

State of Delaware

Strategic Plan for Injury Prevention 2005-2010



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Data used in this report are from multiple sources and, therefore, should not be used out of context.

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August 1, 2005

Dear Colleagues,

Delaware's Division of Public Health's Office of Emergency Medical Services and the Delaware Core State Injury Surveillance and Prevention Program are pleased to present you with the Delaware Injury Prevention Strategic Plan: 2005-2010. The plan was developed by the Delaware Coalition for Injury Prevention with support from many state and local agencies and injury prevention organizations.

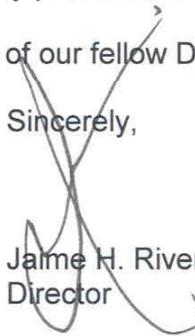
The plan focuses on injuries from the following causes: motor vehicles, poisons, falls, suicides, traumatic brain injuries, drowning, firearms, fires/burns, and dog bites. Of these, the four leading causes of injuries in Delaware are motor vehicles, falls, suicide and poisoning. Prevention can save Delawareans from experiencing the pain and loss caused by these injuries.

This plan provides a framework for integrated injury prevention in Delaware. In addition, the plan details the burden of each injury, defines risk populations and behaviors, identifies best prevention practices, notes relevant legislation and makes suggestions on possible preventive actions for implementation in Delaware.

The Division of Public Health's Injury Prevention Program is committed to supporting statewide injury prevention efforts through surveillance, training, technical support, community partnerships, supporting intervention development at multiple levels and establishing the effectiveness of interventions through evaluation. Our vision is to promote safe Delaware communities, as measured by a decrease in fatal and non-fatal injuries, risk-taking behaviors, and disability resulting from injuries. We invite the participation of everyone who is involved in injury prevention.

Together we can make a difference in the lives of our fellow Delawareans.

Sincerely,


Jaime H. Rivera, MD, FAAP
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Photos courtesy of Coalition Injury Team members

Photo, child with gun, courtesy New Mexico Emergency Medical Services for Children Program

Executive Summary

Injury is one of the principal public health problems in Delaware. Between 1992 and 2001 injuries were the leading cause of death in the 1 to 44 year age group and the fourth leading cause of death over all age groups. From 2001 to 2003, an average of two people died from injuries, seven were hospitalized, and 190 suffered injuries that were severe enough to require emergency services each day in our state. Costs associated with these hospitalizations have increased from \$45 million dollars in 2001 to \$82 million dollars in 2003.

There is some good news. Great strides have been made in Delaware to begin to reduce the number of injuries and resulting disabilities and premature deaths. For example, vehicle seat belt use in Delaware has increased from 64% in 1999 to 82% in 2004. In addition to the primary seat belt law, Delaware has passed other safety laws, and an Injury Prevention Coalition has been established to facilitate statewide injury prevention efforts.

This *Strategic Plan for Injury Prevention* has been developed by expert work teams from the Delaware Coalition for Injury Prevention with guidance from the Division of Public Health's Office of Emergency Medical Services. The plan provides a framework to address nine core injuries: falls, motor vehicle injuries, traumatic brain and spinal cord injuries, suicide and suicide attempts, poisoning, fire injuries, dog bites, firearm injuries, and drowning and submersion injuries. The work teams used the public health approach to define each problem, identify risks and causes, and develop interventions to increase the public's awareness about the preventability of these injuries. The plan also seeks to reduce environmental risks, impact public policy and decision-making, and redirect the economic and social losses now caused by injury.

In alignment with the Healthy Delaware 2010 objectives, it is anticipated that implementation of the *Strategic Plan for Injury Prevention* will reduce the burden of injury in Delaware.

The Delaware Coalition for Injury Prevention

***Strategic Plan for Injury Prevention
2005-2010***

INTRODUCTION

The Burden of Injury in Delaware

Unintentional injuries remain the leading killer of children and adults ages 1 to 44 years in Delaware.² The leading causes of injuries in this age group are motor vehicle crashes, falls, poisonings and suicide. All of these injuries have risk factors that can be predicted and prevented, therefore, injuries must not be viewed as random accidents but as predictable and preventable occurrences.

Annually in Delaware about 36.5 people per 100,000 population die from unintentional injuries and 18 per 100,000 from intentional injuries. Through the time period of 1999 to 2002, this equated to an average of nearly one injury-related death per day in our state (average annual number of deaths was 201 from unintentional injury, 76 from suicide and 53 from homicide). The burden of injury also includes hospitalizations, disabilities, economical cost, and loss of human years of life.²

There is much work to be done to reduce the burden of injuries in Delaware. In the past few years, progress has been made, particularly in addressing unintentional injuries. As shown in Table 1 below, the rates of motor vehicle-related and poisoning-related fatal injuries have decreased, albeit not significantly. This progress is the result of several statewide efforts including collaboration between agencies to increase public awareness of modifiable risk behaviors, passage of legislation such as seat belt laws and laws lowering legal blood alcohol limits, and modification of environmental factors to reduce risks.

Table 1. Baseline and Milestones for Fatal Injury Rates in Delaware^{1,2,3}

Mechanism of Injury	Delaware Rate (per 100,000 population)		National Average (per 100,000), 2002	Healthy Delaware 2010 Target
	1999	2002		
Traumatic Brain Injury	17.3	15.2 ¹	16.25	
Motor Vehicle	12.40	14.45 ⁺ ¹	15.5	12.8
Suicide	11.07	9.10 ¹	10.7	11
Firearm-related	8.73	9.07 ⁺ ¹	10.4	
Fall	6.91	5.07	5.5	2.3
Drowning	1.33	1.51 ⁺	1.45	
Fire/burn/flame	1.69	0.50 ¹	1.33	1.3
Poisoning	7.87	11.50 ⁺ ¹	8.12	1.8
Dog bite				

+ Indicates that the rate in Delaware is increasing.

¹Indicates significant difference from national rate.

Table 2. Baseline and Milestones for Injury Hospitalization Rates, Delaware Residents^{1,2,3}

Mechanism of Injury	Delaware Rate (per 100,000 population)		National Rate (per 100,000), 2002
	1999	2002	
Fall	294.6	336.8 ⁺	175.2
Motor Vehicle	107.1	123.3 ⁺	56.6
Traumatic Brain Injury	62.6	62.9 ⁺	52.5
Suicide	47.8	52.6 ⁺	45.7
Poisoning	13.14	12.3 ¹	27.2
Fire/burn/flame	5.18	6.6 ⁺	2.8
Dog bite	2.23	3.6 ⁺	1.23
Firearm-related	2.12	1.9 ¹	2.34
Drowning	1.2	0.87 ¹	0.53

+Indicates that the rate in Delaware is increasing.

¹Indicates significant difference from national rate.

The Public Health Approach to Injury Prevention

The development and implementation of injury prevention activities in Delaware will be based on the Injury Prevention Framework which is illustrated in the figure below.

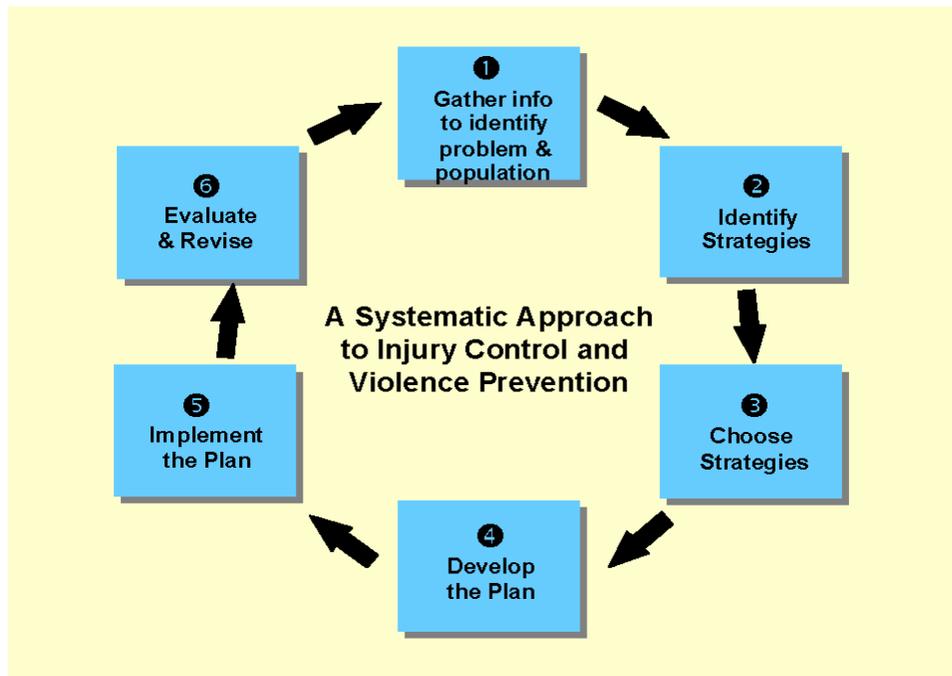


Figure 1.

Source: Carolyn Runyun, University of North Carolina, Injury Prevention Program.

State Plan Development

In 2001, a group of individuals representing Delaware organizations active in injury prevention came together to form an Injury Prevention Coalition under the auspices of the Division of Public Health, Office of Emergency Medical Services. In order to give direction to this collaboration, the Injury Prevention Coalition developed a Statewide Injury Prevention Strategic Plan. The purpose of this Statewide Strategic Plan is to provide a framework for injury prevention in Delaware. The Plan addresses the nine focus areas shown in Tables 1 and 2, which were identified by the Coalition as the main causes of injury and disability in Delaware. A plan for each focus area was developed by nine teams consisting of members from the Injury Prevention Coalition - professionals and citizens with a passion for and experience in the topic area under review. These separate plans were combined to form an overall State Plan for Injury Prevention.

Because injuries have modifiable risk factors that can be predicted systematically, each team used the public health approach to define and identify risk factors for their topic area. Teams reviewed the literature for best practices and identified implementation strategies based on effectiveness as well as financial, social, technical and political feasibility in Delaware. They identified goals, objectives and action steps to aid in effectively addressing the injury topic.

State Plan Implementation

The Injury Prevention Program within the Delaware Office of Emergency Medical Services will coordinate the implementation of this Plan. Each focus area will be implemented through existing injury prevention programs statewide. Each team has identified key indicators which will be monitored and reviewed by the Coalition Advisory Council (leaders of each of the teams), and at least annually by the Injury Prevention Coalition as a whole. The Coalition is hopeful that through this plan the vision of promoting safe communities in Delaware will be realized, as measured by fewer fatal and non-fatal injuries, fewer risk taking behaviors, safer environments and reduced incidence of injury-related disabilities. Through effective surveillance, partnerships, interventions, training and evaluation, the Coalition's goal is to help Delawareans learn that injuries are preventable and take steps to reduce their risks.

The next chapters present the individual injury prevention plans developed by each of the nine teams as discussed above. Each individual plan contains a description of the injury problem, best practice strategies to prevent or reduce its occurrence and the goals, objectives and action steps that the Coalition members will take to bring about this reduction. We hope that those who read this plan will be motivated to act on the action steps identified in order to effectively reduce the burden of injury in Delaware.

Sources

1. Centers for Disease Control, National Center for Injury Prevention and Control. Retrieved from, [<http://www.cdc.gov/ncipc/wisqars>].
2. Delaware Vital Statistics Annual Report 2002, Delaware Health and Social Services, Division of Public Health, Delaware Health Statistics Center.
3. Healthy Delaware 2010. Retrieved from, [<http://www.healthydelaware.com>].

FALL PREVENTION

I. STATEMENT OF THE PROBLEM

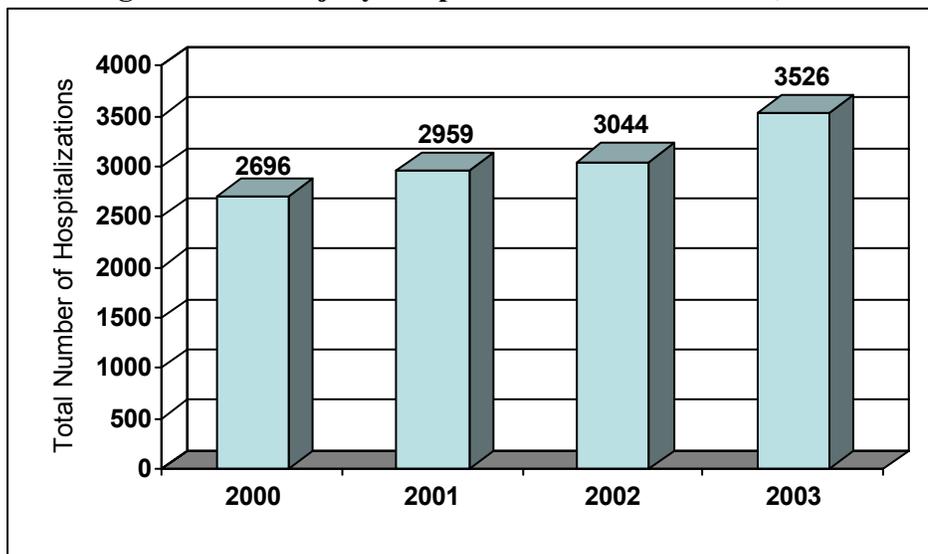
Falls occur from a wide variety of circumstances and in all age groups. There are two distinct ‘at risk’ populations for falls – those over the age of 65 and children under the age of 15.

Between 1997 and 2001 an average of four people per 100,000 died and 350 per 100,000 persons were hospitalized as a result of fall related injuries in Delaware.^{2,4} Fall-related injuries among older people can have long-term consequences including loss of confidence and the physical ability to live independently. Once a fall-related injury has occurred, individuals often become less autonomous, require specialized care and therefore place increased demands on health-care providers. The impact of a fall goes beyond the obvious injury into the domains of medicine, rehabilitation, social work and medical economics. Annually, fall injuries in Americans over 65 cost about \$20 billion and the cost is projected to reach \$32.4 billion by 2020.⁶ The cost of hip fractures may reach \$240 billion by 2040.²²

Falls are the leading cause of non-fatal injury in the pediatric population. More than two and a half million children ages 14 and under are treated annually at hospital emergency departments for fall-related injuries.⁸ According to the National SAFE KIDS Campaign, the severity of a fall-related injury is determined by the distance of the fall and the landing surface. Head injuries are associated with the majority of deaths and severe injuries resulting from falls. Falls represent the largest share of injury costs for children ages 14 and under, accounting for more than one-quarter of all childhood unintentional injury-related costs.³

II. PROBLEM ANALYSIS

Figure 1. Fall Injury Hospitalizations in Delaware, 2000-2003



Data Source: Delaware Hospital Discharge Data from 2000 to 2003

The ranges used for the fall injuries include E-Codes from E880 to E886.9, or E888 in the E-Code field.

According to Delaware Hospital Discharge data, 3526 persons suffered fall-related injuries serious enough to require hospital admission during 2003. This represented a 30% increase in fall injury hospitalizations since 2000.⁴ Types of falls reported were from stairs or steps, from a ladder or scaffolding, from or out of a building, into an opening in the surface, from one level to another, a slip, trip or stumble, resulting from a collision, and unspecified. In 2003, 38% of all injury-related deaths occurring in hospitals in Delaware were due to falls.⁴

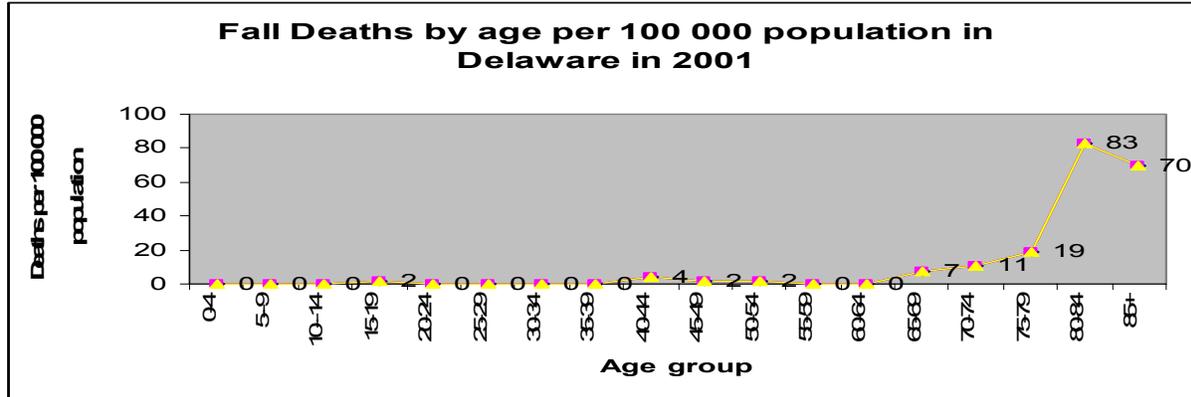


Figure 2.

Source: Delaware Vital Statistics, 2001

Older Adult

In the United States, an older adult (65 years or older) dies as a result of a fall every hour. Falls are the leading cause of injury-related death in this age group. Overall, falls resulted in the highest rates of injury and were the most common mechanism of injury, accounting for 62% of all nonfatal Emergency Department visits in this population.² Of those who fall, 20% to 30% suffer moderate to severe injuries such as hip fractures or head traumas that reduce mobility and independence, and 20% die within a year after a hip fracture.¹⁶ About 30% of adults live with the fear of falling.¹⁰ Of the 3526 reported fall related injuries in Delaware, 43% occurred in the 65 and older age range. Sixty percent of fractures occur at residential homes, 30% in public places and 10% in institutions such as nursing homes.²⁸ The risk of falling increases with age, being female, having a chronic disease, mental impairment, muscle weakness, gait and balance problems, vision difficulties and the intake of psychoactive medications.⁹

Children

Nationally, one in ten children aged one to three years are treated for fall injuries in hospital Emergency Departments.

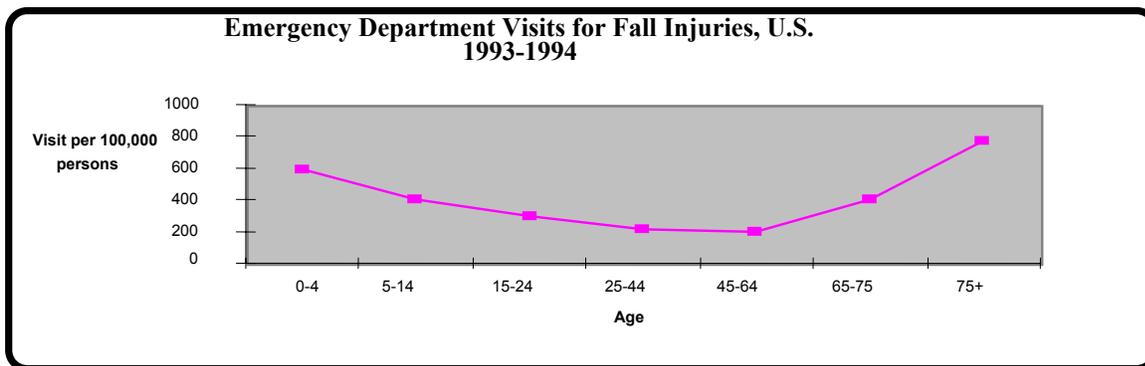


Figure 3.

Source: National Center for Health Statistics, US.

Twenty-one percent of fall-related injuries occurred in those under the age of 15 years.⁴ Information from the Childhood Injury in Delaware report showed that the largest percentage of fall-related injuries (21%) involved roller skates, skateboards, knee boards and snow boards.³ Other categories of falls in children include falls from playground equipment (14.2%), stairs/steps (8.7%), sports (6.8%), furniture (6%) and buildings. Each year in the United States more than 50,000 children age 14 and younger are treated in Emergency Departments due to fall-related playground injuries. Two percent of all playground injuries in children under the age of five in the United States occur at home (such as yard areas) and 36% occur at day care center playgrounds.¹⁵ Ropes and slides account for many of these injuries.²¹

III. GOAL

Reduce the number of fall-related injuries and deaths. Fall prevention strategies must address physical, developmental and environmental issues for specific age groups. This plan will contribute to the reduction of fall-related deaths from 4 deaths per 100,000 in 2001 to 2.3 per 100,000 in 2010.

