Vehicle Crashes<br>Traffic Crashes: 139<br>Non-Traffic Crashes: 5 | 144 | 33% |
| Machine-Related | 74 | 17% |
| Falls from Elevation | 49 | 11% |
| Homicide | 42 | 10% |
| Electrocution | 33 | 8% |
| Struck and/or Crushed by Object | 26 | 6% |
| Suicide at Work | 10 | 2% |
| Airplane Crashes | 10 | 2% |
| Explosion | 9 | 2% |
| Animal-Related | 8 | 2% |
| Thermal Burn | 7 | 2% |
| Accidental Drug Overdose | 5 | 1% |
| Drowning | 5 | 1% |
| Suffocation | 5 | 1% |
| Others | 5 | 1% |
| **TOTAL** | **432** | **100%** |

## RECOMMENDED STRATEGIES FOR THE PREVENTION OF OCCUPATIONAL INJURIES/FATALITIES IN OKLAHOMA

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 1. Continue statewide surveillance of fatal work-related injuries. | 1a. Obtain state funding to continue surveillance of fatal work-related injuries by 2006. |
| | 1b. Continue to receive reports of work-related fatalities from news clipping service and other internal and external sources through 2010. |
| 2. Continue on-site investigations of selected deaths and write fatality reports. | 2a. Actively investigate selected work-related cases (i.e. machinery-related, highway work zones, and youth fatalities) through 2010. |
| | 2b. Continue to write fatality reports providing a summary of the incident, condition of the work environment, cause of death, and recommend prevention strategies through 2010. |
| | 2c. Increase awareness of work-related fatalities by disseminating fatality reports to constituents on an ongoing basis. |
| 3. Develop new partnerships and maintain existing working relationships with professional associations. | 3a. Continue participation in work groups addressing the need to reduce work-related injuries and fatalities on an ongoing basis. The work groups include (Occupational Safety and Health Administration, Oklahoma Safety Council, Department of Labor, Public Employees Occupational Safety and Health Program, Worker's Compensation Court, and other organizations involved in the safety and health of workers in Oklahoma. |
| | 3b. Continue to actively participate with the Farm Safety Day Camp organization to promote farm safety among children living in farming communities through 2010. |
| | 3c. Create a partnership with the Southwest/Northwest Area Health Educational Centers to promote farm safety education through their quarterly publication by 2005. |

| RECOMMENDATION | IMPLEMENTATION PLAN |
| --- | --- |
| 3. Develop new partnerships and maintain existing working relationships with professional associations. (continued) | 3d. Create a new partnership with Legal Aid of Western Oklahoma to disseminate farm safety material among Hispanic farmers by 2005. |
| | 3e. Identify and develop working relationships with rural farm coops and insurance companies by 2005. |
| | 3f. Create partnerships with specific work-groups which are at risk of work-related injuries, such as restaurant, construction, and automotive associations. Disseminate specific safety information within these groups by 2005. |
| 4. Implement a farm safety education campaign. | 4a. Define a geographical area where agriculture is the leading industry or occupation, and farmers have the highest occupational injury rates by 2005. |
| | 4b. Create a farm safety advisory group including representatives from farm co-ops, insurance companies, county health departments, Oklahoma State University, and community representatives by 2005. |
| | 4c. Pilot-test the farm safety campaign in the defined geographical area and evaluate for effectiveness by 2006. |
| | 4d. Develop an educational strategy and materials for dissemination to area farmers through partners by 2005. |
| | 4e. Develop an evaluation strategy for educational materials by 2005. |
| | 4f. Utilize county health department services (i.e., immunizations and hearing screenings) conducted at rural farm co-ops to promote farm safety educational campaign by 2005. |
| | 4g. Create an evaluation form for staff to administer to farmers/ranchers participating in farm safety clinics in the defined geographical area by 2005. |

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available to medical certifiers of death). Without a detailed definition or description, various poisoning statistics may not be directly comparable.

