

Injury Prevention: North Carolina's Challenge and Capacity to Respond

Sharon Baker Rhyne, Sharon Schiro

North Carolina has worked to develop an infrastructure and identify priorities to reduce the high morbidity and mortality from injuries. Findings of the North Carolina Institute of Medicine (NCIOM) Task Force on Adolescent Health and the NCIOM Task Force on Prevention, combined with the North Carolina Division of Public Health strategic plan and the Injury and Violence Prevention State Advisory Council, have laid the path toward this goal.

Each year, thousands of North Carolinians are disabled by or die of intentional and unintentional injuries. Unintentional injuries, most of which result from motor-vehicle collisions, falls, and unintentional poisonings, are the leading cause of death for North Carolinians across all age groups [1]. Intentional injuries, such as homicide and suicide, are among the 5 leading causes of injury-related death across all age groups. Among young children, intentional injuries are commonly due to assault; however, in every age group, starting with individuals aged 10-14 years, suicide is among the top 5 leading causes of death. Many groups in North Carolina, including state, university, hospital, and non-profit organizations, are working to reduce the occurrence of injuries and to minimize the morbidity and mortality of injuries that have not been prevented. The designation of a central coordinating agency, the development of a multiyear strategic plan involving multiple partners, and the emphasis on evidence-based practices should increase the impact of efforts to prevent injury.

The Challenge

Motor-vehicle collisions are the leading cause of death due to unintentional injury in North Carolina. Many motor-vehicle collisions are the result of speeding, not wearing a seat belt, and/or driving while impaired (DWI), and many involve motorcyclists. The 2009 report by the North Carolina Institute of Medicine (NCIOM) Task Force on Prevention included several recommendations that focus on these causes, including enhancing surveillance and enforcement of traffic laws, ensuring training and licensure of all motorcycle drivers, enacting a primary belt use law for rear-seat

occupants of vehicles, and requiring breath alcohol ignition interlock devices for drivers with a previous DWI offense [2]. The 2009 report from the NCIOM Task Force on Adolescent Health addressed the causes of motor vehicle-related injuries that are more prevalent among children and adolescents aged 10-20 years than among individuals in other age groups [3]. Adolescence is a period of great change in all aspects of development and a time when many behaviors are learned or tested that will significantly impact the rest of one's life. Thus, interventions that reduce risk-taking behavior during adolescence can reduce youths' immediate risk for, and long-term consequences of, serious injury. North Carolina has adopted many evidence-based strategies to reduce the occurrence of motor vehicle-related death and injury, such as a graduated driver-licensing system and mandatory seat belt use. However, motor vehicle-related deaths and injuries could be additionally reduced through greater enforcement of existing laws, improvements in driver education, a primary belt law that applies to all vehicle occupants, and increased fines associated with noncompliance with seat-belt and DWI laws.

Falls are a leading cause of injury in North Carolina, predominantly affecting people older than 65 years [4]. Falls can result in serious injuries, such as hip and pelvic fractures and traumatic brain injuries, that may lead to lifelong disability or death. As the populations of North Carolina counties shift toward greater percentages of residents older than 65 years, the number of people affected by fall-related injuries and the associated health care costs will dramatically increase in the absence of interventions. Falls are also addressed in the report by the prevention task force, with recommendations to increase funding for implementation of evidence-based falls prevention programs and injury surveillance, to coordinate existing prevention efforts in the state, and to improve housing conditions and thereby ensure healthy and safe homes [2].

Deaths from unintentional poisoning are increasing significantly in number, and unintentional poisoning is the second leading cause of unintentional injury in North Carolina. During 1999-2007, deaths due to unintentional poisoning increased from 3.5 to 9.9 cases per 100,000 population—an

Sharon Baker Rhyne, MHA, MBA programs manager, Chronic Disease and Injury Section, Division of Public Health, North Carolina Department of Health and Human Services, Raleigh, North Carolina (sharon.rhyne@dhhs.nc.gov).