IV. OBJECTIVES

1. By 2010, each of the three counties in Delaware will have an active fall awareness work team. Currently none of the counties has regular community fall education programs.
2. By 2010, fall related fatalities will be reduced from 4.2 per 100,000 to 3.0 per 100,000. [Based on ICD-10 codes: W00-W19].
3. By 2010, the rate of hip fractures among Delaware adults over 65 years old will be reduced from 700 per 100,000 in 2001 to 500 per 100,000.

V. BEST PRACTICES

For children, modifiable risk factors are personal protection, product design and supervision by the parent. For older adults, the relative risks attributed to muscle weakness are, gait and balance problems, vision problems and psychoactive medications.⁹ The following interventions are recommended.

Education

Health information provides a premise for informed choices in reducing risk behaviors and it increases the demand for preventive services. Information on wearing personal protection and restricting children's play environment are effective at reducing incidences of fall injuries in children. Providing health education to day care providers in Georgia reduced fall injuries by 10%.²¹ Parents should be informed of hazardous products and the importance of securing children. For example, educating shop owners to remind shoppers to use shopping cart seat belts can reduce Emergency Department visits related to falls by 18%.¹⁹ Two-thirds of children who use child walkers will be injured.⁷ Supervising the use of walkers by children between 5 and 12 months of age can reduce walker-related injuries by 30 to 40%.⁷ Setting and enforcing standards such as, no child without a supervisor at playgrounds, or ensuring that the ratio of children to care giver is equally proportioned, has shown to decrease the rate of fall injuries.¹² Increasing

awareness on home safety standards such as the use of helmets,³ slip resistant shoe soles,⁷ compliance to product recalls, window bars, stair gates and infant walkers²⁰ have shown effective results on fall prevention.²⁶ To help older people act on their knowledge, home safety checklists with information on tips for creating a barrier free house and having a schedule for periodic geriatric physical assessment can reduce falls.¹² Physicians must be encouraged to assess older people for vision and motor functions. However, it is very difficult to change the behavior of children and adults who are 65 years and older. Therefore, education must be complemented with other interventions.

Medicine and Engineering

Strengthening the balance of the elderly through exercise has shown to decrease the likelihood of falls between 29-49%.^{17,26} Community or institutional based programs which encourages the elderly to walk regularly and have a check-up with a physical therapist has shown to reduce falls in this population.^{4,30} Comprehensive medical assessments of adults for vision, balance and treatment of osteoporosis are associated with a 20% reduction in fractures.¹⁷ Some studies have shown that the use of multiple medications such as psychotropic drugs increases the risk of falls in the elderly and that reducing the intake of such drugs reduces fall injuries.^{23,26} The use of hip protectors in high risk adults has been associated with an 80% reduction in hip fractures in nursing homes.¹⁴ Making walkers, balconies and windows fall-proof by changing the design can prevent a significant amount of injuries in children.²⁰

Legislation and Enforcement

Legislation of building codes requiring lifts or grab bars on stairs, installing impact attenuating carpet and good lighting at nursing homes has shown to reduce fall injuries in older adults.^{10,28} Heights at playgrounds make a significant contribution to pediatric injuries. Legislation that enforces reducing heights to less than six feet, replacing playing surfaces with sand or wood chips to a depth of 10 inches and the replacement of monkey bars with climbing frames are effective at reducing fall related injuries and hospitalizations.^{9,20,21,27} In New York, legislation and community education requiring window bars in high rise apartments resulted in a 96% reduction in pediatric fall hospitalizations in seven years.¹ Another New York-based study which reviewed the effect of standardized code enforcement in nursing homes showed a 22% reduction in geriatric fall injuries.¹⁷ Building codes at nursing homes should ensure that floors have shock absorbent surfaces and sidewalks have guardrails. Regular enforcement of legislation is necessary for optimal compliance.²⁹

Environment

Modifying environmental factors could reduce the incidence of falls. For example, removing clutter, loose rugs or uneven surfaces from walkways and using non-slip floors can reduce hazards for children and the elderly.^{10,28} A British study showed that replacing monkey bars with slides or swings can reduce the risk of childhood playground injuries seven times and placing rubber surfaces over bare ground can reduce injury five times.¹⁸ A study in New York showed that community education and giving away free window bars reduced non-fatal and fatal pediatric injuries by 50% and 35% in two years respectively.²⁵ A Canadian study showed fall injuries in children dropped 21 times by modifying the surface, 18 times by reducing the height to less than six feet and seven times by installing guardrails.¹⁹

Implementation

Attention to fall-related injury reduction is important in the application of falls prevention programs for our increasingly aged population. Strategies to reduce falls and fall-related injuries are based on the five E's of injury prevention (Education, Enforcement, Engineering, Evaluation and Environment), and will be implemented as universal to target both adults and children. The Division of Services for Aging and Adults with Physical Disabilities will lead the implementation of this plan in partnership with the Delaware Safe Kids Coalition, the Delaware Risk Watch program and the Division of Parks and Recreation.

VI. ACTION STEPS

Research shows that no single intervention is effective alone. Therefore, these actions will be targeted and complemented accordingly.

Universal Actions

1. Develop a public service announcement to make the public aware of the significance of falls and fall-related injuries.
2. Educate staff of local residential and education agencies in ways to prevent falls such as the installation of protective devices (fences, stair rails, stair gates, window bars and window guards).
3. Develop brochures and fact sheets (age appropriate) for distribution in public facilities.
4. Include specific developmental considerations in educational materials.
5. Fall prevention education should be built into school curricula, including day care providers, and should be offered to community groups.
6. Sensitize healthcare providers on the importance of routine assessments for the elderly. These assessments should include hearing, vision, drug intake, gait and balance and the use of assistive devices as needed.

Targeted actions: Older Adult

1. Promote supervised elder exercise programs to improve strength, balance and coordination.
2. Promote regular access to vision and hearing screening for older adults.
3. Develop and implement a community plan to offer home safety evaluations.
4. Provide access to gait training and home safety checks for older adults.

Targeted actions: Children

1. Prevent access to heights by physical barriers and health education to parents.
2. Change the composition of surfaces with high potential for fall impacts.
3. Reduce the likelihood of falls by wearing protective shoes and gear, and using caution during activities such as bike riding, skating and skate boarding.

VII. LEGISLATION

Delaware Codes and signed legislation do not exist for fall prevention. However, using common sense and taking extra precautions can help prevent fall injuries.

Building codes should ensure that balconies, decks, porches, bleachers and fire escapes have railings with vertical openings not greater than four inches apart. The Delaware State Fire Marshal's Office adopted regulations from the National Fire Protection Agency's Life Safety Code pertaining to safe exiting from public buildings. All the components of "means of egress" are addressed and include doors, stairs, aisles, capacity and how well they are marked and illuminated. These components are designed to meet the minimum requirements of the applicable edition of the Life Safety Code as adopted by Delaware's State Fire Prevention Regulations.

The U.S. Consumer Product Safety Commission recommends that: 1) platforms and ramps on playground equipment should have guardrails to prevent falls; 2) shock-absorbing surfaces should be installed and maintained around playground equipment; and 3) tripping hazards such as exposed concrete footings, tree stumps and rocks should be removed. According to the National Program for Playground Safety recommendations, playground climbing equipment should be surrounded with a guardrail or protective barrier. Platforms and guardrails should be at least 29 inches high for pre-school aged children; for school-aged children barriers should be at least 38 inches high.

VIII. IMPLEMENTATION

Christiana Health System and the Division of Services for Aging and Adults with Physical Disabilities will be the lead agencies. Other organizations will include, but not be limited to, all nursing homes, Delaware Safe Kids, Risk Watch and the Division of Parks and Recreation.

IX. METHODS OF EVALUATION

Regular meetings will be held by implementing partners to review process indicators such as the number of health education sessions done, number of nursing homes with exercise programs, number of falls by cause, age, sex and location. Outcome indicators such as hip fractures and death rates will be reviewed annually to identify trends.

X. SOURCES

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PREVENTING MOTOR VEHICLE CRASH INJURIES & DEATHS

I. STATEMENT OF THE PROBLEM

More than 42,000 people are killed and approximately 3.3 million seriously injured on our nation's highways each year. Motor vehicle crashes are the leading cause of death and disability for Americans aged 35 and under.³ In 2004, 140 persons died on Delaware roadways and 7,610 individuals were injured. Of those killed, 33% (46) of the deaths were alcohol-related and 50% (55) were not wearing a seat belt. Fifty-five percent (71) of the 130 fatal crashes resulted from aggressive driving behaviors. Of the 7,610 crash-related injuries in Delaware in 2004, 722 were alcohol-related.¹ The economic impact and emotional toll of traffic crashes are staggering. It is estimated that motor vehicle crashes cost America \$231 billion annually, an estimated \$7 billion in Delaware alone.³

II. PROBLEM ANALYSIS

Occupant Protection

Based on the Statewide Observational Seat Belt Use Survey conducted by the Office of Highway Safety in June 2004, Delaware's seat belt use rate is 82%, up from 75% in 2003.² The current national seat belt use rate is 80%.³ In 2004, 50% (55 of 110) of those killed in motor vehicle crashes on Delaware roadways were not wearing seat belts.¹

Table 1. Delaware Seat Belt Use Data²

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Use rate	62%	59%	62%	64%	66%	67%	71%	75%	82%

Table 2. Delaware Motor Vehicle Occupant Fatality Data and Seat Belt Use¹

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Occupant Fatalities	85	123	89	82	100	108	100	113	110
% not using seat belts	49%	65%	62%	68%	72%	64%	64%	55%	50%
	41 of 85	80 of 123	55 of 89	56 of 82	72 of 100	69 of 108	64 of 100	62 of 113	55 of 110

Impaired Driving

In 2004, 32% (42 of 130) of the fatal crashes in Delaware were alcohol-related and 33% (46 of 140) of the traffic fatalities were alcohol-related.¹ Nationally, 2002 crash data reveals that 41% (17,419) of the 42,815 traffic fatalities on our nation’s roadways were alcohol-related.³ In Delaware, most alcohol-related crashes occur between Friday and Sunday, between the hours of 8 p.m. and 4 a.m. It can also be noted that the majority of these crashes involve males between the ages of 22 and 54.¹

Table 3. Delaware – Historical Alcohol Involvement in Fatalities¹

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Fatalities	120	148	115	104	130	139	127	145	140
% Alcohol-involved	40%	43%	37%	38%	45%	42%	36%	37%	33%
	48 of 120	63 of 148	43 of 115	40 of 104	59 of 130	58 of 139	46 of 127	54 of 145	46 of 140

Aggressive Driving

In 2003, the three primary contributing circumstances for all types of aggressive driving-related crashes were failure to yield the right of way, speeding and following too closely. Since 1995, the percentage of all crashes resulting from aggressive driving behaviors has remained around 43%, yet the percentage of fatal crashes resulting from aggressive driving behaviors has increased from a low of 38% (46 of 121) in 2000 to a high of 57% (67 of 117) in 2002.¹

Table 4. Delaware – Percentage of Fatal Crashes Resulting from Aggressive Driving Behavior¹

	1996	1997	1998	1999	2000	2001	2002	2003	2004
Total fatal crashes	109	125	107	94	121	118	117	136	130
Aggressive driving related	51	53	53	51	46	60	67	70	71
Percentage	47%	42%	50%	54%	38%	50%	57%	51%	55%

III. GOAL

A goal of Healthy Delaware 2010 is to reduce fatalities resulting from motor vehicle crashes from 16 per 100,000 population to 12 per 100,000 population. Accordingly, the goal for 2005 is to reduce the current death rate to 14 per 100,000 population.

IV. OBJECTIVES

1. Conduct occupant protection enforcement initiatives, education programs and public awareness efforts aimed at increasing the statewide seat belt use rate from 75% in 2003 to 83% in 2005.
2. Conduct impaired driving enforcement initiatives, coordinate public awareness efforts, provide alcohol treatment services for DUI offenders and work to improve the DUI adjudication process aimed at reducing alcohol-related fatalities from 37% (54 of 145) in 2003 to 34% in 2005.
3. Conduct enforcement initiatives, education programs and public awareness efforts aimed at reducing fatal crashes resulting from aggressive driving behaviors from 51% (70 of 136) in 2003 to 48% in 2005.
4. Implement a statewide-integrated crash data collection system, which will allow for the comprehensive analysis of crash data including pre-hospital, fatality, injury, location, time of day, day of week, contributing circumstances and adjudication information. This data collection system will help to ensure effective policy development, program planning and resource allocation.

V. ACTION STEPS

Increase Passenger Restraint Use

Action Step 1: Support high visibility enforcement of occupant protection laws coupled with educational programming and public awareness efforts.

Action Step 2: Educate law enforcement officers, judges, prosecutors, emergency medical services personnel, employers, driver trainers, insurers and others about the effectiveness of safety restraints and the importance of consistently using safety restraints.

Action Step 3: Support efforts to increase public awareness about the importance of consistently using safety restraints.

Action Step 4: Support community-based education and training about child passenger safety issues. Continue to offer training on the correct use and installation of child safety seats.

Action Step 5: Work with law enforcement and emergency medical services to improve crash data collection, including safety restraint use data.

Decrease Prevalence of Impaired Driving

Action Step 1: Support high visibility enforcement of impaired driving laws coupled with educational programming and public awareness efforts.

Action Step 2: Support comprehensive public awareness programs aimed at educating the public about the dangers of drinking and driving.

Action Step 3: Advocate for passage of strong and effective impaired driving laws.

Action Step 4: Support implementation of training programs specific to impaired driving issues for law enforcement, prosecutors and legislatures.

Decrease Prevalence of Aggressive Driving

Action Step 1: Support high visibility enforcement of aggressive driving laws coupled with educational programming and public awareness efforts.

Action Step 2: Support efforts to increase public awareness about the dangers associated with aggressive driving. Support efforts to increase public awareness about the State's graduated driver licensing law.

Action Step 3: Encourage highway officials to identify and implement programs that will utilize new technologies aimed at decreasing aggressive driving.

VI. LEGISLATION

Occupant Protection

- House Bill 43 - Primary Seat Belt law enacted June 30, 2003. Allows for primary enforcement of the law and requires seat belt use by all vehicle occupants in every seating position of the vehicle.
- Senate Bill 130 - Booster Seat law enacted May 9, 2002, effective January 1, 2003. Requires children between the ages of four and seven and under 60 pounds to be secured in a child safety seat or booster seat.

Impaired Driving

- House Bill 111 - .08 Blood Alcohol Content (BAC) law enacted July 12, 2004. Establishes .08 as the prohibited blood alcohol concentration for driving a motor vehicle in the State of Delaware. Lowers the blood-alcohol level for intoxicated driving from .10 to .08.

Aggressive Driving

- House Bill 364 - Aggressive driving law enacted June 30, 1999, effective July 22, 1999. This bill created a new offense called aggressive driving that is based on a combination of unsafe and unlawful driving actions committed by a motorist.

VI. IMPLEMENTATION

The Delaware Office of Highway Safety (OHS) shall lead in the implementation of this plan in partnership with Delaware Safe Kids Coalition and the Crash Outcome Data Evaluation System (CODES) project partners. Many of the actions listed in this plan are integrated into the OHS injury prevention plan.

VII. METHODS OF EVALUATION

Monitoring and evaluation will be conducted by the Delaware Injury Advisory Council in partnership with motor vehicle injury prevention programs in the state. Annual meetings will be held to evaluate program outcome and process indicators such as motor vehicle injuries and deaths, and impaired driving and occupant protection rates. The Office of Highway Safety in partnership with the Delaware CODES project partners and the Injury Prevention Coalition's Data Review Committee shall lead the evaluation of this plan. Process indicators such as hospitalizations, seat belt use, helmet use, booster seat use, cost of hospitalizations and alcohol involvement in crashes shall be reviewed. Outcome indicators for review shall include fatal crashes, motor crash disabilities and the effectiveness of specific interventions.

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TRAUMATIC BRAIN and SPINAL CORD INJURY PREVENTION PLAN

I. STATEMENT OF THE PROBLEM and ANALYSIS

Traumatic Brain Injury

Traumatic Brain Injury (TBI) is responsible for more deaths and disabilities in children and adults than any other type of injury. The most frequent causes of TBI are motor vehicle crashes, falls, sports injuries, and violence (gunshot wounds, assaults, and shaken baby syndrome). TBI is the largest acquired disabling condition of children and adolescents, with 15 to 24-year-olds being at highest risk. In the United States, a TBI occurs every 21 seconds. Every five minutes one person will die and another will become permanently disabled due to brain injury. In 2004, 1,465 Delaware citizens sustained a TBI requiring hospitalization (Delaware Trauma System Registry). Ninety percent of TBI victims have difficulty with understanding, reasoning, learning, memory, and/or emotions. Sixty-one percent suffer from muscle weakness or uncontrollable movement, paralysis, or coordination problems. A TBI survivor's lifetime expenses for healthcare and services may reach approximately \$4 million.^{4,17}

Spinal Cord Injury

There are 11,000 new spinal cord injuries (SCI) in the United States each year. Almost half of these patients die before reaching a hospital. Current estimates indicate between 183,000 and 230,000 Americans are living with spinal cord injuries. More than half the people who suffer SCI are between ages 16 and 30 years. A single SCI survivor's lifetime healthcare and services costs will exceed \$2 million, with lost wages and productivity potentially exceeding \$50,000 annually.^{17,21}

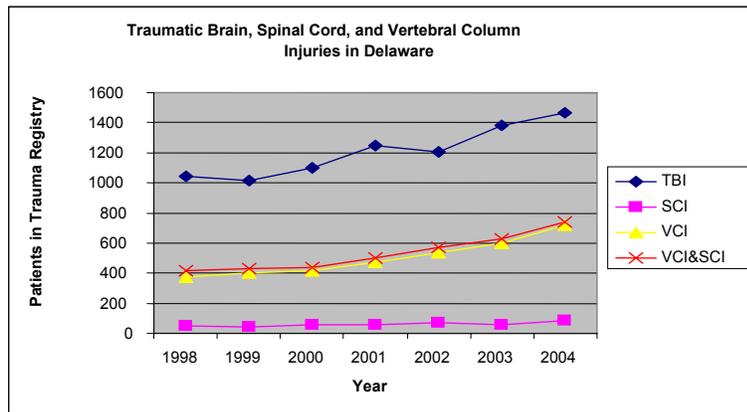
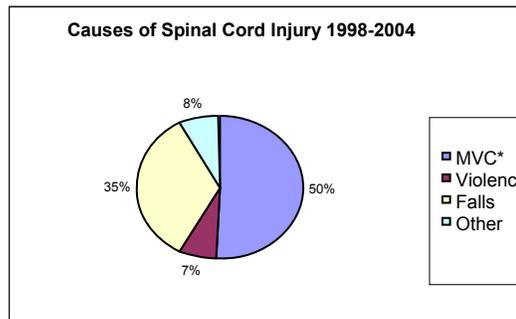
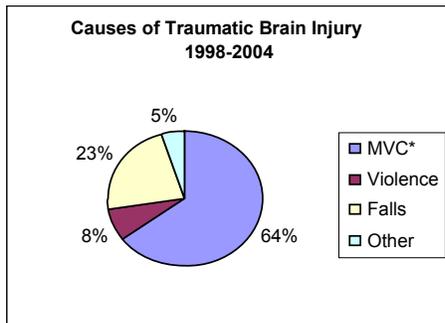


Figure 1: Source: Delaware Trauma System Registry
Division of Public Health



*MVC – Motor Vehicle Crash

Figures 2 & 3: Source: Delaware Trauma System Registry, Division of Public Health

II. GOAL

Reduce the number of traumatic brain and spinal cord injuries and deaths in Delaware.

III. OBJECTIVES

1. Reduce the number of nonfatal Traumatic Brain Injuries from 70 per 100,000 in 2003 to 65 per 100,000 persons by the year 2010.
2. Reduce the number of TBI fatalities from 19 per 100,000 persons to 17 per 100,000 by 2010.
3. Increase the percentage of people discharged with TBI who have access to rehabilitative services by 10%. A baseline will be established in 2005 through the surveillance system.
4. Reduce the number of SCI fatalities and SCI injuries by 5% from baseline rates by 2010.

