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Injuries in Infants and Children, Virginia, 1995

This article presents excerpts from the report entitled Injury in Virginia *prepared by the Center for Injury and Violence Prevention, Virginia Department of Health. A complete copy of* Injury in Virginia *may be obtained from the Center at (800)732-8333.*

Background

Injuries are the fourth leading cause of death for all Virginia residents, and the leading cause of death for Virginians between the ages of 1 and 44 years. During 1995, 3,524 deaths resulted from injury, accounting for 6.7% of all deaths that occurred in the state. In addition to the enormous toll from loss of life, 35,010 (4.8%) of all hospitalizations resulted from injury, for a total of 178,284 hospital days (average length of stay = 5 days). Although the overall number of hospital discharges decreased in 1995 compared to 1994, the number of discharges for injuries increased by 22%.

The cost of hospitalizations for injury was more than $336 million in 1995, with an average charge of almost $10,000 for each patient treated. The government, through health care programs such as Medicare, Medicaid, Champus, and jail or detention services, paid for more than half (53%) of the total injury hospitalization costs. Private sources or insurance companies were the next largest payer, covering almost one-third (30%) of the total costs.

This report examines injuries in Virginia during 1995 among infants and children aged 0 to 19 years that resulted in death or hospitalization . More children and adolescents died from injuries than from all other causes of death combined. Injuries accounted for 38.0% of all deaths for children aged 1 to 9 years, 53.9% of all deaths for children aged 10 to 14 years, and 82.4% of deaths for adolescents aged 15 to 19 (Figure 1). For the age group 1 to 19 years, injuries accounted for 8.8% of all hospital discharges (Table 1).

Methods

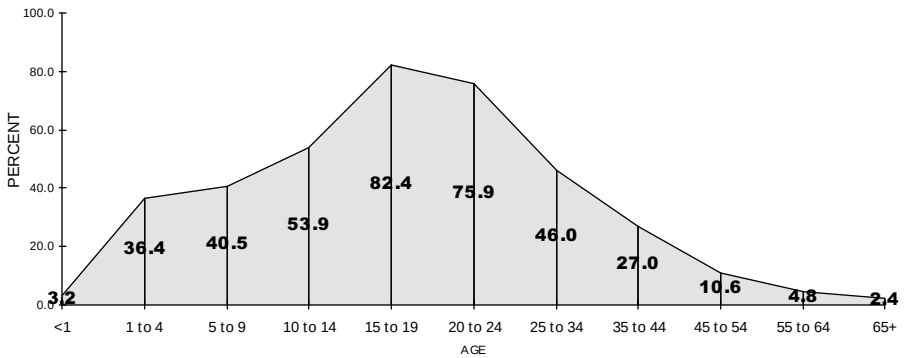
Injury was defined as unintentional or intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical or chemical energy or from the absence of such essentials as heat or oxygen.[1] Utilizing ICD-9-CM External Cause of Injury codes (E-codes), injuries due to the following causes were analyzed for this report: cutting or piercing, drowning or submersion, falls, fire and flames, firearms, poisoning, suffocation, hot objects, nature or environment (e.g., animal bites, lightning), overexertion, striking or being struck by an object or person, motor vehicles, and bicycles. Injuries were further classified as unintentional, self-inflicted, or resulting from an assault, using guidelines provided by McLoughlin, *et al*.[2] Injuries due to medical treatment or war were not analyzed in this report.

Injury mortality data were provided by the Virginia Center for Health Statistics. National mortality data were obtained from the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

Virginia Health Information, a private nonprofit organization that compiles discharge data from all hospitals in the state, provided information about injuries resulting in hospitalization based on the ICD-9 E-codes assigned at the time of discharge.

Population data were obtained from the Virginia Center for Health Statistics.

Figure 1. Injury as a Proportion of All Causes of Death by Age, Virginia, 1995



Source: Virginia Center for Health Statistics

In This Issue:

Results

Deaths

In 1995, injuries caused 415 deaths in children and adolescents aged 0 to 19 years. The five leading causes of injury death were crashes involving a motorized vehicle on a public roadway (including collisions between motorized vehicles and pedestrians or bicycles), homicide, suicide, drowning, and suffocation (Figure 2).