Sharon Schiro, PhD associate professor, Department of Surgery, School of Medicine, University of North Carolina-Chapel Hill, Chapel Hill, and vice president, North Carolina Institute of Medicine, Morrisville, North Carolina (sharon_schiro@med.unc.edu).

increase of 183% [5]. The majority of these deaths (75%) were due to use of prescription and over-the-counter drugs, especially methadone and other narcotics. Twenty-three percent of the remaining deaths were due to use of illicit drugs, primarily cocaine. Death occurred most frequently among people aged 35-54 years. Because behaviors that begin during adolescence tend to carry over into adulthood, addressing substance-abuse behaviors among adolescents is crucial to reducing the overall burden of this type of injury. To this end, the Task Force on Adolescent Health recommended increased screening and treatment of substance abuse and mental health problems and maintaining the drinking age at 21 years [3]. The Task Force on Prevention report also made several recommendations to reduce the occurrence of unintentional poisoning, such as safe storage of hazardous substances, including prescription drugs [2].

The NCIOM Task Force on Child Abuse Prevention, which convened during 2004, focused on an aspect of intentional injuries, namely, childhood injuries due to violence and neglect [6]. Abuse and neglect affect thousands of children in North Carolina each year and can result in long-term emotional, cognitive, and physical disability. To date, prevention efforts in this area have been fragmented, with limited coordination at the state level, limited funding, and limited surveillance. The statewide strategic plan developed by the Task Force on Child Abuse Prevention set forth 37 recommendations to address the prevention of child maltreatment and abuse. Specific recommendations included focusing on prevention instead of reporting, development of a new state structure to coordinate prevention efforts, promotion of collaboration among prevention agencies and the state, promotion of the use of evidence-based prevention practices, and development of a child maltreatment surveillance system [6].

To reduce morbidity and mortality from injury, there is a need for a strong state infrastructure to provide the leadership, funding, and data required to support injury surveillance and prevention, as well as for recognition by the public and the government that injury is a significant public health problem. Several recommendations reflecting these issues were common among the 3 injury-related reports by the NCIOM task forces and included the recognition of injury as a significant public health problem and prevention as an essential public health service, the development of infrastructure to support injury surveillance and prevention activities, and the need to change social norms and everyday behavior to promote injury prevention.

The Capacity to Respond

The state has vast experience to confront the challenges presented by the injury and violence prevention recommendations. Over the years, numerous state agencies, such as the Department of Health and Human Services, the Division of Mental Health, Developmental Disabilities and Substance Abuse Services, the Department of Insurance, the

Department of Transportation, and the Governor's Highway Safety Program, and a number of universities, private organizations, and hospitals have demonstrated a strong commitment to, and provided expertise in, injury and violence prevention, including related research. In 1991, the North Carolina General Assembly established the Child Fatality Task Force to respond to the public's concern about preventable deaths among children. Soon thereafter, the state became nationally recognized for several successful injury prevention campaigns that continue today, such as Click It or Ticket, a campaign begun in 1993 to encourage compliance with state seat belt laws, and Booze It & Lose It, a DWI-specific enforcement and education campaign started in 1996. More-recent initiatives include the Period of PURPLE Crying, the largest and most comprehensive program in the country aimed at prevention of shaken baby syndrome.

Despite this work, for a long time the state lacked a coordinating entity—an agency clearly vested with broad responsibility for injury and violence surveillance and the conceptualization of a statewide injury plan with related oversight and evaluation of efforts. Finally, in 2007, the General Assembly passed legislation that designated the Division of Public Health as the lead state agency for the broad spectrum of injury and violence prevention activities in North Carolina. Within the division, the Injury and Violence Prevention (IVP) Branch was established in 1989 and willingly took on this charge, knowing it could depend on the support and assistance from a vast array of partners who were equally vested in cutting the state's injury morbidity and mortality numbers.

After the legislation was passed, the mission of the IVP Branch was adapted to include facilitating development and implementation of a statewide strategic plan for injury and violence prevention; facilitating a comprehensive, statewide approach to injury and violence prevention through collaboration; and maintaining a statewide injury prevention program that includes data collection, surveillance, education, and effective prevention strategies.

The IVP Branch brought approximately 60 stakeholders together during 2008-2009 to develop a vision, consisting of goals, specific objectives, and action steps, for an injury and violence prevention plan. Input from approximately 40 additional stakeholders was sought throughout the writing process. The goal was not to replace the individual plans and goals of the many partners, but to build upon these goals, providing a common road map for a stronger state infrastructure to support injury and violence prevention efforts.