IV. BEST PRACTICES

Surveillance

There is limited epidemiologic data on the incidence and outcome of TBI and SCI patients after discharge from hospitals.¹⁸ This limits the ability of states to estimate the number of new TBI and SCI cases and the type of services they require. Identifying TBI and SCI cases through Hospital Discharge Data, Trauma Registries and case abstraction has been used to measure the estimated services needed and to link patients to services in North Carolina, Colorado and South Carolina.^{14,18,20} For effective intervention design, TBI and SCI variables such as socio-economic status, age, race/ethnicity, personal protection use, and alcohol or drug involvement should be collected. Also, surveillance should capture information on the availability and utilization of rehabilitative services and the outcomes three years post-injury since initial deficits can improve over time.¹⁵ All of these efforts require interagency cooperation among federal, state, legislative, statutory bodies and victims of TBI and SCI.

Screening

While concussion is a form of TBI and can have serious consequences, research shows that of all high school football players who acquire concussion while in school, only 26% to 28% access rehabilitative services.^{9,16} Numerous studies have demonstrated that screening high risk groups for concussions can help identify children with TBI and link them to necessary rehabilitative services.^{16,22} However, this requires the development and use of sensitive and case-specific screening tools.¹

Education

Since the incidence of TBI and SCI is greatest in the 15 to 24 year age group, it is critical that this group is educated regarding the major causes for these injuries (motor vehicle crashes, violence, falls, and sports), their increased risk of acquiring these devastating injuries, and strategies they can employ to decrease their risk¹². Appropriate child safety seat use can decrease the risk of injury to a child by 71%, yet 77% of child safety seats evaluated in Delaware are misused⁶. Booster seat use for children ages 4-8 years can decrease risk of injury by 59%, yet only 5% of this age group are properly restrained. Health education efforts must focus on both parents and children to encourage discussion of risk behaviors, the proper use of child safety restraints, and helmet use during sports.

Often people with a brain injury are not aware of the extent of their injuries and where to get help. Increasing awareness of the devastating effects of traumatic brain and spinal cord injury can increase the demand for services. In South Carolina, a care pathway for people discharged with TBI was developed through partnership between hospitals and the TBI surveillance system. Hospitals provided discharged patients with resources on TBI in the community and a TBI hotline was established to allow patients to call with questions.¹⁴ Even though this has not been evaluated, similar interventions, such as poison control hotlines, have helped increase the utilization of services.

Enforcement

Legislation is necessary to promote the actions that increase personal protection, reduce alcohol intake when driving, reduce inexperienced driving, promote stringent building codes at nursing homes, and reduce violence-related brain and spinal cord injuries.^{13,14,15}

Environment/Engineering

The impact and incidence of TBI and SCI can be reduced by improving the safety of environments in ways such as installing guard rails at nursing homes and public buildings that serve older citizens, redesigning air bag discharge systems, improving child safety seat design and ease of use, increasing the use of traffic signs and signals at risky intersections, providing bike and walking paths away from traffic, and supporting the use of developmentally appropriate playgrounds surfaced with rubber.¹³

V. ACTION STEPS

This plan will be implemented in partnership with public and private organizations, including the State Council for Persons with Disabilities' Brain Injury Committee, the Brain Injury Association of Delaware, Disabilities Law Program, ThinkFirst Delaware, and Delaware Paralyzed Veterans Association. These agencies will help to implement planning, advocacy and funding initiatives focused on prevention of TBI and SCI, as well as enhancement of service delivery for persons with TBI and SCI.

Education

1. Support and expand such programs as ThinkFirst Delaware, an identified best practice brain and spinal cord injury prevention community education program. SAFE KIDS Coalition initiatives and the Delaware Risk Watch Program focus on preventing injuries that can cause TBI and SCI.
2. Educate the public about the increased risks for TBI and SCI related to alcohol and substance abuse.
3. Support the training of educators to enable identification and development of programming for students and older adults with TBI and SCI and to promote accommodations and remediation of disability-related deficits.
4. Increase public awareness of the increased risk for TBI and SCI in children, especially adolescents and young adults ages 15-24.
5. Work to decrease high-risk behavior in individuals with TBI.
6. Increase public awareness of TBI and SCI as major health issues in Delaware.

Enforcement

7. Increase public awareness of laws that help to decrease injury from traffic crashes, violence, falls and sports.
8. Support legislative initiatives including but not limited to client alcohol consumption for taverns, expanded helmet laws for motorcycles, scooters, and bicycles, regulation of electric scooters and bikes, enhanced child restraint requirements, additional graduated drivers license restrictions, and providing financial assistance for injured persons from hospitalization into the community.
9. Establish legislation that will enable the follow-up of TBI and SCI cases and help to establish outcomes of care.

Environment/Engineering

10. Assist with identification and support of changes to the environment that will help decrease the incidence of TBI and SCI such as bicycle paths, specific diving areas in public pools, safer playgrounds, recreational areas, and home and nursing home improvements.
11. Assist with the identification of and support for changes to the environment, including housing, which will improve access for those who have TBI and SCI, such as ramps and physical plant modifications.
12. Encourage the use of and funding for access to assistive technology for TBI and SCI individuals.

Interagency Planning, Advocacy and Funding

13. Promote governmental responsiveness to the needs of persons with TBI and SCI through the application for new planning and service grants, full implementation of the new TBI Medicaid Waiver, adoption of revised TBI and SCI eligibility standards for disability services, incorporation of Acquired Brain Injury-related components in disability services' strategic plans and Medicaid Buy-in planning.
14. Delaware has developed a TBI/SCI surveillance system using the Trauma System Registry, Hospital Discharge and Vital Statistics databases. The next step will be to develop the data analysis that is necessary for developing age, gender and race/ethnicity-specific interventions. Case follow-up will be implemented when necessary legislation is passed. This will allow for estimating unmet needs of new TBI and SCI patients who are discharged from the hospital.

VI. LEGISLATION

Bicycle Helmets

The Delaware Child Bicycle Helmet Law requires any person under the age of 16 to wear a properly fitted and fastened bicycle helmet, which meets or exceeds the ANSI Z90.4 or the Snell Memorial Foundation's 1984 Bicycle Helmet Standard for Protective Headgear for Use in Bicycling. This also applies to child seats attached to bikes or in trailers towed by bikes. Any guardian who fails to enforce helmet-wearing by his/her child shall be fined \$25 for the first offense, and \$50 for each subsequent offense. The court may dismiss all charges if presented evidence shows that a violator has purchased or obtained a bicycle helmet meeting the above-mentioned standards.

Occupant Protection

The Primary Seat Belt Law requires the driver and all passengers in the vehicle to wear a seat belt. Officers may pull over motorists if they see an unrestrained passenger. The driver's fine for violating this law is \$25 plus \$15 court costs.

Child Restraint Law requires that all children be properly restrained in a federally approved child safety seat appropriate for the child's age, weight and height up to six years of age or 60 lbs. Children ages 7-15 must be secured in a seat belt. Children under 12 years of age or 65 inches in height are required to sit in the back seat if there is an active passenger side airbag. The driver's fine for violating this law is \$25.

Inexperienced Driving

The Graduated Driver Licensing Law requires that teen drivers successfully pass a state-approved driver education program. They then receive a Level One Learner's Permit under which they will drive supervised by an adult at all times with no more than two other passengers for six months, followed by six months driving unsupervised during the day with no more than two passengers and supervised during the night (10 p.m.-6 a.m.). Failure to follow the rules for the graduated license will result in a two month suspension of the Learner's Permit.

Impaired Driving

Zero Tolerance states that anyone under the age of 21 years who drives, operates, or has actual physical control of a vehicle, an off-highway vehicle, or a moped while consuming or after having consumed alcoholic liquor, shall have his or her driver's license and/or privileges revoked for a period of 2 months for the first offense and not less than 6 months nor more than 12 months for each subsequent offense. If the underage person does not have a driver's license and/or privileges, the person shall be fined \$200 for the first offense and not less than \$400 nor more than \$1000 for each subsequent offense.

.08 Blood Alcohol Content (BAC) Law establishes .08% as the prohibited blood alcohol concentration for driving a motor vehicle in the State of Delaware. The bill lowered the blood-alcohol level for drunk driving from .10% to .08%.

VII. IMPLEMENTATION

This plan will be implemented through partnerships among the Division of Public Health, the State Council for Persons with Disabilities' Brain Injury Committee, the Brain Injury Association of Delaware, the Paralyzed Veterans' Association, the Division of Services for Aging and Adults with Physical Disabilities, and ThinkFirst Delaware.

VIII. METHODS OF EVALUATION

Monitoring and evaluation will be conducted by the Delaware Injury Advisory Council in partnership with traumatic brain and spinal cord injury prevention programs in the state. Annual meetings will be held to evaluate program outcome and process indicators for traumatic brain injuries and spinal cord injuries. Process indicators such as TBI by cause and TBI by age/sex/race and outcome indicators such as TBI severity, TBI discharges and access to rehabilitative or support services in the community will be evaluated.

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SUICIDE PREVENTION

I. STATEMENT OF THE PROBLEM

Suicide is a major public health problem in Delaware, with an average of nine suicide deaths occurring monthly. In 2001, Delaware ranked 16th in the nation for suicide deaths.⁵ More people die in Delaware by suicide than by homicide. The suicide rate has increased from 11.09 per 100,000 in 1998 to 13.30 per 100,000 population in 2001. This was far above the national average of 10.7 deaths per 100,000 in 2001.³³ In 1999-2000, suicide was the 11th leading cause of death in Delaware while homicide ranked 16th.¹⁴ In this same period, suicide was the 2nd leading cause of death in the age group 15-24, and 4th in the age group 25-44, resulting in three times more years of life lost than homicide.¹¹ One in five high school students has seriously considered suicide, with one in ten making attempt.¹⁰

II. PROBLEM ANALYSIS

Figure 1 below shows the increase in suicides in Delaware between 1999 and 2001. The number of suicides increased from 82 (11.1/ 100,000 population) in 1999 to 108 (13.3/ 100,000 population) in 2001.

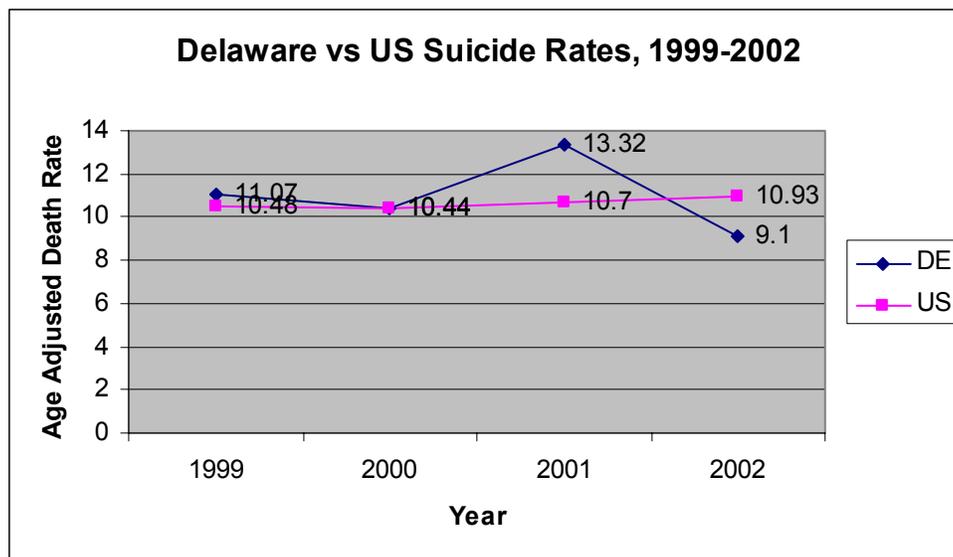


Figure 1. Source: The Centers for Disease Control: Injury Mortality. Accessed 2004.

In 2001, suicide was the 11th leading cause of death in the United States; homicide was the 13th leading cause of death in the United States.¹ Firearms are currently the most frequently utilized method of suicide.¹⁹ About one person is hospitalized daily for an attempted suicide in Delaware. Males complete suicide at a rate 4 times greater than females.³⁰ In 1999-2001, suicide was the third leading cause of death in Delaware for 5 to 14 year olds, the second leading cause in the age group 15 to 24, and the fourth leading cause among ages 25 to 44. 15 to 44 year olds and adults over 75 are at greatest risk of committing suicide in Delaware.¹⁴

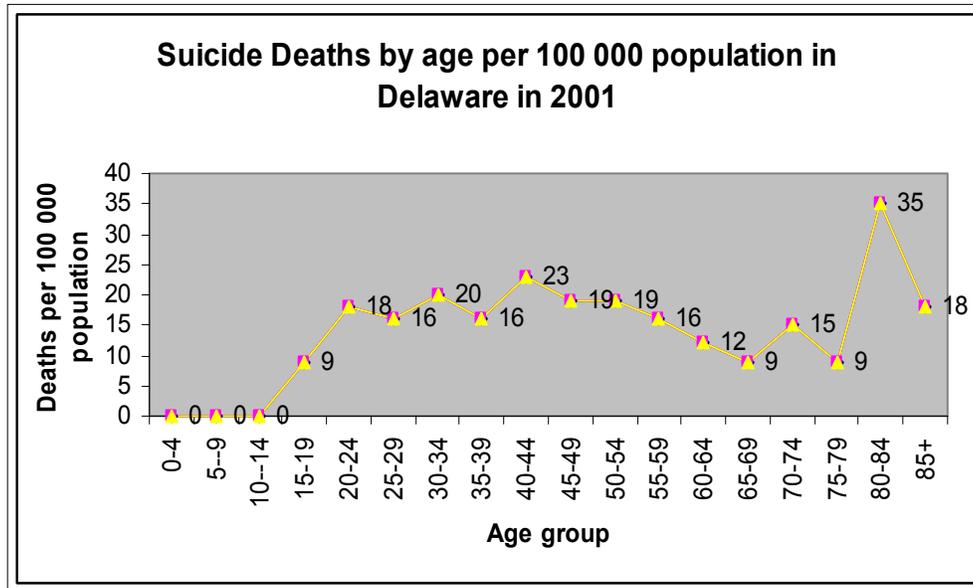
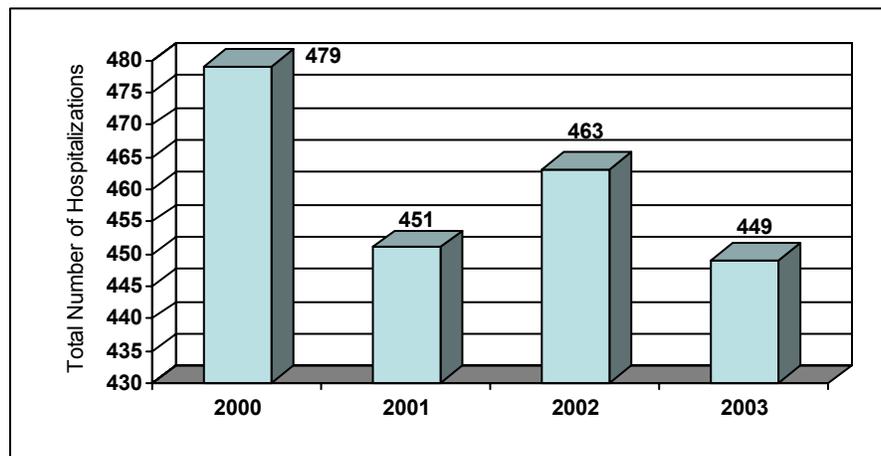


Figure 2. Source: Delaware Office of Vital Statistics, 2001

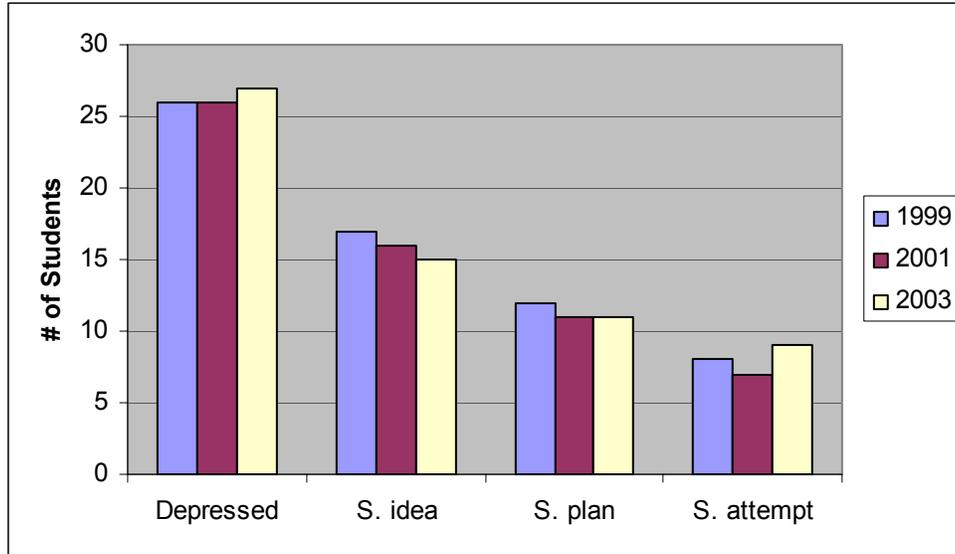
Figure 3. Hospitalizations for Suicide Attempts in Delaware, 2000-2003



Source: Delaware Hospital Discharge Data from 2000 to 2003, Office of Vital Statistics
The ranges used for the suicide attempts include E-Codes from E950 to E959 in the E-Code field.

Psychological autopsy studies reflect that in more than 90% of completed suicides the victim had one or more mental disorders.¹⁴ In Delaware the number of youths reporting suicidal ideation and plans decreased between 1999 and 2003 as shown in Figure 4 below. However, the percentage of youths reporting suicidal attempts has increased from 6 in 1999 to 8 in 2003. There are an estimated 8 to 25 attempted suicides for each suicide death; more women than men report a history of attempted suicide, at a ratio of 3:1.¹¹ Group diagnoses for particular risks include those with depression, schizophrenia, chemical dependency, and panic disorder.²⁹

Figure 4. Suicidal Behavior Among Delaware Youths 1999-2003



Source: Youth Behavior Factor Surveillance System (Age is 14-18 years)

III. GOAL

Promote awareness that suicide is a preventable public health problem and enhance behavioral and social changes necessary to reduce suicidal ideation and attempts.

IV. OBJECTIVES

1. By 2010 the number of youths considering suicide will be reduced from 27 in 2001 to 15.
2. By 2010 the number of youths attempting suicides will be reduced from 7.1 in 2001 to 5.
3. By 2010 the suicide death rate will be reduced from 13.30 per 100,000 population in 2001 to 10.0 per 100,000.
4. By 2010 the proportion of youths considering suicide who report receiving counseling or medical intervention shall be increased to 70%. The baseline will be established using the 2006 Youth Risk Behavior Factor Survey.