The leading causes of injury death varied across the age categories within this group. Suffocation accounted for 40% of injury deaths in infants, followed by homicide (17%) and motor vehicle crashes that occurred on a public roadway (9%). Injury deaths in children aged 1 to 4 years were most likely due to drowning or submersion (23%), motor vehicle crashes on a public roadway (21%), and homicide (13%). The leading cause of injury death for older children and adolescents was motor vehicle crashes on a public roadway, accounting for 53% of injury deaths in the 5 to 9 year age group, 40% in the 10 to 14 year group, and 49% in the 15 to 19 year group. The next two leading causes of injury deaths in children aged 5 to 9 were drowning or submersion and fire or flames (13% each). Homicide and suicide were the second and third cause of injury death for children and adolescents aged 10 to 19 years. Fifteen percent of injury deaths in 10 to 14 year olds and 27% of injury deaths in 15 to 19 year olds were due to homicide. Suicide comprised 13% of injury deaths for both of these age groups.

Overall, for the 0 to 19 year age group, more than two-thirds (68%) of injury deaths were determined to have been unintentional. Twenty percent were due to assault, 10% were self-inflicted, and 2% were of unspecified intent.

Black males had the highest rate of death due to injury (52.3 per 100,000 population) followed by white males (25.0 per 100,000), black females (21.3 per 100,000), and white females (13.7 per 100,000).

Hospitalizations due to Injury

In 1995, there were 5,637 hospitalizations for injury in children and adolescents aged 0 to 19 years, for a total hospitalization charge of more than $40 million. Three categories (motor vehicle crashes on a public roadway, poisoning and falls) accounted for over 60% of all injury hospitalizations (Figure 3). Overall, injuries associated with firearms, drowning or submersion, suffocation, fire and flames, and motor vehicles on public roadways resulted in the largest average hospitalization charges. Not surprisingly, the longest hospital stays were associated with these injuries as well. More than three-fourths (78%) of injuries requiring hospitalization resulted from unintentional causes, 13% were self-inflicted, 5% were due to assault, and no intent was specified for the remaining 4%. Black males had the highest number of hospitalizations per 100,000 population (429.5 per 100,000), followed by white males (280.2 per 100,000), black females (258.1 per 100,000), and white females (226.5 per 100,000).

The leading causes of injury hospitalizations varied across the 0 to 19 year age group. Falls accounted for 28% of injury hospitalizations for infants, followed by motor vehicle crashes on public roadways (15%) and poisonings (15%). Injury hospitalizations in children aged 1 to 4 years were most likely due to poisoning (29%), falls (25%) and motor vehicle crashes on public roadways (12%).

Falls were the leading cause of injury hospitalization for children in the age groups 5 to 9 years (37%) and 10 to 14 years (22%). The next two leading causes of injury hospitalization for children aged 5 to 9 years were motor vehicle crashes on public roadways (22%) and bicycle crashes not involving a motorized vehicle (8%). The second and third leading causes of injury hospitalization for children aged 10 to 14 years were poisoning (20%) and motor vehicle crashes on public roadways (19%). Overall, bicycle injuries accounted for more than 10% of injury hospitalizations for children aged 5 to 14 years, and 40% of all bicycle hospitalizations were for children in this age group.

Motor vehicle crashes on public roadways accounted for 32% of injury hospitalizations for persons aged 15 to 19 years, followed by poisoning (29%) and falls (10%). This is the first age group for which firearms appeared in the top five causes of injury hospitalization. Of the 150 firearm-related hospitalizations in this age group, 49% were the result of assault, 23% were unintentional and 5% were self-in-