## Oklahoma

In Oklahoma, unintentional poisonings from all sources are the seventh leading cause of unintentional injury deaths and result in over 2,000 years of potential life lost before age 65 each year.[1] However, for the purposes of this analysis, unintentional poisonings were defined to exclude deaths that involved illicit drugs used alone or in combination with another drug/poison.
According to the Oklahoma Office of the Chief Medical Examiner, there were 1087 Oklahomans who died from 1987-2001 as a result of an unintentional drug or poison exposure (average annual rate, 2.2 deaths per 100,000 population). Comparing deaths from 1987-1989 and 1999-2001, the number of deaths increased nearly 195 percent. While deaths from prescription and non-prescription medications increased considerably over this 15-year time period, the number of carbon monoxide (CO) deaths dropped substantially from 1994-1998 (Table 1). Medication-related deaths account for nearly 60 percent of all unintentional drug/poisoning deaths. The annual average number of medication-related deaths from 1999-2001 (103) was more than seven times higher than the annual average number of deaths from 1987-1989 (14). The leading types of medications found in the decedents' bloodstreams were narcotic analgesics (74%), antianxiety (19%), tricyclic antidepressants (TCA) (14%), muscle relaxants (10%), non-narcotic analgesics (7%), and hypnotic/sedatives (6%). The most common narcotics found in the decedents' bloodstreams were methadone, propoxyphene, and hydrocodone.

Overall, males accounted for 732 (67 percent) of all drug/poison-related deaths (average annual rate, 3.1 deaths per 100,000 population). Males had more deaths in all drug/poison categories than females, including a rate five times higher in deaths due to poisons and inhalants and four times higher among alcohol and poisonings (Table 2).

*Table 1. Unintentional Drug/Poison-Related Deaths by Type and Year, Oklahoma, 1987-2001*

| Drug Type | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 00 | 01 | Total | % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Medication | 12 | 20 | 9 | 9 | 21 | 15 | 38 | 21 | 24 | 48 | 33 | 58 | 80 | 98 | 132 | 618 | 57 |
| Alcohol | 11 | 21 | 12 | 10 | 11 | 11 | 21 | 17 | 20 | 15 | 13 | 16 | 14 | 19 | 24 | 235 | 22 |
| CO* | 14 | 11 | 15 | 2 | 10 | 13 | 22 | 7 | 7 | 8 | 5 | 5 | 13 | 5 | 6 | 143 | 13 |
| Inhalants | 2 | 4 | 2 | 5 | 0 | 5 | 4 | 3 | 3 | 6 | 3 | 3 | 3 | 3 | 6 | 52 | 5 |
| Poisons | 1 | 1 | 3 | 4 | 7 | 4 | 1 | 1 | 1 | 0 | 3 | 2 | 1 | 4 | 1 | 34 | 3 |
| Other/Unspecified** | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 5 | <1 |
| Total | 41 | 57 | 41 | 30 | 49 | 48 | 87 | 49 | 55 | 77 | 58 | 85 | 111 | 130 | 169 | 1087 | 100 |
| Rate*** | 1.3 | 1.8 | 1.3 | 1.0 | 1.6 | 1.5 | 2.7 | 1.5 | 1.7 | 2.3 | 1.8 | 2.6 | 3.4 | 3.8 | 4.9 | 2.2 | |

*Carbon Monoxide
**Other/Unspecified includes 2 Inhalant/Poison, 2 Medication/Inhalant, and 1 Drug N/S.
***Rates are per 100,000 population