V. BEST PRACTICES Literature suggests that the following interventions are effective.

1. Partnership-based approach to suicide prevention.

Involving the community in recognizing and counseling people with suicide ideation or attempts can increase the chances of reducing suicide attempts. For example, a program called Gatekeepers has been implemented in Colorado to help adults in schools and communities who come into contact with suicidal youths to respond promptly and appropriately. This project is built on the premise that youths will only disclose secrets to people they are comfortable with and these people will be friends who are non-judgmental. Results from such studies have demonstrated that participants in specific gatekeeper training programs have enhanced their readiness to intervene by increasing their comfort, competence and confidence in helping people at risk, and such participants generally retain the skills they were taught.²⁸ Gatekeepers must be aware of common predictors of suicide such as major depression, affective disorder, previous suicide ideation/attempts, isolation, cognitive rigidity, elderly white males, family history of suicide, occupational/financial problems, acute life stressors, marital problems and physical illness.²³ Suicide prevention education should focus on males because they are less likely to report attempted suicide and more likely to complete suicide.²⁵

Several studies show that 46-76% of older people who committed suicide saw a health care provider within the last 30 days of death.³⁰ It is not uncommon that healthcare workers see suicidal behavior in the elderly and women in post-menopause age as normal.^{1,19} A Japanese study showed that a community-based screening for depression in the elderly, followed up by a mental health counselor and health education resulted in a significant reduction in suicide among the elderly.¹⁸ Mental health education for religious organizations, day care providers, nursing schools and maternal health providers should be encouraged as part of promoting a continuity of care to suicide survivors or high risk groups.⁹ This is because people with a history of suicide attempts are more likely to repeat them.¹⁹

2. Promote efforts to reduce access to lethal means and methods of self-harm.

Research shows that restricting access to locally prevalent lethal means of suicide is an effective suicide strategy.^{1,23} Most suicides are impulsive. Easy access to a firearm or poison increases the risk of suicide by 75% and reduces survival by 80%.¹⁹ Reducing access to firearms is feasible in Delaware with much health education, enforcement of regulations, and increased partnerships among the Justice Department, the Medical Examiner's Office, the State Police, schools, community organizations, mental health and hospital organizations. In Delaware, gun safety education is promoted in schools by the Risk Watch program. A study in Baltimore showed that gun-related suicides and injuries went down with increased community enforcement and punishment for gun violations.²⁵ Fear of being cited for gun violation is associated with reduced gun suicide.³² The Delaware Project Safe Neighborhoods has stepped up gun violation monitoring with a view to increase gun safety. Indictments increased by 340% between 2001 and 2003. Since 8-10% of suicide attempters are alcoholics, awareness of health-related lifestyle restrictions must be increased among alcoholics.²⁵

3. Increase access to services

Crisis hotlines are widely encouraged by suicide prevention programs. A study by Miller (1984) showed a 55% reduction in suicide rates with the introduction of a crisis hotline.⁶ However, other studies caution that youths in need of help tend to seek out peers rather than professionals.¹² Therefore, innovations that attract adolescents such as email and internet chat rooms should be explored.²⁴ Establishing care pathways for patients between institutions such as mental health, correction facilities and crisis hotlines is essential for ensuring a continuum of care for potential victims of suicide. Also, services should be provided to friends of individuals who commit suicide because they are at risk of developing depression, post-traumatic stress disorder and complicated grief reactions.¹⁵ In Delaware, amendments have been made to the Violent Crimes Compensation Board through the Child Advocacy Center to support mental health treatment for children with psychological and behavioral antecedents of suicide.

While health education is essential for increasing suicide awareness, current evidence suggests that an increase in suicide follows suicide stories in the media—"contagion effect." Therefore, education should describe what should be avoided and where to get help.² Such an education strategy was associated with a 73% reduction in youth suicide in Vermont.²²

4. Screening and treatment of suicide

Screening of people for depression not only provides a proxy for estimating the anticipated suicide problem, but it also indicates those needing interventions. The Youth Behavior Risk Survey provides an estimate of suicidal attempts, but this data is not school-specific and therefore cannot be used to identify which youths require counseling. Forty-three states have adopted the Columbia University TeenScreen Program which has three suicide prevention screening tools: the Diagnostic Predictive Scale (DPS), the Columbia Health Screen, and the Depression Scale. The DPS is a computerized screening tool that is widely used and up to date. The Columbia Health Screen and the Depression Scale are both done on paper. The results of each of the tests are reviewed by a licensed mental health professional who then recommends that students with high scores be referred for treatment.¹³ School nurses, teachers and caregivers at nursing homes should be trained in identifying suicidal behavior and clear referral protocols should be established.

The State of Delaware is trying to implement the computerized DPS version into high schools and youth-serving agencies to help prevent suicide.

Medical personnel can help to identify and treat people who are at risk of committing suicide.³² Common predictable markers of suicide in adults include major depressive illness or affective disorder, drug/alcohol abuse, prior suicide attempts/ideation/talks, isolation, cognitive rigidity, history of suicide in the family and social/family stress.^{9,27,31} A recent review of several studies showed that the main risk factors for suicide include non-intact family (61%), conflict with parent (51%), legal discipline (31%), psychiatric disorder (95%), psychiatric morbidity (81%), mood disorder (76%), major depression (54%) and substance abuse (62%). Recent studies have shown that addiction and withdrawal from illicit drugs increase the risk for suicide attempts.^{24,17} The Food and Drug Administration has recently issued warnings that the unsupervised intake of antidepressants by children could increase the risk of depression.¹⁶ An Australian study that promoted early screening of suicide in

children and followup by a suicide intervention counselor reduced suicide hospitalizations from 11% to 4 %.²⁶ Obstetricians can contribute to the reduction in post-partum depression and suicide by offering screening and counseling services to pregnant women.⁸ Model skill based training includes, health education on risk and protective factors, mentoring, recreation and physical education, psychological and pharmacotherapy, family and community integration and occupation opportunity services.^{24,12,2}

5. Skills training and rehabilitation

School-based suicide prevention education strategies have not been known to reduce suicidal risk behaviors.⁷ Recent studies recommend skills-focused education which incorporates coping, problem-solving and cognitive skills into school and community based programs.²¹ Such skills-based interventions must be introduced at an early age especially in children from stress-ridden non-intact families.²⁴

VI. ACTION STEPS/ INJURY PREVENTION

Objective 1.1: Develop a public information campaign designed to increase public knowledge of the importance of suicide prevention. The Child Death, Near Death, Stillbirth Commission recommends having a crisis hotline on all school computers for students to access anytime.

Objective 1.2: Develop strategies to reduce the stigma associated with being a consumer of mental health, substance abuse and suicide prevention services.

Objective 2.1: Increase the proportion of school districts, private school associations, colleges, and universities with evidence-based programs designed to address serious young adult distress and prevent suicide.

Objective 2.2: Increase the proportion of organizations (e.g. businesses, senior centers, community centers, Girl Scouts, etc.) that ensure the availability of evidence-based prevention strategies for suicide prevention.

Objective 2.3: Promote screening for depression, substance abuse and suicide risk by health professionals.

Objective 3.1: Expose a proportion of households to public information campaign(s) designed to reduce the accessibility of lethal means, including firearms in the home. Project Safe Neighborhoods, a Delaware subsidiary of Operation Disarm Gun, has increased the number of federal firearm indictments by 340% between 2001 and 2004.³¹ Continue gun safety education in schools and through enforcement agencies.

Objective 4.1: Develop guidelines for schools on appropriate linkages with mental health and substance abuse treatment services and implement these guidelines in all schools.

Objective 4.2: Increase the proportion of private and public sector organizations that offer assessments of mental health and substance abuse problems and access to care. Also, institute crisis hotlines on school computers and wellness clinics.

VII. LEGISLATION

The Garrett Lee Smith Memorial Act (S. 2634), which passed both the U.S. House of Representatives and the U.S. Senate on September 9, 2004, and was signed into law by the President in October 2004, amends the Public Health Act and authorizes \$82 million in grant money over a three-year period to states, Indian tribes, colleges and universities for the development of youth suicide prevention and intervention programs. The law calls for early screening programs to identify mental illness in children and provide treatment referrals, training for community child-care professionals and authorization to states and other eligible entities. The Act will bring parity to federal funding for public health issues by more than doubling the amount of money that the federal government allocates to suicide prevention.²⁷

VIII. IMPLEMENTATION

The Mental Health Association in Delaware, in partnership with the Division of Substance Abuse and Mental Health, will lead in the implementation of statewide suicide prevention efforts.

IX. METHODS OF EVALUATION

The lead agency shall call meetings with leaders of partner organizations to review process indicators such as active partners, resource use or availability, access to counseling services and utilization of counseling or mental health services. Annually, outcome indicators such as suicide rates, attempted suicides, suicide ideation and means of suicide shall be reviewed with the help of the Data Review Committee.

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POISONING PREVENTION

I. STATEMENT OF THE PROBLEM

In 2003, the nation’s poison control centers received over 2,300,000 calls.²⁴ Closer to home, The Poison Control Center at the Children’s Hospital of Philadelphia handled over 110,000 calls, 12,000 of which originated in Delaware. Ninety percent of these incidents occurred in the caller’s home and 62% involved children six years of age or younger. Poison exposure was twice as high in children under five years than in adults.²⁵ In 2001, an average of three Delaware residents died from poisoning every day.⁹ Therefore, prevention of poisonings in children, the most at-risk group, must become a state priority.

II. PROBLEM ANALYSIS

Of the 41 unintentional poisoning deaths in Delaware in 2001, 83% or 34 cases involved white people. The age-adjusted death rate for white males (8.2 per 100,000) was twice as high as that of females (3.75 per 100,000 population). Twenty-three deaths (56%) involved people between 35 and 44 years of age.^{9,13} The poisoning death rate for Delaware has been higher than the national average since 1997.

Lead poisoning from poorly maintained residential older neighborhoods remains one of the most common causes of environment-related poisoning that occurs in children.²⁷ Even though the prevalence of lead hazards in Delaware is largely unknown, national estimates show that 20% of all housing units in the US have lead-based hazards especially houses constructed before 1978.²⁸ Repair or maintenance of such houses generates lethal doses of lead dust that can cause poisoning. Lead poisoning can result in learning disabilities and behavioral problems.

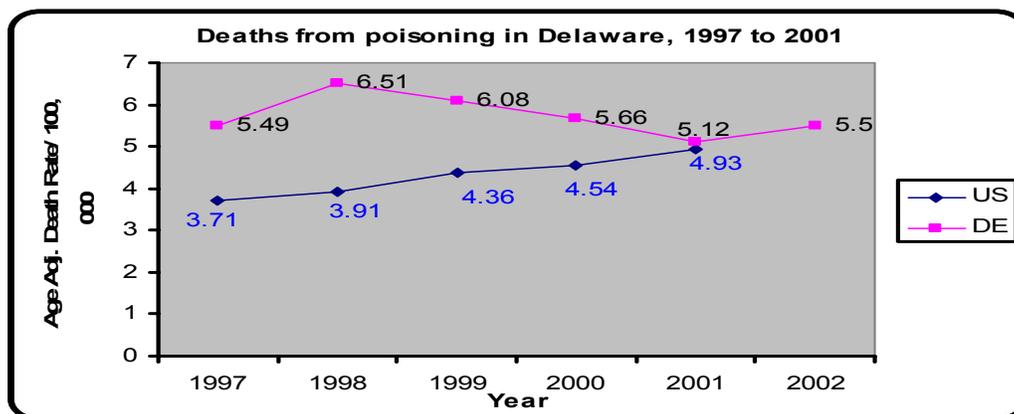


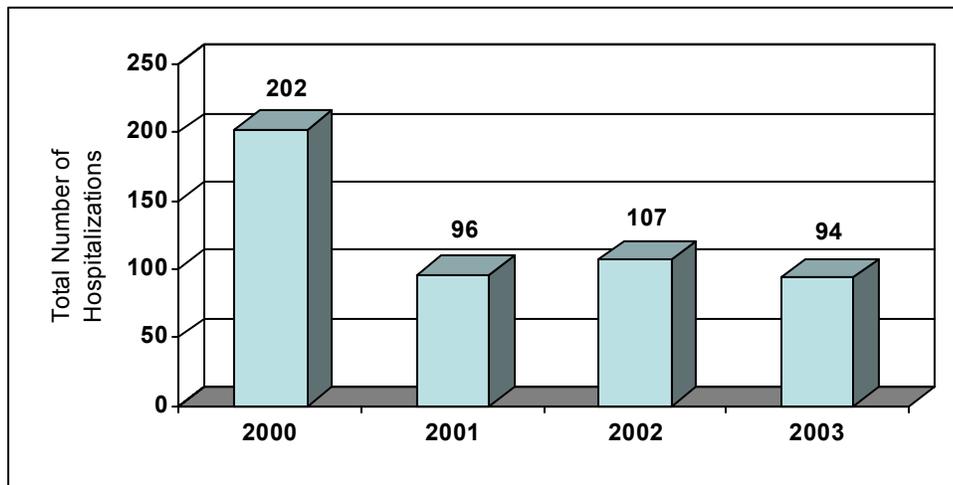
Figure 1.

Source: Delaware Vital Statistics, Centers for Disease Control

Between 1997 and 2001, the age adjusted death rate from poisoning was twice as high in males (7.8/100,000) compared to females (3.5/100,000). The death rate for blacks (5.3/100,000) was not significantly different from that of whites (5.9/100,000). White males were almost two times more likely to die from poisoning (8/100,000) than white females (4/100,000). On the other hand, the death rate for black males (9/100,000) was four times higher than that of black females (2/100,000).

The national poison hospitalization rate has increased from 26.41 per 100,000 population in 2001 to 27.13 per 100,000 population in 2002.¹⁹ In Delaware there were 74 (9.2/100,000 population) poison-related hospitalizations in 2001 and 107 (13.2/100,000 population) in 2002.⁸ According to hospital discharge data (2001), the average cost per hospitalization was \$11,700 per case. The main causes of poisoning hospitalizations were: medication (59%), alcohol (19%), carbon monoxide (14%), inhalants (4.5%), poisons (2.5%), others/unspecified (0.4%). Medications were the leading causes of hospitalization in all age groups except adults over 65 years old. Smoke or carbon monoxide exposure was the leading cause of hospitalization in adults over 65 years old.

Figure 2. Hospitalizations for Poisoning Injuries in Delaware, 2000-2003



Data Source: Delaware Hospital Discharge Data from 2000 to 2003

The ranges used for the poisoning injuries include E-Codes from E850 to E869.9 in the E-Code field.

While the overall poisoning hospitalization rate decreased from 202 to 94 hospitalizations between 2000 and 2003, the proportion of females hospitalized for poisoning was twice as high as the number of males hospitalized. Men had high incidences of alcohol, cocaine, heroin and methadone poisoning.

Table 1 shows the number of poison-related calls from Delaware received in 2003 by The Poison Control Center based at The Children’s Hospital of Philadelphia. There were five times more calls from people who had an exposure to poison (6,275) than those seeking information (1,104).

Table 1. Types of Calls from Delaware in 2003

Call Type	Number of Calls	Percentage (%)
Exposures	6,275	85.04
Information Calls	1,104	14.96
Follow-up Calls	4,627	----

Source: The Poison Control Center, Children’s Hospital of Philadelphia

Table 2 below shows that almost 90% of the poisoning incidences were unintentional compared to 8% intentional. This is consistent with the 2002 report by the American Poison Control Center Surveillance System.¹⁸

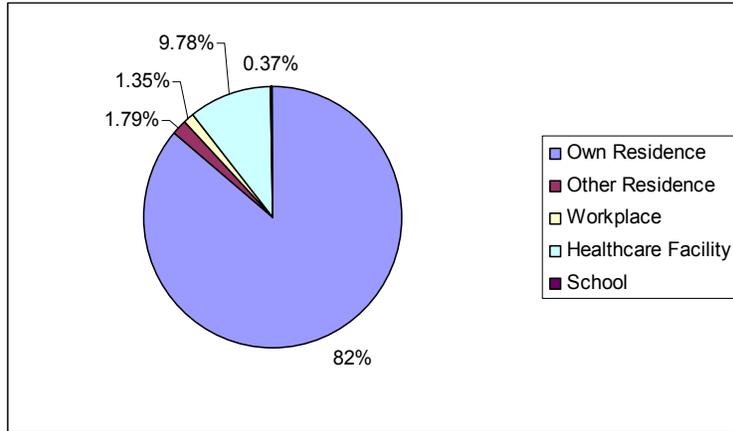
Table 2. Calls from Delaware by Reason in 2003

Reason for Exposure	Number of Calls	Percentage (%)
Unintentional	5,409	89.77
Intentional	486	8.07
Other Reasons	37	0.61
Adverse Reactions	87	1.44
Reason Unknown	4	0.07
No Reason Coded	2	0.03

Source: The Poison Control Center, Children’s Hospital of Philadelphia

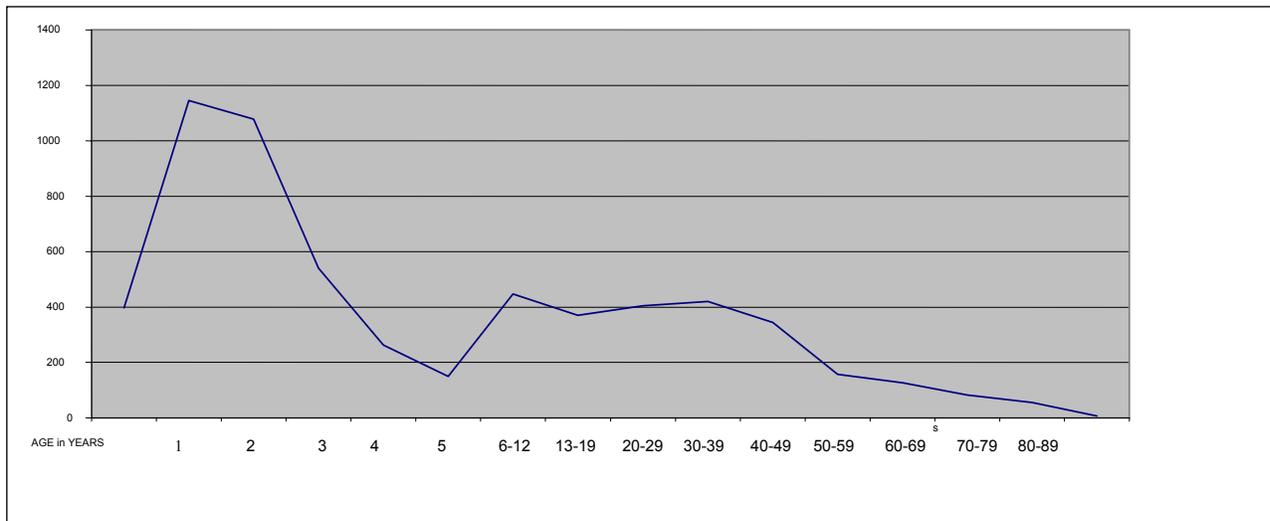
As Figure 3 illustrates, of the 7,379 Delaware calls in 2003, 6,076 (82%) were from home; 139 (1.79%) were from other residences; 722 (9.78%) were from healthcare facilities; 100 (1.35%) were from work places; 27 (0.37%) were from schools; and 22 (0.3%) were from public places.

Figure 3. Poison Calls by Call Site in Delaware, 2003



Source: The Poison Control Center, Children’s Hospital of Philadelphia

Figure 4. Calls by Patient Age in Delaware, 2003



Source: The Poison Control Center, Children’s Hospital of Philadelphia

As Figure 4 above illustrates, the number of calls increased from ages one to three years then dropped steadily before rising again between ages 13 and 30 years. 60% (3,574) of all the calls received involved children between the ages of one and five.

III. GOAL

The mission of The Poison Control Center is to reduce the number of accidental poisonings, the severity of injuries, the number of deaths and the health care costs associated with poison exposures.

IV. OBJECTIVES

1. Reduce the number of Delaware poisoning hospitalizations in the 1 to 20 age group from 74 in 2001⁸ to 50 by 2010.
2. Reduce Delaware human poisoning exposures from 6,025 in 2003²⁵ to 4,000 by 2010.
3. Reduce Delaware's poisoning age-adjusted death rate from 5.1 per 100,000 population in 2001^{8,23} to 1.8 per 100,000 population by 2010.

V. BEST PRACTICES

Surveillance

Data on poisoning from illicit drugs such as heroin is limited in Hospital Discharge Data (HDD). HDD requires linkage with the Medical Examiners records because this data captures a significant amount of information on illicit drug usage.^{2,17} Recent studies have also shown that data on social demographic characteristics of people utilizing Poison Control Centers is limited.²⁹ Further research is necessary to obtain information about the prevalence of drug addiction, tolerance and dependence in subpopulations if well-targeted interventions are to be developed.