Figure 2. Childhood Injury Deaths, Ages 0 to 19 Years, Virginia, 1995

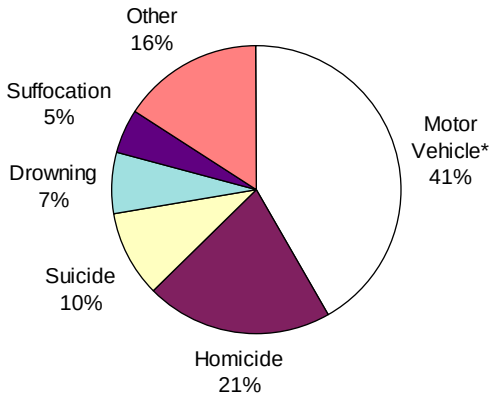
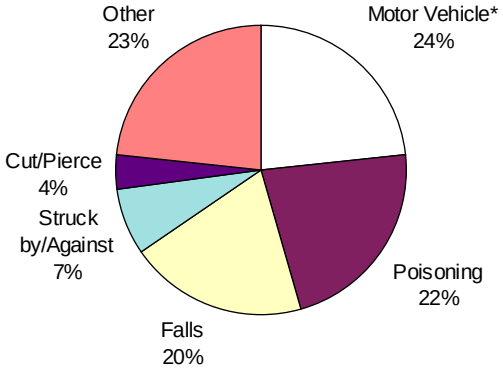


Figure 3. Childhood Injury Hospitalizations, Ages 0 to 19 Years, Virginia, 1995



**Crashes involving a motorized vehicle on a public roadway, including collisions between motorized vehicles and pedestrians or bicycles.*

Table 1. Injury as a Proportion of Total Hospital Discharges, Virginia, 1995

Age	Total Hospital Discharges (THD)	Injury Discharges (% of THD)
<1	91,000*	468 (0.5)
1 - 4	14,289	922 (6.5)
5 - 9	8,681	825 (9.5)
10 - 14	10,218	1,035 (10.1)
15 - 19	25,629	2,387 (9.3)
20 - 24	36,241	2,354 (6.5)
25 - 34	94,538	4,762 (5.0)
35 - 44	78,052	4,504 (5.8)
45 - 54	70,593	3,142 (4.5)
55 - 64	71,453	2,659 (3.7)
65 and up	225,424	11,952 (5.3)
Total	**726,118**	**35,010 (4.8)**

**Includes newborns*

flicted. Over one-third (39%) of firearm injury hospitalizations were caused by a handgun.

Conclusion

Consideration of the data provided in this report may enable more effective allocation of resources for prevention and implementation of intervention programs. Primary prevention measures include the use of child safety seats, bicycle helmets, smoke detectors and poison control centers. Each of these has been shown to result in direct and indirect cost savings.[3] Programs supporting these and other injury prevention activities are administered by the Virginia Department of Health (see Box).

Statewide data on injury hospitalizations and deaths have been collected by the Center for Injury and Violence since 1994. These data are also available for individual cities and counties. Data for 1996 have been analyzed and are available upon request. Three years of data may provide initial information about trends in injury hospitalizations and deaths.

References
1. Injury prevention: meeting the challenge. National Committee for Injury Prevention and Control. New York: Oxford University Press, 1989.
2. A proposed mechanism/intent matrix for presenting E-coded data. E. McLoughlin, L. Fingerhut, H. Weiss, L. Annest, and the Bay Area Injury Data Group, June 13, 1995.
3. Childhood injury: cost & prevention facts. National Public Services Research Institute. Landover, MD.1997.

Submitted by: William K. Slater, M.P.H.,Center for Injury and Violence Prevention.

Resources Available through the Center for Injury & Violence Prevention, Virginia Department of Health

- ☞ Unintentional and intentional injury morbidity, fatality and cost data
- ☞ Injury prevention information and resources
- ☞ Local, state, and national referrals for violence and injury prevention
- ☞ Low income child safety seat program
- ☞ Statewide sexual assault program

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Flu Corner

The objectives of the influenza surveillance system in Virginia are to detect outbreaks of influenza as quickly as possible and to specify the organisms involved. The system has three parts: a ***passive reporting system*** (receives reports from throughout the state of sporadic cases occurring throughout the year), an ***active reporting system*** consisting of 46 medical practices (Sentinel Physicians) distributed geographically among the state's five health planning regions (identifies trends in incidence of influenza from October through March or April of the next year), and ***laboratory surveillance*** (identifies the various strains of influenza virus present in the state).