## RECOMMENDED STRATEGIES FOR THE PREVENTION OF UNINTENTIONAL POISONING DEATHS IN OKLAHOMA

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 1. Support and strengthen services at the Oklahoma Poison Control Center. | 1a. Increase interaction and dialogue between OSDH and the Poison Control Center by 2005. |
| | 1b. Support the Poison Control Center in securing funding for educational programs, particularly the Train-the-Trainer program on an ongoing basis. |
| | 1c. Recommend that at least one public health nurse in each county completes the Train-the-Trainer program by 2005. |
| | 1d. Recommend utilization of Team Stations to conduct more advanced medical poison prevention training of county health department personnel by Poison Control Center staff by 2005. |
| | 1e. Put the Poison Control Center hotline number on the OSDH Web site by 2005. |
| 2. Expand and implement poison prevention and medication safety education programs. | 2a. Secure funding for poison prevention education and enhanced data collection, possibly investigating options with private foundations, pharmaceutical companies, and organizations like the American Association of Retired Persons by 2006. |
| | 2b. Evaluate current poison prevention efforts, and develop and support programs proven to be most effective by 2005. |
| | 2c. Support the development of culturally-sensitive materials and the elimination of language/communication barriers to help bridge cultural gaps that prevent certain groups from accessing poison control services by 2006. |
| | 2d. Implement a statewide multi-media public awareness campaign targeting high-risk poison exposure behaviors, such as medication mismanagement and home environmental hazards, as well as misperceptions about the safety of over-the-counter medications and prescription versus illicit drug abuse by 2006. |

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 2. Expand and implement poison prevention and medication safety education programs. (continued) | 2e. Support the development of public educational forums that enlist public involvement in poison prevention, as well as highlight gaps in funding and knowledge by 2005. |
| | 2f. Increase interaction and dialogue between OSDH and the OUHSC College of Pharmacy and/or pharmaceutical companies to educate the public and pharmacists about proper OTC and prescription medication usage by 2005. |
| | 2g. Partner with rural co-ops to increase education on specific issues such as agricultural and horticultural chemical poisonings by 2005. |
| | 2h. Partner with senior citizen organizations and/or grandparents-raising-grandchildren support groups to educate about proper medication usage and storage by 2005. |
| | 2i. Partner with the Department of Mental Health and Substance Abuse Services and the Poison Control Center to develop poison prevention and medication safety education programs specifically for adults aged 35-54 that focus on issues of substance abuse, alcohol poisoning, and proper medication dosages by 2006. |
| 3. Implement home inspection programs in communities across the state. | 3a. Partner with other programs (e.g., home health care, head start, etc.) that make home visits to develop a home inspection checklist that identifies and remedies possible poison exposures and adverse events associated with multiple medication usage by 2005. |
| | 3b. Partner with the Poison Control Center to develop a home inspection component into the Train-the-Trainer program by 2006. |
| | 3c. Partner with EMS or fire departments to develop a protocol for home inspections by 2006. |
| 4. Increase the number of carbon monoxide detectors in family dwellings. | 4a. Seek funding to establish an educational or giveaway program to work in conjunction with the IPS smoke alarm program by 2005. |

| RECOMMENDATION | IMPLEMENTATION PLAN |
| --- | --- |
| 4. Increase the number of carbon monoxide detectors in family dwellings. (continued) | 4b. Educate legislators on the benefits of carbon monoxide detectors and on the laws adopted by other states requiring their installation in for-sale and newly built/remodeled structures by 2005. |
| | 4c. Work with municipalities to adopt ordinances and enforcement strategies that mandate working carbon monoxide detectors in homes by 2006. |
| | 4d. Investigate the high rates of carbon monoxide deaths in the 65 years and older age group and identify associated/causal factors by 2005. |
| 5. Enhance data and knowledge about poison exposures and circumstances of the event. | 5a. Secure funding to develop emergency department surveillance to better identify the true amount and types of poison exposures by 2007. |
| | 5b. Partner with the Poison Control Center and the Advisory Board to monitor and address adverse events from over-the-counter medication and multiple prescription medication use by 2006. |

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Colorado at Boulder. This initiative seeks to identify and replicate effective violence prevention programs, particularly for youth, based on a rigorous set of criteria. Model programs have strong research designs (adequate sample size, low attrition, reliable and valid measures), sustained effects (at least one year beyond "treatment"), and multiple site replication potential (success with diverse populations in diverse sites). To date, 11 programs have been defined as model, while 21 meet the less stringent "promising" designation.[33] The following table briefly describes the model programs (Table 2).