Education

Poison Prevention Week presents an opportunity to increase public awareness on poison prevention resources such as Poison Control Centers, antidotes, help-lines and poison control information. Well-segmented health awareness programs have been known to reduce exposure to poisoning and also minimize the detrimental outcomes of poisons.¹⁵ For example, a videotape intervention on improving knowledge, attitudes and behavioral intention regarding use of the Poison Control Center in a Hispanic population showed a 49% increase in the utilization in two years.¹⁵ Poison labels alone such as "Mr. Yuk" are not effective at deterring children from poisons.¹¹ Complementing Risk Watch with community visits is effective in reducing accidental poisons and informing children³ and parents on how to respond to poisoning.¹⁴ Another educational strategy is to promote poisoning counseling to drug consumers by physicians and pharmacists.^{1,12} Physicians use tools such as the Poison Prevention Anticipatory Guidance (PPAG), when interacting with patients. Also, health providers should counsel and provide information to patients and the general public on the side effects, shelf life, storage, drug interaction and proper dosage of over the counter medications.⁷ Research shows that adults older than 65 consume 40% of all prescriptions.³⁰ Therefore, targeted health education must be given to older adults on preventing drug overdoses and misuse.⁷

Poison Control Centers

Poison Control Centers (PCC) provide training, information, education and skills on the management and prevention of poisoning. The utilization of PCC can be increased by introducing and promoting toll-free access numbers. For example, in Pittsburgh, Pennsylvania, a 9.9% increase in the utilization of the PCC was observed within two years of introducing a toll-free phone number.¹⁶ However, utilization of PCC tends to show racial and ethnic disparities.²⁹ Therefore, well-segmented strategies must be developed for people such as migrant workers. Another intervention that requires further study is the integration of PCC with programs such as substance abuse, tolerance and addictive prevention services because illicit drugs are an increasing cause of poisoning in adolescents.²

Environmental Strategies

Educating parents on the geography of poisonous plants can lead to reduced skin and ingestion exposures to children.^{5,22} In the home restricting access to poisonous substances such as drugs and/or alcohol is associated with a 15% reduction in poisoning incidences.⁵ Child resistant packaging of aspirin has been associated with a 50% reduction in accidental pediatric poisoning.⁶ Adults 65 years and older should be encouraged to have carbon monoxide detectors inside the home and reduce burning fuel in confined places to minimize chances of carbon monoxide poisoning.³² Making homes with lead-free materials can help reduce poisoning.²²

Legislation and Regulation

The U.S. Poison Prevention Packaging Act (PPA) of 1970 established standards for packaging medication in order to deter children from opening them. The PPA has resulted in 75% of pharmacies dispensing prescription drugs in child-resistant packages.¹⁰ Legislation requiring carbon monoxide detectors in every nursing home is encouraged, as in Connecticut.⁴ Even though there are no studies to show the effectiveness of these strategies, evidence from other interventions such as smoke detectors has shown that legislation is effective. Other recommended legislation includes code compliance for lead poisoning prevention³ and having all combustion appliances professionally installed and inspected annually.⁴ Lead poisoning can be entirely prevented by controlling the source of exposure, the most common of which is deteriorating lead-based paints in poorly maintained homes.^{26,28} Code enforcement should require owners to secure a license for rental property, have routine inspections, enforce chipping or peeling paint violations, include lead-based paint and dust hazards as prosecutable offenses in housing codes, train and require code enforcers to conduct visual inspections for potential lead hazards in all pre-1978 housing and, where appropriate, sample household dust, ban unsafe work practices. Property owners should also be required to conduct repair work in a lead-safe manner and to undergo post-work clearance testing to ensure the absence of hazards, target intensive enforcement efforts to high-risk units and neighborhoods and to recalcitrant landlords and use lead hazard data gathered by code enforcers to prevent lead poisoning and neighborhood decay.²⁸ Community awareness on products recommended by the Consumer Product Safety Commission should be promoted and all recalled products must be communicated to the public.³

Response to Poisons

Raising community awareness on the signs and symptoms of poisoning can increase the utilization of poison control services. Parents and/or community members must recognize when a poisoning has occurred, remain calm and call 911 or the Poison Control Center for help.²¹ One such controlled community trial showed that informed families were twice as likely to manage poisons as the uninformed control group.¹⁴ Once a person is poisoned it is critical to have certain

antidotes such as activated charcoal available at emergency rooms, schools or work places for immediate use.^{3,22}

VI. ACTION STEPS

1. Develop an effective method of distributing poison prevention educational materials throughout the state of Delaware.
2. Target children six years and younger and their care providers by:
 - a. Partnering with elementary schools, pharmacies, and physicians' offices to distribute educational material. Education is an effective tool in preventing poisoning. It helps people to understand how and when to call The Poison Control Center and it decreases stress and unnecessary health care costs. Priority will be given to childcare providers regarding poison prevention in the home.
 - b. Planning a mass mailing to schools, pharmacies, doctors' offices and others during National Poison Prevention Week.
 - c. Promoting use of the Center's website for information on poison control, <http://www.poisoncontrol.chop.edu>.
 - d. Promote use of the Philadelphia Poison Control Center hotline **1-800-222-1222**, for poisoning incidence assistance.
 - e. Continuing to support the current efforts of the Delaware Department of Health and Social Services by providing printed material for all of their agencies. The Poison Control Center is not able to fund a comprehensive poison education program alone, rather it must partner with others to fulfill this part of the mission. Thus, our plan must utilize the concept of "partnering" to achieve our goals.
 - f. Studying the cost effectiveness of poison prevention education by utilizing the Poison Control Center's recently installed teleconferencing equipment to provide education.
3. Integrate poison control activities of Risk Watch, Division of Substance Abuse and the Poison Control Center.

VII. LEGISLATION

In an effort to prevent accidental poisonings, Congress established National Poison Prevention Week in 1961, Public Law 87-319. The President signed it into law and designated the third week in March of every year as National Poison Prevention Week. The observance, sponsored by the Poison Prevention Week Council, was designed to alert the American people to the problem of unintentional poisonings.²¹

VIII. IMPLEMENTATION

The Poison Control Center of The Children’s Hospital of Philadelphia in partnership with the Delaware Safe Kids Coalition and the Division of Substance Abuse and Mental Health will be the lead agencies for poison prevention.

IX. METHODS OF EVALUATION

Monitoring and evaluation will be conducted by the Delaware Injury Advisory Committee in partnership with poisoning prevention programs in the state. Annual meetings will be held to evaluate program outcome and process indicators such as poisoning injuries and deaths.

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PREVENTION OF INJURIES AND DEATHS FROM FIRES



I. STATEMENT OF THE PROBLEM

Although in this country the National Fire Protection Association estimates that 96% of all homes have at least one smoke detector, almost 50% of all home fire deaths occur in the small percentage of homes with no smoke detectors present.¹⁴ In Delaware, home fire deaths with no smoke detectors present represent 78% of all fire deaths.⁶

In one-quarter of the reported fires in homes equipped with smoke detectors, the devices did not work. Consequently, households with non-working smoke detectors now outnumber those with no smoke detectors. Most often in cases where existing smoke detectors do not work, missing, disconnected or dead batteries are to blame.¹⁴

II. PROBLEM ANALYSIS

In Delaware, the fire-related death rate increased from 8 deaths (1.09 per 100,000 population) in 1997, to 26 deaths (3.27 per 100,000) population in 2001 after a devastating fire in 2001 took the lives of eleven individuals, seven of them children.^{6,8} This fatal fire was the largest loss of life in a single incident in Delaware.

Fire Deaths in Delaware, 1997 – 2002
Compared to US, per 100,000 population

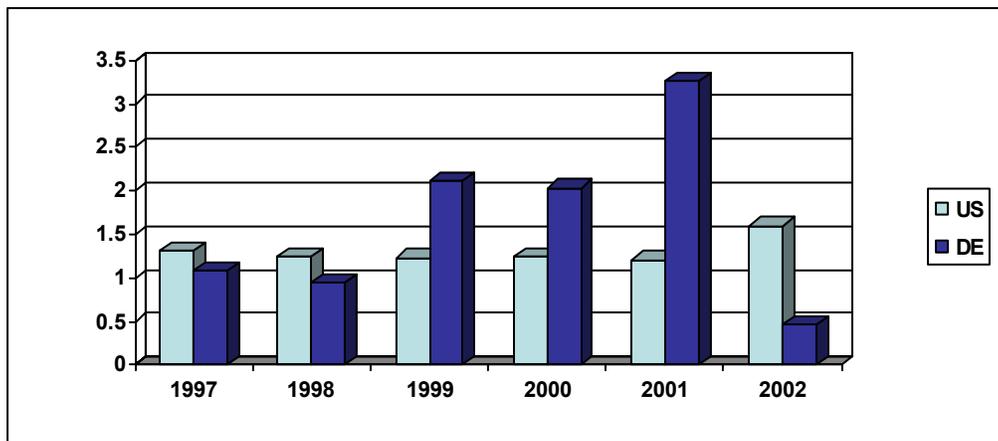


Figure 1:

Source: National Fire Protection Association Injury Mortality Reports and Delaware State Fire Marshal's Office.

The investigation revealed that the home was equipped with smoke detectors, but they were rendered useless because the batteries had been removed. This investigation determined that an early warning device, such as a functional smoke detector, likely would have prevented any loss of life. This disturbing fact shocked the public and many rushed out and bought smoke detectors.

After this devastating loss, the state's fire-related death rate fell to a 32-year low in 2002 with four deaths (0.46 per 100,000 population). Complacency may be to blame for the recent rise in fire deaths. In 2003, eight deaths (0.979 per 100,000 population) represented a 53% increase in fire deaths from the previous year. An alarming 71% increase in fire deaths from 2002 to 2004 may suggest that the farther we get from that deadly year, the more fire deaths we have.^{6,8}

The very young and the very old are at highest risk of injuries and death from home fires. Young children are particularly vulnerable to burn-related injuries and death. Nationwide, children under age 5 are twice as likely to die in a home fire as the average person.¹¹ Children, defined as those ages 14 or under, make up 29% of our population in Delaware.⁸ In Delaware, child fire deaths represent 19% of home fire deaths.⁶

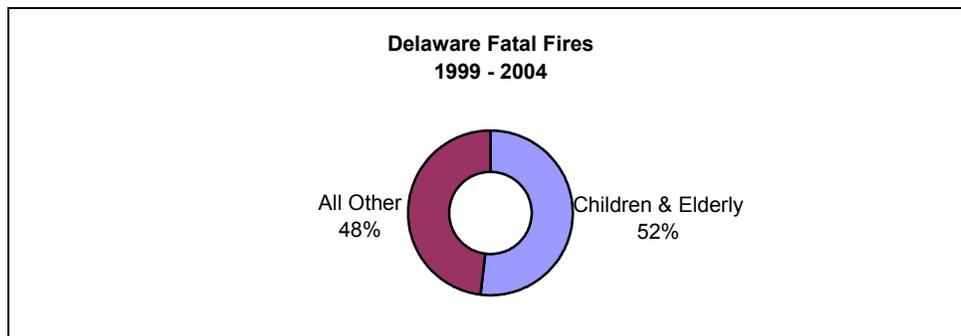


Figure 2: Source: Delaware State Fire Marshal's Office

Adults age 65 or older make up about thirteen percent of Delaware's population, slightly above the U.S. average of twelve percent.⁸ At age 65, people are twice as likely to be killed or injured by fires compared to the population at large, and people over the age of 85 are four times as likely to die in a fire as the rest of the population.¹³ In Delaware, elderly fire deaths represent 33% of home fire deaths.⁶

While the percentages of fire-related injuries reported to the Delaware State Fire Marshal's Office for the 14 or under, 65 or over, and 75 or over categories fall below the national average, the 35 to 49 age group category is well above the 24% national average.⁷ Individuals in the 35 to 49 age group category account for 31% of fire-related injuries in Delaware.⁷ The highest risk demographic (25%) within the 35 to 49 age group category is white males.

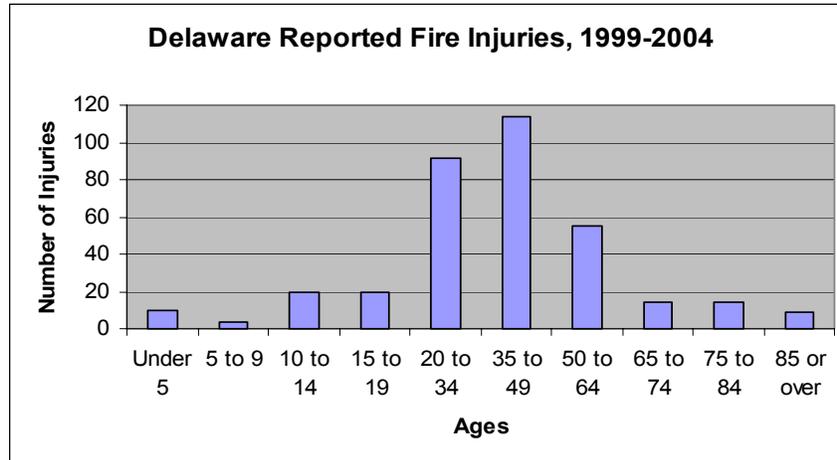


Figure 2: Source: Reported Injuries to Delaware State Fire Marshal’s Office

III. GOAL

Reduce the number of fire injuries and deaths in Delaware.

IV. OBJECTIVES

1. Reduce the fire death rate per 100,000 population in Delaware from 3.27 in 2001 to 1.00 by 2010.
2. Reduce the number of reported fire injuries per 100,000 population from 8.3 in 2001 to 5.0 by 2010.
3. Decrease the number of fire deaths with no smoke detectors from 78% in 2004 to 0% by 2010.

V. BEST PRACTICES

Early detection devices

Smoke detector giveaways are effective at increasing availability of functional smoke detectors.⁴ The Delaware State Fire Marshal’s Office initiated a program “Working Smoke Detectors Do Save Lives” in 2001. Over 10,000 smoke detectors were given away through fire departments, churches and other various agencies and/or organizations throughout the state. Since that time, the “Wake Up Delaware” campaign has taken over as the main sponsor of the giveaway program and has continued to enhance the program. In its simplest terms, “Wake Up Delaware” provides free smoke detectors and batteries to any citizen who visits their local fire station. “Wake Up Delaware” is funded by a grant through the United States Fire Administration.

Sprinklers typically reduce the chances of dying in a home fire by one-half to two-thirds in any kind of property where they are used. Together with smoke detectors, sprinklers cut the risk of dying in a home fire 82 percent, relative to having neither.¹⁵ In Delaware, it is estimated that less than 10% of single-family dwellings have sprinkler systems. Education and awareness programs

dispelling common misconceptions are key to the successful growth of lifesaving residential sprinkler system installations.

Education

The Delaware State Fire School is mandated by Delaware Code to provide fire safety training to the citizens of Delaware.¹⁶ The Fire School conducts approximately 250 programs per year and annually reaches in excess of 50,000 people. Programs are directed at all age groups from pre-schoolers through senior citizens. Major topics include home escape planning, fire behavior, kitchen safety and emergency calling. Lessons feature the National Fire Protection Association's "Learn Not to Burn" curriculum, as well as "Risk Watch." Risk Watch presents an opportunity to reinforce fire safety education messages such as "Stop, Drop, and Roll" or the "Crawl Low Under Smoke" to children in schools.

Fire injuries and deaths can be prevented and lessened by increasing awareness on how to recognize dangers of fires, eliminating fire hazards, safely using flammable items such as cigarettes, having operating smoke detectors and sprinkler systems, using fire-proof products such as non-flammable clothing, and knowing what to do. For example, one study in which fire safety media campaigns were given to children through cartoons resulted in a 50% decrease in pediatric fire injuries.¹⁰ The Delaware State Fire School is dedicated and committed to continuing and expanding these programs.

Legislation

Enforcing and enriching current legislation is key to reducing the number of fire injuries and deaths in Delaware. Legislation such as smoke detector requirements, code enforcement and fireworks regulations have been associated with reduction in fire deaths and injuries. For example, legislation requiring mandatory smoke detector installation in new houses was associated with a 6% incidence of non-fatal injuries compared to a 16% incidence in unregulated homes.¹² A recent multi-state study showed that states which do not regulate the purchase, sale of fire crackers, sparklers and bottle rockets have seven times more hospitalizations than states with regulations.² Another U.S. study showed a 51% decline in pediatric fire injuries with the introduction of legislation that required banning and confiscating of fireworks during a select number of celebrations.³

In 2000, New York was the first state to pass legislation requiring that only self-extinguishing cigarettes be sold in the state. Currently, numerous states are either in the process of or will be proposing legislation for a fire safe cigarette that will not smolder but will burn out quickly when discarded. However, regulation alone is not sufficient without mandatory regular code enforcement and education.

Environmental modification

Fire deaths due to toxic gases and/or oxygen deprivation, collectively called smoke inhalation, outnumber fire deaths due to burns in Delaware, 2-to-1.⁶ Smoke inhalation is especially deadly in a population with declining health. Environmental modifications involve both modifying fire-igniting products and any environment that easily catches fire. Promoting self-extinguishing cigarettes or non-flammable cigarettes as a replacement therapy among high-risk populations is one such modification.¹ Non-flammable cigarettes could indeed reduce cigarette-associated fires.¹⁷ Environmental modifications can demonstrate tremendous success. For example,

modifications to flammable sleep outfits, through the passage of the Flammable Fabric Act of 1972, were associated with a 75% decline in burn unit admissions in Boston.⁵

VI. ACTION STEPS

Reduce Number of Fire Deaths

Action Step 1: Giveaway smoke detectors tend to exclude high risk groups such as the elderly or disabled who may not attend public give away opportunities.⁹ Therefore, particular awareness must be given to high-risk groups. The Delaware State Fire Marshal's Office instituted a program to help the deaf or hearing impaired, the blind and persons with both disabilities. A smoke detector for the deaf or hearing impaired has a 177-candela flashing light and emits a loud sound for others in the home without the disability. This smoke detector is mounted on the wall at the foot of the bed so that the flashing light can be detected no matter what the position of the person's head. The smoke detector for a person with both disabilities is a "Shake Up Alarm." This wall-mounted smoke detector transmits a signal to a receiver and activates a vibrator located between the mattresses or under the pillow. This smoke detector also emits a loud sound for others in the home without the disability.

Action Step 2: Utilize code enforcement, along with providing information and education on smoke detector installation and proper maintenance of smoke detectors, to increase the number of people with functional smoke detectors.

Action Step 3: The State Fire Marshal will continue involvement with the National Fire Protection Association and the National Association of State Fire Marshal's study regarding smoke-alarm waking effectiveness among children and the elderly.

Action Step 4: Delaware State Fire School will continue and enhance educational efforts regarding the benefits of residential sprinkler systems and the fact that they reduce the risk of death or injury from a fire because they dramatically reduce the heat, flames and smoke produced, allowing people time to evacuate the home.

Reduce Number of Fire Injuries

Action Step 1: Recent studies show that more men than women die in domestic fires because men tend to fight the fires. Therefore, education efforts must focus on men of all ages and the dangers of fighting fierce fires.

Action Step 2: Delaware State Fire School has been very successful in promoting fire and burn safety. Continue the course and keep successful programs funded, maintained and moving forward. The Injury Epidemiology Office will work with the State Fire Marshal's Office to document the magnitude and causes of fire and burn injuries treated in emergency departments.

Action Step 3: Continue aggressive education of children and the elderly regarding fire and burn safety.

Decrease Number of Fire Deaths with No Smoke Detectors

Action Step 1: Continue support for the “Wake Up Delaware” program. This program provides easy access to smoke detectors and batteries for those who need them.

Action Step 2: Obtain funding for additional promotion and education platforms for the elderly targeting elderly based programs such as Meals on Wheels, Foster Grandparents, Visiting Nurses Association and other such agencies with elderly clientele.

Action Step 3: Continue the disabled, deaf, hearing-impaired, and the blind persons smoke detector giveaway program in recognition that these individuals require special assistance.

Action Step 4: Continue and enrich current education platform for children to integrate smoke detectors as an everyday tool of life. The institute school take-home smoke detector program, which provides free smoke detectors to families of high risk age groups.

Action Step 5: Provide free smoke detectors and bilingual education to non-English speaking employees of the poultry and agricultural industry.

VII. LEGISLATION

In 2002, several legislators joined staff members from the State Fire Marshal’s Office and the Delaware Volunteer Firemen’s Association in sponsoring House Bill #216, the Hard Wired Smoke Detector Bill. This bill established the Fire Detection Fund, which provides hard wired smoke detectors for those homes that are presently not protected by a working smoke detector. A priority list for the distribution was established to assist those homeowners where disabled children or adults, the elderly, or infirm occupants reside. HB #216 passed the House and Senate, and Governor Ruth Ann Minner signed the bill into law.

During the 142nd General Assembly the following two important pieces of legislation were passed:

HB-57, False Fire Alarms, makes the owner responsible for maintaining the fire alarm system in working order to reduce the amount of false fire alarms, thus providing less strain on fire department resources along with ensuring detector operability.

HB-112, Exceeding the Posted Occupant Load, in places of assembly increases the penalty for exceeding the posted occupancy limit, as determined by the State Fire Marshal, in buildings that hold more than 50 people. The State Fire Marshal’s Office hopes to avoid a tragedy such as the February 2003 Station Nightclub in Rhode Island. Over 100 people lost their lives in that fire.