The data are used to monitor and define relative levels of influenza activity in Virginia during the flu season. Activity is characterized as sporadic, regional or widespread. Beginning November 20 through December 18, activity has been characterized as sporadic. Influenza type A has been isolated in the northwest health planning region of Virginia.

Advisory Committee on Immunization Practices (ACIP) Amended Statement on Human Rabies Immune Globulin (HRIG)

The current Rabies Prevention - United States, 1991, has been revised. The following statement is found on page 5 in Table 2 and in the text on page 6:

If anatomically feasible, up to one-half the dose of HRIG should be infiltrated around the wound(s) and the rest should be administered IM in the gluteal area.

This statement has been changed to read:

If anatomically feasible, the full dose of HRIG should be thoroughly infiltrated in the area around and into the wound(s). Any remaining volume should be administered intramuscularly at a site distant from vaccine inoculation.

Cases of Selected Notifiable Diseases Reported in Virginia*

Disease	Total Cases Reported, October 1997						Total Cases Reported Statewide, January through October		
	State	Regions					This Year	Last Year	5 Yr Avg
		NW	N	SW	C	E			
AIDS	128	5	46	26	23	28	942	991	1002
Campylobacteriosis	51	14	7	9	17	4	520	677	604
Giardiasis	41	3	16	10	8	4	368	293	281
Gonorrhea	961	55	81	79	278	468	7120	7950	10081
Hepatitis A	24	1	12	2	5	4	195	147	139
Hepatitis B	11	2	4	3	0	2	106	119	120
Hepatitis NANB	1	0	0	0	1	0	24	15	23
HIV Infection	51	5	17	16	1	12	803	844	1000
Influenza	7	0	0	0	0	7	449	394	676
Legionellosis	2	0	1	0	0	1	21	34	19
Lyme Disease	7	0	5	0	1	1	53	47	78
Measles	0	0	0	0	0	0	1	3	5
Meningitis, Aseptic	18	4	8	2	0	4	193	166	325
Meningitis, Bacterial†	7	2	1	3	0	1	75	59	82
Meningococcal Infections	5	2	0	0	1	2	47	51	51
Mumps	0	0	0	0	0	0	10	14	30
Pertussis	0	0	0	0	0	0	42	75	40
Rabies in Animals	60	11	19	10	12	8	565	512	375
Rocky Mountain Spotted Fever	4	1	0	1	0	2	19	49	26
Rubella	0	0	0	0	0	0	1	2	0
Salmonellosis	125	15	22	18	28	42	887	1004	927
Shigellosis	13	3	10	0	0	0	376	596	444
Syphilis, Early‡	58	1	1	5	26	25	536	722	1011
Tuberculosis	15	0	4	1	5	5	275	282	292

Localities Reporting Animal Rabies This Month: Alexandria 3 raccoons; Appomattox 1 bat; Arlington 1 raccoon; Augusta 1 skunk; Bland 2 foxes; Charlotte 1 raccoon; Chesterfield 2 raccoons; Clarke 1 raccoon; Cumberland 1 skunk; Fairfax 2 bats, 8 raccoons, 1 skunk; Fauquier 1 skunk; Floyd 1 skunk; Goochland 1 skunk; Grayson 1 raccoon; Halifax 2 raccoons; Hanover 1 fox, 1 skunk; Henrico 2 skunks; Highland 1 cat; James City 1 raccoon, 1 skunk; Loudoun 1 cat, 2 raccoons; Louisa 1 raccoon; Lynchburg 1 raccoon; Nelson 1 raccoon; Newport News 1 raccoon; Northumberland 1 skunk; Nottoway 1 skunk; Pittsylvania 3 raccoons, 1 skunk; Prince William 1 skunk; Rockingham 2 raccoons, 1 skunk; Stafford 1 bat, 1 cat; Virginia Beach 2 raccoons; Westmoreland 1 raccoon; York 1 raccoon.

Occupational Illnesses: Asbestosis 15; Carpal Tunnel Syndrome 41; Hearing Loss 17; Lead Poisoning 10; Pneumoconiosis 7.

*Data for 1997 are provisional.

†Other than meningococcal. ‡Includes primary, secondary, and early latent.

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