These programs illustrate the diversity needed to curb violence and the levels at which prevention can occur (i.e., before or after violent tendencies or behaviors are manifested). By including a variety of measures and approaches to help children and young adults make good life choices both in and out of the classroom, these model programs are examples of proven ways to minimize the presence and effects of violence in community settings. Ultimately, though, the success of such prevention programs is dependent upon "buy-in" and adequate training and resources. If communities, educational systems, teachers, parents, and students do not believe in the

*Table 2. Model programs identified by Blueprints for Violence Prevention*[34]

| Blueprint Model Programs | Description |
|---|---|
| Midwestern Prevention Project | Community-based adolescent drug abuse prevention program |
| Big Brothers Big Sisters of America | Mentoring program for youth ages 6-18 from single parent homes |
| Functional Family Therapy | Prevention/intervention program for youth at risk for and/or presenting with delinquency, violence, substance abuse, conduct disorder, oppositional defiant disorder, or disruptive behavior disorder |
| Life Skills Training | Intervention program for middle school students to prevent or reduce gateway drug use |
| Multisystemic Therapy | Intensive family- and community-based treatment for chronic, violent, or substance abusing juvenile offenders 12-17 years old |
| Nurse-Family Partnership | Home visitation program serving low-income, at-risk pregnant women bearing their first child |
| Multidimensional Treatment Foster Care | Alternative treatment program for teenagers with histories of chronic and severe criminal behavior at risk of incarceration |
| Bullying Prevention Program | School-based program for all lower and middle school students |
| The PATHS curriculum (Promoting Alternative Thinking Strategies) | School-based program for lower school students, promoting emotional and social competencies and reducing aggression |
| The Incredible Years Series | Developmentally-based curriculum for children ages 2-8 at risk and/or presenting with conduct problems |
| Project Towards No Drug Abuse | Targeted drug abuse prevention program focusing on high school students ages 14-19 |

## RECOMMENDED STRATEGIES FOR THE PREVENTION OF VIOLENCE

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 1. Continue collection and analysis of violent death data. | 1a. Implement and maintain the Oklahoma Violent Death Reporting System (OVDRS) through 2008.<br>1b. Support other violence-related data collection (nonfatal injuries, IPV, suicide, Domestic Violence Fatality Review Board, Child Death Review Board) on an ongoing basis.<br>1c. Support efforts to enhance data collection tools for accurate assessment of race and ethnicity on an ongoing basis.<br>1d. Continue data analysis to support legislation/policy/education development and refute common myths about violence on an ongoing basis. |
| 2. Implement and support community assessments to determine needs for violence prevention in particular areas. | 2a. Collaborate with Turning Point communities to conduct community needs assessments by 2005.<br>2b. Partner with community coalitions, civic groups, city clubs, religious organizations, tribes, and/or ethnic groups to help promote an understanding of the violence problem, prevention methods, and how to mobilize community resources by 2005.<br>2c. Compile a reference list of available violence prevention resources and programs for communities by 2005.<br>2d. Support the Department of Mental Health and Substance Abuse Services in modeling the Communities that Care program in establishing community coalitions and conducting surveys to identify risk and protective factors by 2005. |
| 3. Enhance knowledge about violence prevention, and expand and implement violence prevention programs. | 3a. Increase interaction and dialogue between OSDH and the Department of Education to encourage statewide adoption of violence prevention curriculum in schools and training for teachers and staff to recognize and address violence-related problems by 2006.<br>3b. Support the development of public educational forums that enlist public involvement in violence prevention, as well as highlight gaps in funding and knowledge by 2006.<br>3c. Support the development of culturally sensitive materials and the elimination of language/communication barriers to help bridge cultural gaps that prevent certain groups from accessing services to cope with violence-related issues by 2006. |