VIII. IMPLEMENTATION

The Delaware State Fire Marshal’s Office and Delaware State Fire School, in partnership with the Delaware SAFE KIDS Coalition, the Emergency Medical Services for Children program,

Delaware Children's Fire Safety Foundation, Delaware Risk Watch and Delaware Volunteer Firemen's Association, shall lead the implementation of this plan.

IX. METHODS OF EVALUATION

The Delaware State Fire Marshal's Office is the lead agency for early fire detection enforcement and awareness. Quarterly meetings shall be held with partners to review the implementation of this strategic plan. With the help of the Injury Data Review Committee, process indicators such as the number of EMS responses to fires, smoke alarm prevalence, and hospitalizations will be reviewed. Outcome indicators such as injury deaths and disability will be reviewed annually.

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DOG BITES: AN ISSUE OF PUBLIC HEALTH & EDUCATION

I. STATEMENT OF THE PROBLEM

Nationally: Every 40 seconds, someone in the United States seeks medical attention for a dog bite-related injury. Between 1979 and 1998, dog bite attacks killed more than 300 Americans. Nearly 800,000 people sought medical care for dog bites in 1994; half of them were children under age 18.¹⁰

According to the Academy of Plastic Surgeons, dog bites result in approximately 44,000 facial injuries in US hospitals each year. Severe injuries occur almost exclusively in children less than 10 years of age. The face (lips, nose and cheeks) are the most frequent targets, accounting for 77% of all injuries. Previous estimates indicate that 17% of dog bite-related injuries are treated in medical facilities, 38% of which are treated in Emergency Departments.¹¹

Statewide: In a three-year span (1996-1998), 3,780 dog bites were reported in Delaware. Of these bites, approximately 53.3% of victims were male and 46.6% were female. An average of 53% of these bites occurred to the population under the age of 21. The county distribution was as follows: New Castle 53.3%, Kent 24.3% and Sussex 21.2%.

II. PROBLEM ANALYSIS

A ten year study published in the Journal of the American Medical Association shows that while the country's dog population rose only 2% between 1986 and 1996, the number of dog attacks increased by 37% during the same time period. Each year approximately 4.7 million Americans are bitten by dogs. Serious injuries from these bites send approximately 333,000 people to the hospital, with emergency care costs exceeding \$100 million annually.¹⁴ According to the Insurance Information Institute, claims related to dog bites reached \$1 billion in 2000. The Centers for Disease Control states that dog bite-related injuries are the primary health problem for children in the United States and are more common than playground injuries. Nationally, over half of all children will be bitten by age 12, with the majority being bitten by a dog known to them.¹⁴ Most of the dog bite injuries are to the arm (45.3%), leg/foot (25.8%) and head/neck (22.8%). The majority of injuries in children (64.9%) are to the head and injuries to the extremities increased with age.¹¹ Studies have shown that 75% of fatal dog bites were inflicted on family members or relatives on the family's property.¹³

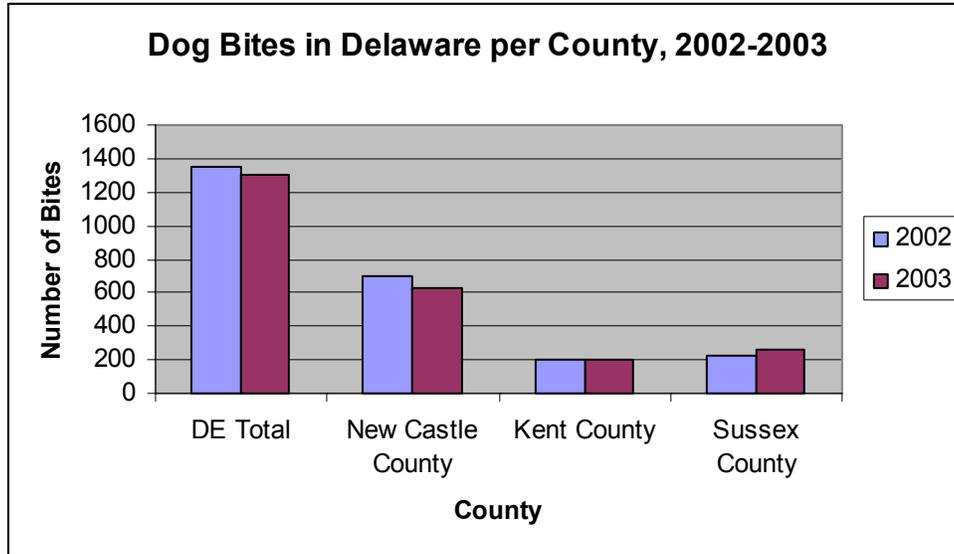


Figure 1: Source: Delaware Rabies Surveillance Program, Delaware Health and Social Services, Division of Public Health

In 2004, the Delaware Society for the Prevention of Cruelty to Animals (SPCA) gave 607 safety presentations to 19,980 Delaware residents. Informal surveys conducted in conjunction with these presentations indicate a bite rate of 50-60% of the audiences.

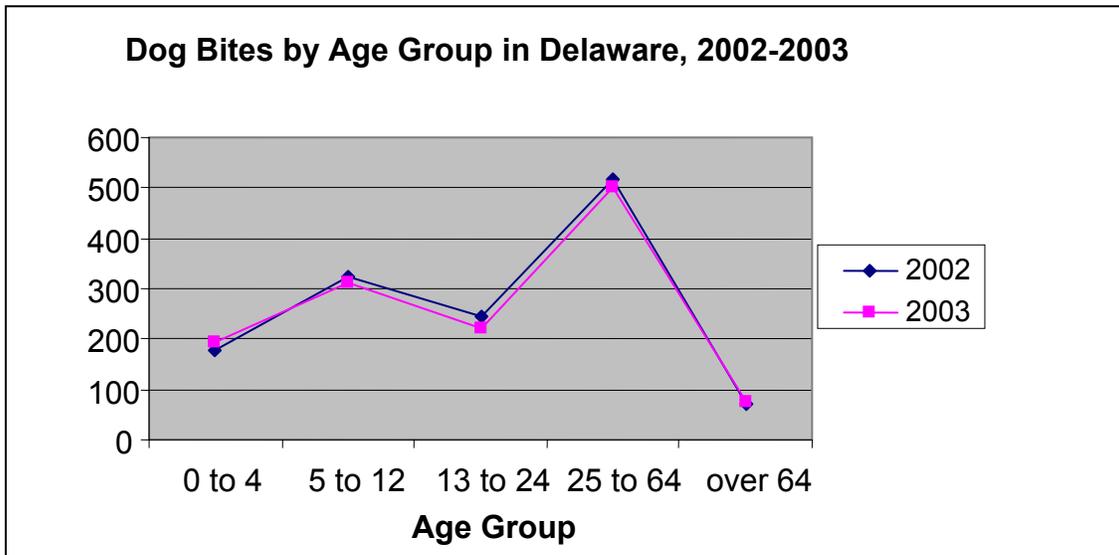


Figure 2: Source: Delaware Rabies Surveillance Program, Delaware Health and Social Services, Division of Public Health

In 2002, of the 1,816 animal bites reported in Delaware, 1,337 (74%) were dog bites.⁷ Twenty-four (1.8%) of these victims were hospitalized.^{7,8} The average cost of dog bite hospitalizations between 1997 and 2001 nationally was at \$6000.⁴

The incidence of dog bites was higher in men (702) compared to women (635). The incidence of dog bites increased from 702 to 726 in men but decreased from 635 to 576 in females between 2002 and 2003. This is consistent with national estimates that dog bite incidence is higher in boys under 15 years (293 per 100,000) than girls (216 per 100,000 population). Nationally, the rate of dog-bite related injuries is highest for ages 5 to 9 years, and the rate decreases as children age. The overall dog bite incidence rate in Delaware decreased from 166 bites per 100,000 persons in 2002 to 159 per 100,000 people in 2003. This remains above the national average of 129 dog bites per 100,000 population.⁸

III. GOAL

Develop an injury prevention plan to effectively address the growing problem of dog bites.

IV. OBJECTIVES

1. By 2010, the incidence of dog bites in Delaware shall be reduced from 159 bites per 100,000 population to 100 bites per 100,000 population.
2. Establish a baseline on post-bite public choice of interventions to evaluate the need for additional education on post animal bite procedures and options.
3. By 2010, demonstrate the effectiveness of media exposure and educational outreach programs at increasing the public's awareness of dog bite prevention and responsible pet ownership, by showing a 10% population-adjusted decrease in the number of dog bites reported to the Delaware Division of Public Health in 2009 versus current 2004 baseline numbers.

V. BEST PRACTICES

Surveillance

Dog bite prevention requires efficient data collection on the incidence of bites by breed, hybrid, sex and parity of the dog,^{8,13} location of bite, circumstances leading to bite, type and location of injury, whether the dog was restrained or not, and relationship of victim to the dog.¹ Hospital data coders must be trained to consistently E-code dog bite injury hospitalizations or emergency department visits using ICD 9 codes.⁴ Effective dog bite prevention interventions must be well targeted if significant reductions in the incidence and severity of injury are to be achieved.¹¹ According to Wright (1991), a dog's tendency to bite depends on at least five interacting factors: heredity, early experience, later socialization and training, health status and victim behavior.¹⁵ These issues should be addressed in a surveillance system.

Education

Since the incidence of dog bites is high in children under 15 years of age, it is critical that children, especially boys aged 5 to 9 years, be taught how to behave and respond to dogs.^{1,13} For example, children should be taught not to approach an unfamiliar dog, not to run away from a dog, to be still when approached by an unfamiliar dog, to report unusual dog behaviors, to

avoid direct eye contact with a dog, to not disturb a sleeping dog and not to pet or play with an unfamiliar dog without supervision of the owner.⁸ Active adults such as joggers or bicyclists should be informed of dog bite dangers through relevant channels such as the YMCA.¹ Dog owners must be encouraged to provide appropriate behavior training and dog control, and to make sure their dog is well fed, gets proper medical care, and is neutered.⁸ Prevention messages should include linking would-be pet owners to consultation services on breed characteristics and pet care, excluding dogs with histories of aggressive behavior from households, the need for vigilant monitoring of children's interactions with dogs and of dog-to-dog interactions around children, proper training of the dog prior to bringing it into the house, seeking professional advice immediately if the dog develops undesired behaviors, and avoiding aggressive games with dogs.^{3,8,11,13} In Nevada, effective methods of communication on dog bite prevention include news releases, victim voices, interviews on radio or television, talk shows, public affairs programs on radio, bulletin boards, editorials and public service announcements.¹

Legislation

The American Veterinary Association recommends legislation such as leash laws, restraints, dangerous dog or breed specific ordinances,² dog licensing, post-bite quarantine or impounding, stringent fines for pet offenses and animal abuse reporting protocols for dog bite incidences.^{1,3} Vaccination reduced the number of confirmed rabies cases from 7,000 in 1947 to 127 in 1997.⁹ However, there is limited research on the effect of other types of legislation on dog bite injuries.⁸

Multidisciplinary Community Approach

In Nevada, a multi-disciplinary proactive community approach to dog bite prevention was associated with a 15% reduction in dog bite-related injuries.¹ This intervention involved the formation of an advisory council with core groups and a program coordinator to study the epidemiology of dog bites, identify opportunities for change, raise community interest and identify community prevention assets and resources such as legislation. The council also developed and communicated post-bite care pathways and provided audience-specific health education for veterinarians, animal behaviorists, dog trainers, physicians and nurses, animal control personnel, children, the elderly and pet owners in general.¹

Environmental Modification

Family members can protect themselves from dog attacks by confining the dog in a designated area if unfamiliar behavior is exhibited.¹¹ Neighbors can be protected from attacks if pet owners erect adequate fences around outdoor dog houses and properties.^{3,11,13} However, studies show that even well-secured dogs can bite if they are not trained.^{2,9,13} Therefore, in addition to environmental modifications, dogs must be trained to be social and less aggressive.¹ Recent studies have shown an association between people who are aggressive to animals and aggressive pet behavior.⁴ Therefore, when a dog bite or abuse occurs, investigators should assess the history of violence in owners to their pets and to other people. Environmental modification may also mean removing dogs from violent owners.

VI. ACTION STEPS

Injuries from dog bites affect everyone in ways ranging from medical costs to lost wages and higher insurance rates. "Education is key to reducing dog bites within a community," according

to a June 2001 report by the American Veterinary Medicine Association's Task Force on Canine Aggression and Human-Canine Interaction.

Education

1. Reach children and parents with safety information about the risk of dog bites related to dog breed and gender, owners' pet management skills, human behaviors and knowledge of ways to avoid being bitten by a dog. Teach children to ask permission of the pet owner before trying to touch an animal. The Delaware SPCA will lead education efforts.
2. Educate dog owners about responsible pet ownership through media campaigns and humane education presentations.
3. At the institutional level, educate teachers, employers, law enforcement officers, insurers, delivery persons and repair personnel about bite prevention strategies.
4. At the community level, increase public awareness among all age groups about dog bite prevention strategies and the impact of bites through media campaigns and humane education presentations. Support community education and training about humane/animal safety issues.
5. Encourage proactive approaches to bite prevention instead of reactive approaches by participating in National Dog Bite Prevention Week (typically held the third full week of May), distributing fact sheets about preventing dog bites and developing public service announcements.
6. Encourage spaying and neutering to reduce the number of potential bites and reduce biting behavior. Also encourage outdoor pet owners to erect signs to signal the danger of an aggressive dog and to use effective containment measures.
7. Integrate health education efforts with supplemental education on animal bites, including those of cats and wildlife.
8. Enlist the continued support of the Delaware Humane Association and Kent County SPCA, as well as the kennel clubs in each county, perhaps in a joint effort or during a specific time each year, such as National Dog Bite Prevention Week.

Legislation

9. Support a legislative proposal to mandate dog bite prevention education in Delaware schools.
10. Request that the Governor or State Legislature proclaim a dog bite prevention day in Delaware.
11. Seek funding to purchase additional safety brochures and dog bite prevention literature for public distribution.
12. Support legislation establishing sanctions such as fines or removal of pets as a means of increasing responsible pet ownership, particularly in relation to providing careful supervision of children when in contact with pets.

Surveillance

13. Collect and analyze data on dog bite incidence of by breed, sex, parity, medical condition and location. Conduct a survey to identify rates and types of responses to dog bites, such as providing first aid, seeking professional medical care, and reporting the attack.

14. Link data on incidences of cruelty to animals, violence and dog bites. Work to increase public awareness on the link between cruelty to animals and intentional injuries to humans.

VII. LEGISLATION

The state legislature is being urged to issue a mandate to the Delaware State School System to include three hours of animal bite prevention and animal safety training during an eight-year period beginning with pre-kindergarten and concluding by the end of sixth grade. The Director of the Delaware SPCA is on the Attorney General's Animal Cruelty and Violence task force. The task force has developed a package of legislative initiatives including measures to:

1. Prohibit convicted animal fight attendees from owning an animal for five years.
2. Ensure that fines will not be suspended.
3. Require micro-chipping of strays (at the owner's expense) before they can be returned to them.
4. Define kennel size to regulate the practice of animal hoarding (keeping more animals than one can safely and effectively care for).

In 2000, Senate Bill 355, the Dangerous Dog Law was signed into legislation to authorize the state's animal control agency to seize and impound a dog for behavior that makes it a candidate for a "dangerous" or "potentially dangerous" designation.

In 2000, House Bill 599, Animal Fighting/Baiting was signed into law that pertains to the cruelty of animals. Fighting and baiting were in recent years classified as Class A misdemeanors. This Act makes each a Class G Felony.

VIII. IMPLEMENTATION

The Delaware SPCA and the Delaware Rabies Surveillance Unit will lead the implementation of this plan in partnership with the Delaware Humane Society, schools, veterinarians and hospitals.

IX. METHODS OF EVALUATION

Monitoring and evaluation will be conducted by the Delaware Injury Coalition Advisory Council in partnership with dog bite prevention programs in the state. Evaluations will occur at least annually to measure the effectiveness of prevention measures. Outcome and process indicators include bite rates, bites per breed, sex, residence and parity of dog, bites by age/sex/race of the person bitten, public knowledge of appropriate management of a dog bite, proportion of bites treated in medical facilities, proportion of fatal bites, and proportion of bites by location, especially of the head.

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FIREARM INJURY AND HOMICIDE PREVENTION

I. STATEMENT OF THE PROBLEM

Intentional and unintentional injuries and deaths involving the use of a firearm remain a concern in our society. In Delaware, firearms continue to be the leading contributor to intentional deaths, homicides and one of the leading mechanisms of suicide. In Delaware, a firearm was the instrument of death in 54% of the homicides in the period from 1996-2001. A firearm was used in 48% of all suicides committed during the same time period.⁵ Of the 33 homicides in 2001, 19 (58%) involved a firearm. The proliferation and availability of firearms, particularly to our youth and criminals, compound and raise the level of this concern.

II. PROBLEM ANALYSIS

Between 1996 and 2001, Delaware's homicide rate followed the national trend, continuing to decline. In this period, a firearm was the instrument of death in 54.8% of the homicides committed, which is 10% lower than the national firearm rate.^{5,13}

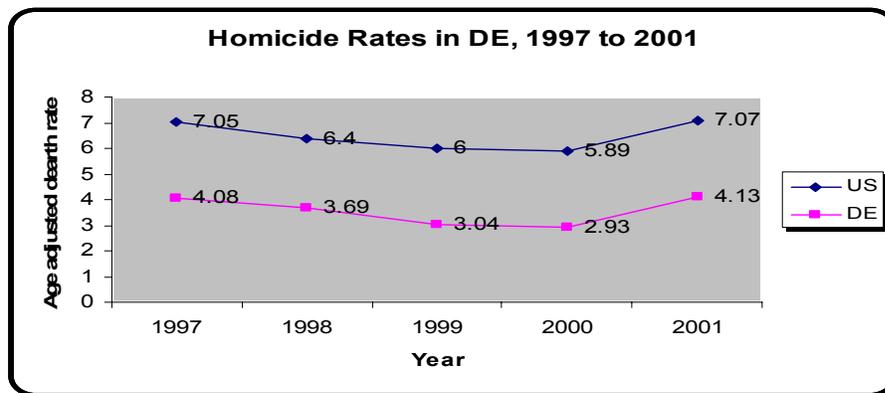


Figure 1. Source: Centers for Disease Control and Prevention, Injury Mortality Reports, accessed 2004.