| RECOMMENDATION | IMPLEMENTATION PLAN |
| --- | --- |
| 3. Enhance knowledge about violence prevention, and expand and implement violence prevention programs. (continued) | 3d. Increase interaction between OSDH, county health departments, Indian Health Service, and Native American tribes in Oklahoma to plan culturally appropriate prevention efforts by 2005.<br>3e. Continue and enhance collaboration with the Department of Mental Health and Substance Abuse Services, the Coalition Against Domestic Violence and Sexual Assault, and other interested organizations to address the problem of domestic violence and sexual assault by 2005.<br>3f. Support the Sexual Assault Prevention Education Program (OSDH), sexual assault response teams, the United Way, and college/university organizations conducting sexual assault and dating violence prevention education to continue and expand these programs by 2006.<br>3g. Support the inclusion of violence prevention training for future teachers in the curriculum of university education departments by 2006.<br>3h. Continue to provide IPV training and resources to county health departments and health care professionals on an ongoing basis (IPS). |
| 4. Support environmental changes geared toward violence prevention. | 4a. Support local police departments and the Oklahoma Association of Chiefs of Police in continuing projects associated with Project Safe Neighborhoods, such as gun lock distribution programs by 2005.<br>4b. Encourage media campaigns to create awareness and mobilize resources regarding violence prevention by 2005.<br>4c. Collaborate with law enforcement, schools, health professions, religious communities, and other organizations to encourage the acceptance and promotion of violence-free social norms by 2006.<br>4d. Educate legislators on the magnitude of violence in Oklahoma and the role of firearms in violence-related injuries and deaths through legislative fact sheets, annual reports, etc. by 2005. |

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# Falls

## MAGNITUDE OF THE PROBLEM

### Nation

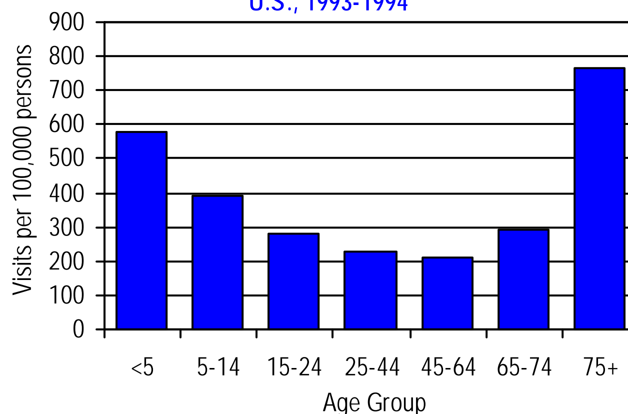
Falls are the second leading cause of unintentional injury deaths and the most common cause of injuries and hospital admissions for trauma.[1] In 2001, 15,764 persons died as the result of falls (10% of all injury deaths).[2] F alls are the leading cause of nonfatal injury in the United States, accounting for 783,357 hospitalizations and an estimated 11.5 million minor injury cases that are not hospitalized.[3] Data reported from emergency departments (EDs) indicated that falls were the leading cause of injury treated in EDs.[4] Age-specific visit rates for falls were "U-shaped" with rates higher for the young, and older adults (Figure 1). One in ten children aged 1-3 years are treated in the ED each year from falls; of these one-fourth are hospitalized.[5] In 1994, the estimated cost of fall-related injuries was $20.2 billion; by 2020, it may reach $32.4 billion.[3]

Healthy People 2010 reported a national rate of 4.7 deaths per 100,000 population for 1998 with whites and Native Americans, males, and persons over 65 years experiencing higher death rates. Incidence of falls and the severity of fall complications increase after age 60 years; among persons 65 years and older, incidence increases by 35%. One of three ED visits result in hospitalization for persons 75 years and older compared with less than 3% for persons less than 25 years.[3]

About 800 work-related falls occur annually.[6] More than 1400 fatal falls occur in nursing homes and other residential institutions.[3] Incidence rates of falls in nursing homes and hospitals are almost three times the rates for persons living at home.[3]

In 1997, nearly 9,000 persons 65 years and older died of a fall; 82% of these occurred in persons 75 years and older.[3] Falls are also the source of 87% of all fractures in the elderly. About 212,000 traumatic hip fractures occur each year in persons 65 years and older in the U.S.; 75% to 80% are sustained by females.[3] In the elderly, 60% of fatal falls occur at home, 30% in public places, and 10% in institutions.[3]

Figure 1. Emergency Department Visits for Falls, U.S., 1993-1994




Source: Health, United States 1996-1997, NCHS

Numerous risk factors contribute to falls including physical, physiological, medical, and behavioral elements. The most common physical factors include age, height, weight,

## RECOMMENDED STRATEGIES FOR THE PREVENTION OF FALL INJURIES

| RECOMMENDATION | IMPLEMENTATION PLAN |
|---|---|
| 1. Determine the incidence and circumstances of fall-related injuries in Oklahoma. | 1a. Obtain hospital discharge data to determine fall-related injury data by 2005. |
| | 1b. Produce an epidemiologic profile of all fall injuries that includes high risk populations, length of stay in a hospital, costs, and outcomes for persons 65 years of age and older by 2005. |
| 2. Promote fall prevention, education and public awareness campaigns among persons 65 years and older. | 2a. Review existing home hazard checklists from other OSDH program areas, agencies, and other states. Develop and disseminate a fall-specific home hazard checklist to older adult groups, organizations, and county health departments with a guide to correcting hazards by 2005. |
| | 2b. Conduct targeted education regarding environmental hazards and correction of such hazards by 2006. |
| | 2c. Conduct public awareness campaign regarding risk factors such as home hazards, medication, and fall protection equipment for persons 65 years and older by 2005. |
| | 2d. Train long-term care and assisted living facility staff regarding risk factors and prevention of senior falls by 2006. |
| | 2e. Disseminate information to physicians by 2006 regarding:<br>1) The magnitude, costs, causes, and prevention of falls among seniors;<br>2) The importance of drugs and adverse drug reactions as contributing factors to senior falls; and<br>3) Counseling seniors on home hazards. |
| | 2f. Work with agencies to disseminate information on the risks and prevention of falls among seniors (Areawide Aging, DHS, EMSA, OKC firefighters) by 2006. |
| | 2g. Coordinate with the OUHSC Department of Rehabilitation Science to provide regular instruction about the physiologic and safety aspects of exercise and fall prevention to activity directors from community senior centers. |

| RECOMMENDATION | IMPLEMENTATION PLAN |
| --- | --- |
| 2. Promote fall prevention, education and public awareness campaigns among persons 65 years and older. (continued) | 2h. Collaborate with area senior centers to publicize annual screening and to increase awareness of screening benefits to seniors. |
| | 2i. Publicize a web-based resource for activity directors of community senior centers and consumers that recommends exercise modification to address specific falls risks. |
| 3. Promote exercise among persons 65 years of age and older. | 3a. Research and distribute best practices regarding implementing physical exercise programs among seniors 65 years and older to providers, family members and caregivers by 2006. |
| | 3b. Conduct public awareness and education campaign regarding the benefits of exercise in the prevention of falls and fall-related injuries by 2005. |
| | 3c. Promote physical exercise programs among seniors 65 years and older by 2006. |
| 4. Promote fall prevention education among children and their caregivers. | 4a. Integrate the Injury Prevention Program (TIPP) fact sheets into CHD clinic encounter visits by 2005. |
| | 4b. Promote distribution of fall prevention educational materials to childcare facilities, head starts, and school-based early childhood classes by 2006. |
| | 4c. Encourage physicians to educate parents and caregivers regarding the causes and prevention of falls among young children by 2005 and ongoing. |
| | 4d. Promote use of helmets while riding bicycles and tricycles for children by 2005. |
| 5. Reduce risk factors for falls in homes and other dwellings. | 5a. Develop education material specific to reducing risk factors for falls and distribute to county health departments, senior citizen centers, Turning Point partners, nursing homes, and DHS by 2006. |
| 6. Increase availability of information about fall risks with hospitals and other facilities. | 6a. Review existing information for reducing risk of falls in hospitals and other facilities to assess need for additional materials by 2007. |
| | 6b. Work with health professionals in selecting/developing information materials on fall prevention in facilities and community dwellers 2007. |

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