On the other hand, when considering other mechanisms of homicide such as those accomplished with knives and other cutting instruments, Delaware’s rate is slightly above the national average. A male is twice as likely as is a female to be the victim of homicide in Delaware.⁵

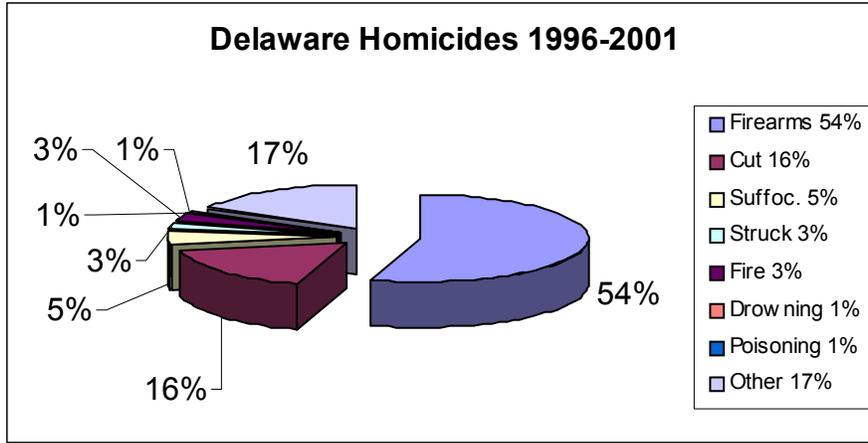


Figure 2. Source: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control

In both Delaware and the United States, more people die every year from suicide than from homicide. In Delaware, just over 50% of the suicides committed involved the use of a firearm as compared to the national rate, which is 56.9%.⁵

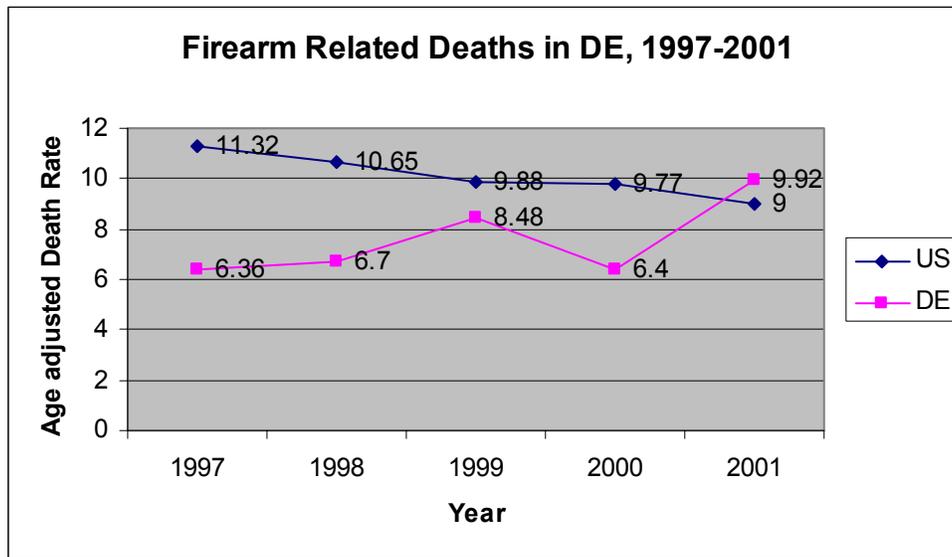
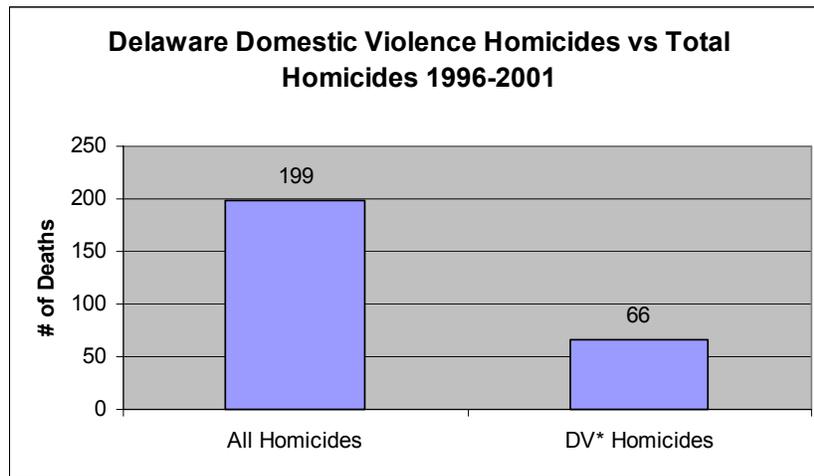


Figure 3. Source: Centers for Disease Control and Prevention, Injury Mortality Reports, accessed 2004.

Domestic violence continues to be a significant catalyst to intentional injuries and deaths of Delaware citizens. Between 1996 and 2001, over 33% of all of the homicides committed in Delaware were domestic-related.¹³ In almost half of those intentional acts of domestic homicide, a firearm was used. Seven percent of all injury deaths in Delaware were caused by firearms during this timeframe. This is approximately half of the national rate. In 2001, Delaware Hispanics had the highest homicide rate per 100,000 (15.2) followed by blacks at 9.1 and whites at 1.29. New Castle and Kent County continue to be the leading locations of homicides.¹⁴

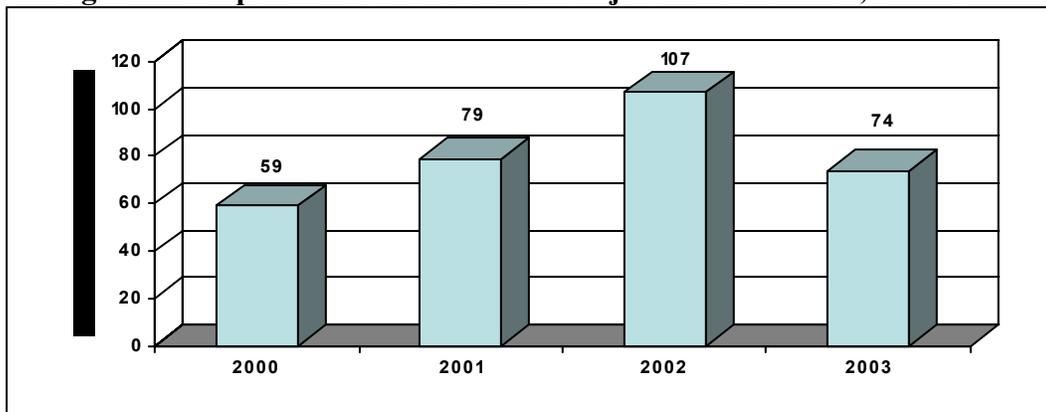


*DV-Domestic Violence

Figure 4. Source: Delaware Domestic Violence Coordinating Council

Nationally, between 2000 and 2003, an average of 7 people per day were admitted with firearm-related injuries to the hospital. For every hospital admission, 5 to 20 others are treated in the Emergency Departments.¹⁶ A recent study showed that 52% of all gun-owning parents store their firearms loaded and unlocked.¹⁶ According to the Delaware Child Death Review, when a gun is in the home, 75% of children know where it is kept. This is daunting considering that children have a low-risk perception on guns.⁹

Figure 5. Hospitalizations for Firearm Injuries in Delaware, 2000-2003



Data Source: Delaware Hospital Discharge Data from 2000 to 2003

The ranges used for the firearm injuries include E-Codes from E922.0 to E922.3, E922.9, E955.0-E955.4, E965.0-E965.4, E985.0-E985.4, or E970 in the E-Code field.

III. GOAL

Reduce the number of firearm injuries, assaults and homicides in Delaware.

IV. OBJECTIVES: The objectives below will be achieved by implementing the actions listed under item V.

1. Reduce the number of homicides per 100,000 population in Delaware from 4.3 in 2001 to 3.0 by 2010.
2. Reduce the percentage of firearm-related homicides from 58% in 2001 to 48% by 2010.
3. Reduce the percentage of domestic violence-related homicides from 33% in 2001 to 30% by 2010.
4. By 2010, increase the number of gun cable locks that are distributed by 15% in order to increase awareness of safe storing and locking of firearms.

V. BEST PRACTICES

Surveillance

Surveillance is critical for understanding the determinants of homicide and firearm-related injuries. For example, in order to design effective interventions it is critical that the antecedents of violence such as type of weapon used, source of weapons, involvement of drugs, victim-perpetrator relationships and socioeconomic status are all examined. Such a system requires the analyses of multi-agency data. In 2001, the CDC developed the National Violent Death Reporting System (NVDRS) which pools together data from Police Crime Labs, Medical Examiners and Police Incident Reports.⁶ Similar systems such as the Crash Outcome Data Evaluation System (CODES) and Fatality Analysis Reporting System (FARS) have shown that linkage of multi-agency data is critical for injury prevention. It is essential that data-collection systems stratify homicides by place of occurrence, such as home, workplace, in the street or at a sporting event.

Domestic Violence

Women and adolescents in abusive relationships are 20% more likely to be victims of homicide.^{21, 26} The chances of being killed increase threefold when a woman leaves her husband for another marriage,^{22, 23} is pregnant,²⁶ or experiences other socioeconomic stressors such as unemployment.²⁵ Half of the victims of homicide underestimate their risk and two-thirds fail to be identified by healthcare screening systems.^{27, 28} Some effective interventions for preventing domestic homicide include protection orders and screening women for domestic violence in hospitals or dental clinics.^{19,25,33} Increasing awareness of the risk of homicide in relationships and providing counseling to victims has been known to reduce re-victimization of homicide.^{4,20-21,24-25} Domestic violence hotlines and temporary shelters are essential for linking victims of domestic violence to rehabilitative and legal services.^{3,4,25} Programs with strong partnerships between the Police, Justice Department, Public Health and Domestic Violence Coordinating Committees are effective at promoting social change in violence prevention.²⁹

Environmental and Culture Modifications

Eighty percent of homicides in the United States involve men.⁵ Most of these homicides are occupational¹ or drug related among African Americans.³¹ Programs that can help prevent homicides include those that identify men with ideas and intent of homicide modeled after transtheoretical behavioral theory can help prevent homicides.¹ Making work places and schools firearm-proof by installing X-ray screening machines or police checks has shown to reduce occupational-related homicides.² Various strategies have been proposed to prevent children from gaining access to and using firearms stored in the home: inclusion of trigger locks with all firearms for sale, manufacture of "personalized" firearms that can be fired only by authorized users, and addition of an indicator to firearms that signifies when ammunition is in the firing chamber.^{17,19} Storage of unloaded guns in a locked cabinet can reduce access to firearms by children.

Legislation and Enforcement

Working with the judicial system will help to create incentives to reduce the risk of children gaining access to firearms (e.g., firearm storage laws and metal detectors at schools).⁷ In Florida, stringent punitive action for allowing gun access to children contributed to a 51% reduction in gun-related injuries in children.³³ Since most perpetrators of homicide have a history of domestic violence, prohibiting gun sales or possession under restraining order can reduce intimate partner homicide by 9-12%. Another intervention which has proven effective is police patrols in high-risk areas to increase the odds of punishing illegal gun possession. This reduced gun violence by 49% in Kansas and 71% in Pittsburgh.³⁵ Legislation that restricts or revokes gun ownership by perpetrators of homicide can reduce gun-related homicides.^{2,32,35}

Education

Providing appropriate gun safety education to children is associated with a 17% reduction in firearm injuries.³⁵ Another study showed that giving gun safety education to third graders showed a significant increase in gun safety discussions between children and parents.²² Other studies showed that children with gun safety education were 60% less likely to mishandle guns compared to 47% who do not get the education.¹⁵ In Delaware, school-age children gun safety education emphasizes avoiding risks. Recent studies encourage physicians to offer safe gun storage counseling to parents with a high risk of gun injuries such as those with a history of gun injuries, multiple guns, domestic violence and drug users.^{16,35} One study showed that 80% of parents who attend pediatric clinics own a gun and 40% would like gun safety counseling.

Another strategy used in Delaware is called Operation Disarm Gun Safety/Avoidance Education. The Operation Disarm Gun Task Force works with the Attorney General's office, local and State Police, Wilmington Seed and Weed Program and the United States Probation Office to provide gun safety education. Operation Disarm Gun is designed to get guns out of the hands of criminals and to target sources of weapons. There have been 115 indictments on federal gun crimes in Delaware in the program's 27 months of operation. Ninety percent of which went to trial and resulted in convictions. The program is based on one developed in Richmond, Virginia called Project Exile. Numerous educational and enforcement techniques have been used to provide firearm education. These include television ads, cards, and billboards that say "A gun crime equals federal time." Ads geared toward young males aired on sports channels and the Cartoon Network, and cards on firearm rules and regulations were distributed to nearly 20,000 people in Delaware who are on probation. Other billboards display the message "Felon + Gun =

Federal Prison.” All of these educational efforts help Delawareans and visitors become more aware of gun safety and homicide prevention.

V. ACTION STEPS

The Delaware State Police will lead in the implementation of this plan partnering with the Delaware Domestic Violence Coordinating Committee, Project Safe Neighborhoods, and ThinkFirst Delaware. Actions will be targeted towards high risk populations and in areas where homicides are most prevalent.

Reduce the Number of Firearm-related Homicides

Action Step 1: Promote and encourage legislation regarding the purchase and carrying of a firearm, as well as restricting those who may possess a firearm. This will provide a legal framework for advancing violence prevention activities.

Action Step 2: Support the recommendations of the Delaware Domestic Violence Coordinating Council and the Fatal Incident Review Teams. This will help reduce intimate partner and child related homicides.

Action Step 3: Support community counseling for surviving victims, perpetrators of homicides and their families since data shows that relatives of victims may have a higher risk of violent retaliatory behavior.⁹ This will reduce repeated perpetration and re-victimization.

Reduce the Number of Firearm-related Injuries

Action Step 1: Continue efforts such as the Delaware Hunter Education Program, which instructs an average of 1,700 students per year on the ethical and safe use of hunting firearms. Additionally, there are several groups in Delaware, including the Boy Scouts, 4-H, sporting clubs and private businesses that offer firearm safety training to the public. The training focuses on improving motor and cognitive skills in regards to gun usage. Participants are also trained on how to handle, store and lock guns at home. In Virginia, such training eliminated firearm injury among participants to 0% in two years.²⁹

Action Step 2: Support the efforts of the Child Death Review Commission. The Commission makes recommendations for firearm/homicide prevention strategies to the governor. This provides a premise for the passage of necessary legislation.

Action Step 3: Encourage an educational program for children of all ages dealing with firearm recognition and safety by supporting the operations of Risk Watch and Operation Safe Neighborhoods.

Action Step 4: Increase the availability of firearm locking devices through existing programs.

Action Step 5: Encourage firearm owners to voluntarily attend firearm safety training.

Action Step 6: Research methods of utilizing the judicial system to create incentives to reduce the risk of children gaining access to firearms (e.g., firearm storage laws and metal detectors at schools).⁷

Reduce Domestic Violence-Related Homicides

Action Step 1: The Delaware Domestic Violence Coordinating Council (DVCC), created in 1993, established an aggressive program to reduce domestic violence. The DVCC is required by Title 13 Delaware Code §2105 to conduct domestic violence fatality reviews. The Fatal Incident Review Team is comprised of representatives of agencies including the court system, Department of Justice, hospitals, adult mental health, law enforcement, victim advocates and members of the DVCC. The Team meets monthly to investigate and review the facts and circumstances of all deaths that occur in Delaware as a result of domestic violence. Issues of concern are identified and recommendations are passed on to the DVCC for action². The DVCC will coordinate the prevention of domestic homicide.

Action Step 2: Create a sub-committee in the Injury Prevention Program to facilitate the integration of domestic violence, sexual assault and child maltreatment issues into statewide homicide prevention activities. This will facilitate information and resource sharing necessary for developing comprehensive interventions.

Action Step 3: Disseminate violence prevention information among State Police, Medical Examiners and crime laboratories to facilitate the implementation of a statewide Violent Death Reporting System so that key homicide, assault and suicide risk factors and behaviors can be identified. This system will identify common risk factors surrounding a homicide, thus promoting effective integrated prevention.

Action Step 4: Support programs aimed at reducing access to firearms to high risk populations, reducing intimate partner violence and reducing sexual abuse/assault. Continue supporting the Operation Disarm Gun Project and Risk Watch.

VI. LEGISLATION

In February 2001, Senate Bill 12 was signed into law to establish closely supervised procedures for the purchase and carrying of firearms by citizens of Delaware. This law states that a Delaware citizen may obtain a license to carry a concealed deadly weapon for protection of self and/or property, provided that he/she is an upstanding citizen and of good moral character (no criminal record) and satisfactorily completes a firearms training course.¹⁰

In July 2001, Senate Bill 110 was signed into law allowing pre-sentencing investigations to determine if convicted felons are in possession of firearms or deadly weapons.

In July 2002, Senate Bill 385 was signed into law pertaining to the Child Death Review Commission. The Commission was mandated by the State Legislature to investigate and review the facts and circumstances surrounding the deaths of abused and/or neglected children. The panel is comprised of representatives from the Division of Family Services, Public Health, Department of Education, Child Advocacy, Office of the Attorney General and law enforcement agencies. To reduce these tragic deaths, the Commission makes recommendations to the Governor.¹⁰

VII. METHODS OF EVALUATION

At least annually, a meeting with key violence prevention program leaders will be held to review progress toward achieving the planned objectives. Indicators such as death rates, hospitalizations and police incidence reports will be reviewed with the help of the Injury Data Review Committee. When a significant increase in an indicator is identified, a response plan shall be developed and implemented through an appropriate host agency or organization.

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DROWNING PREVENTION

I. STATEMENT OF THE PROBLEM

In the United States, an average of 11 people die each day due to unintentional drowning. According to the Centers for Disease Control, 4,138 individuals died in 2000 from drowning incidents.⁴ Nearly 75% of boating-related deaths were due to drowning; almost 100% of those who drown are not wearing a personal flotation device. From 1979-2001, 51% of Delaware's drowning deaths were due to unintentional drowning or submersion while in a pool or reservoir. Children under the age of 20 account for 38% of those deaths.⁵

II. PROBLEM ANALYSIS

Data is available through death certificates, hospital discharge data, and the Trauma System Registry. The death rate from drowning decreased from 1.2 in 1998 to 1 death per 100,000 population in 2001. During the same period the near drowning hospitalization rate increased by 20%.^{8,10} Of the eight drowning incidents in 2001, five (62%) were male while three (37%) were female. The number of deaths was highest among the 45 to 59 age group (3) followed by the 5 to 9 years age group (2). Drowning affecting children ages 0 to 5 and adults over 65 continue to be domestic in nature.¹⁰ The death rate among whites is twice that (1.2 per 100,000) of all other races combined¹. In Delaware and across the nation, more males are hospitalized or die from drowning incidents than females. From 1979 through 2001, there were 267 drowning incidents in our state, of these victims 222 (83%) were male and 45 (17%) were female. The majority of drowning deaths occurred while in a pool, or reservoir (51%). Children 19 years old and younger accounted for 52 (20%) of these deaths.⁵ For the years 1996 through 2000, 52 individuals were hospitalized for drowning and submersion-related reasons. The average cost for all ages per hospital discharge for these injuries was \$14,403.53 versus \$16,617.12 for children less than nineteen years of age.⁵

III. GOAL

Reduce the number of drowning deaths and near-drowning injuries in Delaware. This plan will contribute to the achievement of the Healthy Delaware 2010 objectives.

IV. OBJECTIVES

1. Increase public awareness on how to prevent drowning and submersion injuries to Delawareans by 30% by the year 2010.
2. Increase public awareness on the need to have protective barriers and rescue equipment on newly constructed pools, as well as existing private pools by 40% by the year 2010.

3. Reduce the annual number of near-drowning hospitalizations in Delaware from 13 in 2001 to 8 in 2010.
4. Reduce the annual incidence of water-related injuries in Delaware from 152 in 2001 to 80 by 2010.
5. Reduce the annual number of drownings in Delaware from 8 in 2001 to 4 by the year 2010.

V. BEST PRACTICES

Education

Increasing awareness about the risk factors of drowning such as the type of water, depth of water, tidal waves and the dangers of animals in water can help swimmers and boaters reduce risks in the water. According to a 1989 American Red Cross survey of boaters aged 16 years and older, less than 5% of all boaters had taken a safety course within a year and only 24% in their lifetime.¹ Teaching children how to swim not only improves their chances of survival, but also improves their chances of saving other people's lives.^{2,20} In Hawaii, school based swimming is mandatory in some communities and high school students are required to complete a drown-proof course.¹⁷ It is much easier to teach a child how to swim than an adult, and children perfect their skills over the years.

Environmental Modification

Reducing the access of unsupervised children or adults to bodies of water can reduce the incidence of drowning.^{3,14} Studies show that some types of pool covers can prevent children from falling into the pool.¹¹ However, other pool covers such as floating blankets can increase the risk of drowning.¹⁶ Pool fencing, on the other hand, has been associated with an 81% reduction in pediatric drowning in Los Angeles, California.¹³ Isolation fencing is much more effective than perimeter fencing as long as the height is at least 5 feet and inter-bar spacing is 4 inches or less.¹⁷

Engineering Changes

People who can swim are less likely to drown than those who cannot swim.^{18,19,23} Therefore, it is suggested that promoting Personal Flotation Devices (PFD) can reduce the chances of drowning both for people who cannot swim and swimmers taking on dangerous tides.^{1,17} There are limited studies that show the effectiveness of flotation devices, however, a few studies have shown that PFD's can be easily promoted at the community level through education and discounted sales.¹⁹ In the event of a near-drowning, pool alarms can facilitate a prompt rescue. Recent studies show that sub-surface alarms are more effective at detecting a submerging person than wristband alarms.²³

Enforcement

Children do not perceive risks as well as adults¹⁵ therefore it is critical that children are supervised around water. Studies show that non-supervised children are twice as likely to drown as those supervised,¹⁴ and that having lifeguards at beaches can reduce the incidence of drowning by 50%.^{15,20,21} Code enforcement is necessary to ensure compliance to pool standards.

Legislation

Pool fencing legislation is one of the effective ways of reducing the exposure of children to water hazards.^{13,18} Several studies show that states with pool fencing regulations have been associated with increased pool fencing and reductions in drowning incidences.^{12,15}

VI. ACTION STEPS

Education

1. Develop public service announcements focused on water safety.
2. Educate local pool retailers and civic associations on pool rules and regulations.
3. Develop fact sheets that pediatricians (medical community) can provide to parents during well visits.
4. Support the inclusion of a school-based water safety curriculum and develop drowning prevention resources for schools.
5. Work with Delaware Risk Watch, Kids Count, the SAFE KIDS Coalition, and the YMCA to survey the level of awareness on water safety among school-aged children in Delaware.

Enforcement

6. Support the development of legislation to establish uniform pool safety rules.
7. Support the development of legislation to adopt nationally recognized standards for open water rescue.
8. Enlist the participation of code enforcement personnel in injury prevention activities.
9. Develop plans to increase public compliance with state and local codes and regulations related to pool and water safety.

Environment/Engineering

10. Identify improvement ideas for land use, inspection and enforcement of storm water management.
11. Evaluate existing codes and regulations to determine if they meet national standards and the needs of Delaware citizens.

Surveillance

12. Improve data collection systems so they:
 - a. Provide data that distinguishes between public pools versus private pools versus hotel pools.
 - b. Provide data showing if there is direct access between the home and the pool.
 - c. Provide data regarding the presence of a pool alarm or lifeguards at domestic pools.
 - d. Provide data regarding pond, ocean, lake, storm water and drainage water drowning.

VII. LEGISLATION

Rules and regulations for public pools, private pools and drainage ponds are all enforced and monitored by different agencies. The Department of Health and Social Services Division of Public Health (DHSS/DPH) enforces regulations for public pools in the State of Delaware. Legislation requires that public pools have attendants or signs warning people of the lack of an attendant. In addition, all attendants must be certified by a DHSS/DPH approved agency like the American Red Cross, YMCA, Ellis and Associates, or Aquatic Resource Service Associates. Pool fencing requirements are also mandated in these regulations. Private pool regulations vary depending on the municipality. Kent County uses the codes delineated in the 1996 International One and Two Family Dwelling Code⁷. These codes will be considered for revision this year. County officials are responsible for regulating drainage ponds and other land development issues.

Regulations for Delaware beaches and other recreational swimming areas vary by municipality and location. Beaches that are guarded all have different standards and regulations for their lifeguards. In Delaware, lifeguards are not required to follow nationally recognized standards for open water rescue. It is noted that Delaware does have miles of unguarded beach. Regulations for all bodies of water should be upgraded to ensure that all areas are safe and properly guarded⁷.

VIII. IMPLEMENTATION

The Delaware EMSC (Emergency Medical Services for Children) will lead the implementation of this plan in partnership with the Delaware YMCA and the Delaware Coast Guard. Other partners will be involved as indicated through the Delaware Injury Prevention Coalition.

IX. METHODS OF EVALUATION

Monitoring and evaluation will be conducted by the Delaware Injury Advisory Council in partnership with drowning prevention programs in the state. Annual meetings will be held to evaluate indicators such as drowning and near-drowning rates, disabilities, cost and length of hospitalization, compliance to water safety standards at swimming pools, and number of water safety educational opportunities provided.

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10 Leading Causes of Death, United States, 2002
Source: National Center for Injury Prevention and Control, www.cdc.gov/ncipc/wisqars

Age Groups

Rank	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	All Ages
1	Congenital Anomalies 5,623	<u>Unintentional Injury</u> 1,641	<u>Unintentional Injury</u> 1,176	<u>Unintentional Injury</u> 1,542	<u>Unintentional Injury</u> 15,412	<u>Unintentional Injury</u> 12,569	<u>Unintentional Injury</u> 16,710	Malignant Neoplasms 49,637	Malignant Neoplasms 93,391	Heart Disease 576,301	Heart Disease 696,947
2	Short Gestation 4,637	Congenital Anomalies 530	Malignant Neoplasms 537	Malignant Neoplasms 535	<u>Homicide</u> 5,219	<u>Suicide</u> 5,046	Malignant Neoplasms 16,085	Heart Disease 37,570	Heart Disease 64,234	Malignant Neoplasms 391,001	Malignant Neoplasms 557,271
3	SIDS 2,295	<u>Homicide</u> 423	Congenital Anomalies 199	<u>Suicide</u> 260	<u>Suicide</u> 4,010	<u>Homicide</u> 4,489	Heart Disease 13,688	<u>Unintentional Injury</u> 14,675	Chronic Low. Respiratory Disease 11,280	Cerebro-vascular 143,293	Cerebro-vascular 162,672
4	Maternal Pregnancy Comp. 1,708	Malignant Neoplasms 402	<u>Homicide</u> 140	Congenital Anomalies 218	Malignant Neoplasms 1,730	Malignant Neoplasms 3,872	<u>Suicide</u> 6,851	Liver Disease 7,216	Diabetes Mellitus 10,022	Chronic Low. Respiratory Disease 108,313	Chronic Low. Respiratory Disease 124,816
5	Placenta Cord Membranes 1,028	Heart Disease 165	Heart Disease 92	<u>Homicide</u> 216	Heart Disease 1,022	Heart Disease 3,165	HIV 5,707	<u>Suicide</u> 6,308	Cerebro-vascular 9,897	Influenza & Pneumonia 58,826	<u>Unintentional Injury</u> 106,742
6	<u>Unintentional Injury</u> 946	Influenza & Pneumonia 110	Benign Neoplasms 44	Heart Disease 163	Congenital Anomalies 492	HIV 1,839	<u>Homicide</u> 3,239	Cerebro-vascular 6,055	<u>Unintentional Injury</u> 8,345	Alzheimer's Disease 58,289	Diabetes Mellitus 73,249
7	Respiratory Distress 943	Septicemia 79	Septicemia 42	Chronic Low. Respiratory Disease 95	Chronic Low. Respiratory Disease 192	Diabetes Mellitus 642	Liver Disease 3,154	Diabetes Mellitus 5,496	Liver Disease 6,097	Diabetes Mellitus 54,715	Influenza & Pneumonia 65,681
8	Bacterial Sepsis 749	Chronic Low. Respiratory Disease 65	Chronic Low. Respiratory Disease 41	Cerebro-vascular 58	HIV 178	Cerebro-vascular 567	Cerebro-vascular 2,425	HIV 4,474	<u>Suicide</u> 3,618	Nephritis 34,316	Alzheimer's Disease 58,866
9	Circulatory System Disease 667	Perinatal Period 65	Influenza & Pneumonia 38	Influenza & Pneumonia 53	Cerebro-vascular 171	Congenital Anomalies 475	Diabetes Mellitus 2,164	Chronic Low. Respiratory Disease 3,475	Nephritis 3,455	<u>Unintentional Injury</u> 33,641	Nephritis 40,974
10	Intrauterine Hypoxia 583	Benign Neoplasms 60	Cerebro-vascular 33	Septicemia 53	Diabetes Mellitus 171	Liver Disease 374	Chronic Low. Respiratory Disease 1,008	Viral Hepatitis 2,331	Septicemia 3,360	Septicemia 26,670	Septicemia 33,865

10 Leading Causes of Death, Delaware, 2002

Source: National Center for Injury Prevention and Control, www.cdc.gov/ncipc/wisqars

Age Groups

Rank	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	All Ages
1	Congenital Anomalies 19	Malignant Neoplasms 4	Malignant Neoplasms 2	<u>Unintentional Injury</u> 5	<u>Unintentional Injury</u> 45	<u>Unintentional Injury</u> 35	<u>Unintentional Injury</u> 55	Malignant Neoplasms 142	Malignant Neoplasms 259	Heart Disease 1,576	Heart Disease 1,918
2	Short Gestation 17	<u>Unintentional Injury</u> 4	Chronic Low. Respiratory Disease 1	<u>Homicide</u> 2	<u>Homicide</u> 13	Malignant Neoplasms 16	Heart Disease 46	Heart Disease 112	Heart Disease 167	Malignant Neoplasms 1,147	Malignant Neoplasms 1,621
3	Maternal Pregnancy Comp. 15	Anemias 1	Congenital Anomalies 1	Malignant Neoplasms 2	<u>Suicide</u> 11	<u>Suicide</u> 10	Malignant Neoplasms 45	<u>Unintentional Injury</u> 34	Chronic Low. Respiratory Disease 35	Cerebrovascular 352	Cerebrovascular 405
4	Respiratory Distress 7	Congenital Anomalies 1	Influenza & Pneumonia 1	Heart Disease 1	Heart Disease 4	Heart Disease 8	HIV 25	Liver Disease 29	Diabetes Mellitus 31	Chronic Low. Respiratory Disease 301	Chronic Low. Respiratory Disease 350
5	Placenta Cord Membranes 5	Heart Disease 1	Meningococcal Infection 1	<u>Suicide</u> 1	Malignant Neoplasms 4	HIV 7	<u>Suicide</u> 18	HIV 28	Cerebrovascular 26	Diabetes Mellitus 153	<u>Unintentional Injury</u>
6	Circulatory System Disease 4	Perinatal Period 1	Septicemia 1		Chronic Low. Respiratory Disease 2	<u>Homicide</u> 6	Diabetes Mellitus 10	Diabetes Mellitus 17	<u>Unintentional Injury</u>	Influenza & Pneumonia 149	Diabetes Mellitus 215
7	<u>Unintentional Injury</u> 1		<u>Unintentional Injury</u> 1		Meningococcal Infection 2	Diabetes Mellitus 4	Liver Disease 10	<u>Suicide</u> 17	Liver Disease 15	Alzheimer's Disease 126	Influenza & Pneumonia 168
8	<u>Five Tied</u> 2				Congenital Anomalies 1	Anemias 2	Cerebrovascular 9	Cerebrovascular 16	Septicemia 14	Septicemia 106	Septicemia 133
9	<u>Five Tied</u> 2					<u>Four Tied</u> 1	<u>Homicide</u> 8	Viral Hepatitis 14	Nephritis 9	Nephritis 101	Alzheimer's Disease 128
10	<u>Five Tied</u> 2					<u>Four Tied</u> 1	<u>Two Tied</u> 4	Septicemia 10	<u>Suicide</u> 8	<u>Unintentional Injury</u> 87	Nephritis 117

Recommended framework of E-code groupings for presenting injury mortality and morbidity data (exerpts)

Mechanism/Cause	Manner/Intent				
	Unintentional	Self-inflicted	Assault	Undetermined	Other ¹
Cut/pierce	E920.0-.9	E956	E966	E986	E974
Drowning/submersion	E830.0-.9, E832.0-.9, E910.0-.9	E954	E964	E984	
Fall	E880.0-E886.9, E888	E957.0-.9	E968.1	E987.0-.9	
Fire/burn	E890.0-E899, E924.0-.9	E958.1,.2,.7	E961,968.0,.3	E988.1,.2,.7	
Fire/flame	E890.0-E899	E958.1	E968.0	E988.1	
Hot Object/Substance	E924.0-.9	E958.2,.7	E961, E968.3	E988.2,.7	
Firearm	E922.0-.3,.8, .9	E955.0-.4	E965.0-.4	E985.0-.4	E970
Machinery	E919 (.0-.9)				
Motor Vehicle Traffic^{2,3}	E810-E819 (.0-.9)	E958.5	E968.5	E988.5	
Occupant	E810-E819 (.0,.1)				
Motorcyclist	E810-E819 (.2,.3)				
Pedal cyclist	E810-E819 (.6)				
Pedestrian	E810-E819 (.7)				
Unspecified	E810-E819 (.9)				
Pedal cyclist, other	E800-E807 (.3), E820-E825 (.6), E826.1,.9, E827-E829(.1)				
Pedestrian, other	E800-807(.2), E820-E825(.7), E826-E829(.0)				
Transport, other (Chart continued next page)	E800-E807 (.0,.1,.8,.9), E820-E825 (.0-.5,.8,.9), E826.2-.8, E827-E829 (.2-.9), E831.0-.9, E833.0-E845.9	E958.6		E988.6	

Recommended framework of E-code groupings for presenting injury mortality and morbidity data

(exerpts, continued)

Natural/environmental	E900.0-E909, E928.0-.2	E958.3		E988.3	
Bites and stings³	E905.0-.6,.9, E906.0-.4,.5,.9				
Poisoning	E850.0-E869.9	E950.0-952.9	E962.0-.9	E980.0-E982.9	E972
Struck by, against	E916-E917.9		E960.0; E968.2		E973, 975
Suffocation	E911-E913.9	E953.0-.9	E963	E983.0-.9	

¹Includes legal intervention (E970-E978) and operations of war (E990-E999).

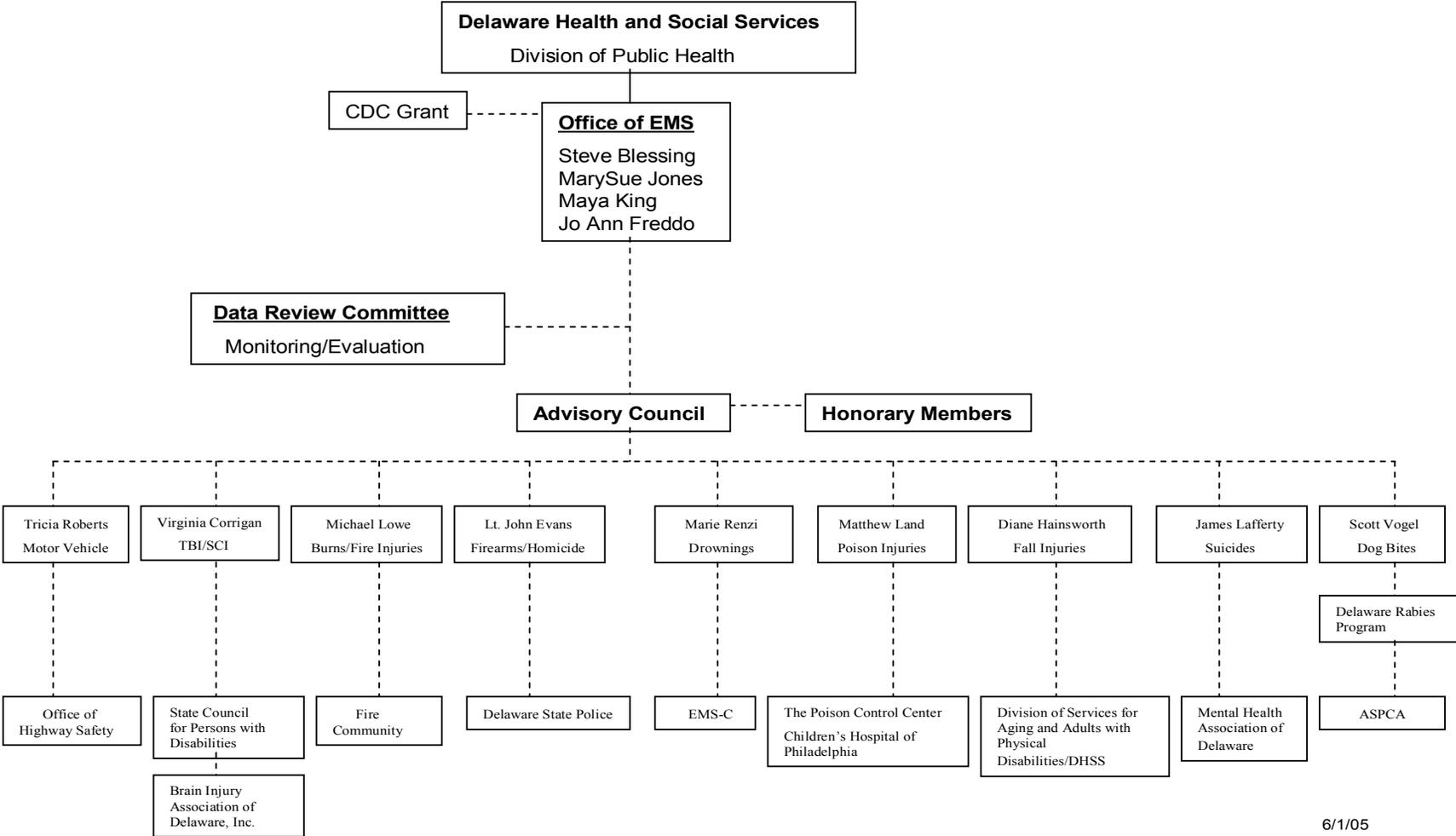
²Three 4th-digit codes (.4 [occupant of streetcar], .5 [rider of animal], .8 [other specified person]) are not presented separately because of small numbers. However, because they are included in the overall motor vehicle traffic category, the sum of these categories can be derived by subtraction.

³E968.5 (assault by transport vehicle), E906.5 (bite from unspecified animal), E922.4 (unintentional injury [gunshot wound] with BB/pellet), E955.6 (suicide attempt/intentionally self-inflicted injury [gunshot wound] with BB/pellet gun), E968.6 (assault [gunshot wound] with BB/pellet gun), E985.6 (undetermined intent injury [gunshot wound] with BB/pellet gun), E928.3 (unintentional human bite), and E968.7 (assault by human bite), are specific to the *ICD-9-CM* and, therefore, only apply to morbidity coding.

⁴E849 (place of occurrence) has been excluded from the matrix. For mortality coding, an *ICD-9* E849 code does not exist. For morbidity coding, an *ICD-9-CM* E849 code should never be first-listed E code and should only appear as an additional code to specify the place of occurrence of the injury incident.

Source: Injury Surveillance Workgroup, *Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance*. Marietta (GA): State and Territorial Injury Prevention Directors Association; 2003.

Delaware Coalition for Injury Prevention



6/1/05

Additional Resources

A. I. DuPont Hospital for Children	www.kidshealth.org
American Association of Poison Control Centers (AAPCC)	www.aapcc.org
American Association of Suicidology	www.suicidology.org
American Burn Association	www.ameriburn.org
American Red Cross	www.redcross.org
American Trauma Society	www.amtrauma.org
Brain Injury Association of America	www.biausa.org
Centers for Disease Control and Prevention (CDC)	www.cdc.gov
Children's Hospital of Philadelphia/The Poison Control Center	www.chop.edu
Consumer Product Safety Commission (CPSC)	www.cpsc.gov
Emergency Medical Services for Children (EMSC)	www.mchb.hrsa.gov/programs/emsc
Mental Health Association in Delaware	www.mhainde.org
National Coalition Against Domestic Violence	www.ncadv.org
National Fire Protection Association (NFPA)	www.nfpa.org
National Highway Traffic Safety Administration (NHTSA)	www.nhtsa.dot.gov
National Institute of Mental Health (NIMH)	www.nimh.nih.gov
National Safe Kids Campaign	www.safekids.org
State and Territorial Injury Prevention Directors Association (STIPDA)	www.stipda.org
State of Delaware	www.delaware.gov
Substance Abuse and Mental Health Services Administration (SAMHSA)	www.samhsa.gov
Suicide Prevention Resource Center (SPRC)	www.sprc.org
The American Society for the Prevention of Cruelty to Animals (ASPCA)	www.aspca.org
U.S. Coast Guard	www.uscg.mil
United Way of America	www.national.unitedway.org
YMCA	www.ymca.com

Acronym List

BAC	Blood Alcohol Content
CDC	Centers for Disease Control & Prevention
CODES	Crash Outcome Data Evaluation System
DHSS	Delaware Health & Social Services
DPH	Division of Public Health
DPS	Department of Public Safety
DUI	Driving Under the Influence
DVCC	Domestic Violence Coordinating Council
EMS	Emergency Medical Services
EMSC	Emergency Medical Services for Children
FARS	Fatality Analysis Reporting System
HDD	Hospital Discharge Data
NHTSA	National Highway Traffic Safety Administration
NVDRS	National Violent Death Reporting System
OHS	Office of Highway Safety
PCC	Poison Control Center
PDF	Personal Flootation Device
PPA	Poison Prevention Packaging Act
PPAG	Poison Prevention Anticipatory Guidance
SCI	Spinal Cord Injury
SPCA	Society for the Prevention of Cruelty to Animals
TBI	Traumatic Brain Injury
WISQARS	Web-Based Injury Statistics Query & Reporting System