At about the same time as the effort led by the IVP Branch got underway, the NCIOM convened the Task Force on Adolescent Health and Task Force on Prevention. Although issues related to injury and violence were not included in the initial agenda of the Task Force on Prevention, the IVP Branch, in its capacity as the state's lead agency on this issue, advocated strongly for a change. As the NCIOM task forces examined factors (and their underlying causes)

associated with the greatest morbidity and mortality at the population level, it became clear that inclusion of injury and violence prevention strategies in their agendas was necessary. The parallel work of the IVP Branch and the NCIOM task forces was mutually beneficial, as the individual efforts of each group enhanced the recommendations and plans of the other groups. Relevant recommendations were subsequently incorporated into the state's Healthy People 2020 agenda.

The state plan, complete with data testifying to the burden of injuries and violence in North Carolina, was finally set forth in 2010 [7]. The plan provides a blueprint for building and strengthening injury and violence prevention efforts in North Carolina through a systems-level approach. The following goal areas, each with an associated work group, were identified: (1) data and surveillance; (2) research and evaluation; (3) messaging, policy, and environmental change; (4) saving lives; (5) building the injury prevention community; and (6) workforce development.

The fourth goal, saving lives, focuses on reducing the rate of morbidity (and, thus, mortality) due to injury and violence by implementing prioritized, data-driven strategies and programs, policies, and innovative and tested practices. Data from 1999 through 2007 provided solid evidence that the leading causes of unintentional injuries (ie, motor-vehicle crashes, poisonings, and falls) and intentional injuries (ie, suicide and assault/homicide) had to be the primary focus of any efforts if the state was to reach its goal of cutting the overall rate of injury-associated morbidity by 15% in 5 years

[7]. Most importantly, any agency or group at the state or local level can draw on the data and priorities of the state plan to make informed decisions that maximize the limited resources available to combat this major public health problem.

As the state plan neared publication, the IVP Branch worked with the state health director to identify a core of 25 injury and violence prevention partners, who met in August 2009 to form the first Injury and Violence Prevention State Advisory Council (IVP-SAC). In April 2010, the IVP-SAC sponsored North Carolina's first Injury and Violence Prevention Day. The event at the state legislature focused on the release of the state's first strategic injury and violence prevention plan and formal recognition of the many partners who were instrumental in the plan's formation and committed to its execution. Other related activities included speakers from across North Carolina, who addressed topics about injury and violence prevention to the advocates, legislators, and citizens in attendance.

Prevention of morbidity and mortality due to injury will require multiple resources, including funding, innovative ideas, continuous surveillance, excellent evaluation, and the assistance of a cadre of partners committed to the shared vision of a North Carolina free from injuries and violence. For the first time, a robust, statewide framework is in place to help ensure the success of these injury prevention efforts. **NCMJ**

Acknowledgments

Potential conflicts of interest. S.B.R. and S.S. have no relevant conflicts of interest.

REFERENCES

1. Injury and Violence Prevention Branch, North Carolina Division of Public Health. 10 leading causes of injury death (all races, both sexes) by age groups, North Carolina: 2008. <http://www.injuryfreenc.ncdhhs.gov/DataSurveillance/2008LCInjuryDeath.pdf>. Accessed January 3, 2011.
2. North Carolina Institute of Medicine (NCIOM) Task Force on Prevention. *Prevention for the Health of North Carolina: Prevention Action Plan*. Morrisville, NC: NCIOM; 2009. <http://www.nciom.org/wp-content/uploads/NCIOM/projects/prevention/finalreport/PreventionReport-July2010.pdf>. Revised July 2010. Accessed January 3, 2011.
3. North Carolina Institute of Medicine (NCIOM) Task Force on Adolescent Health. *Healthy Foundations for Healthy Youth: A Report of the NCIOM Task Force on Adolescent Health*. Morrisville, NC: NCIOM; 2009. http://www.nciom.org/wp-content/uploads/2009/12/AdolescentHealth_FinalReport.pdf. Accessed January 3, 2011.
4. Woody J. *The Burden of Unintentional Falls in N.C.* Raleigh, NC: Injury and Violence Prevention Branch, North Carolina Division of Public Health; 2009. <http://www.injuryfreenc.ncdhhs.gov/DataSurveillance/2009NCBurdenUnintFallInjury.pdf>. Accessed January 3, 2011.
5. Harmon K. *The Burden of Unintentional Poisonings in North Carolina*. Raleigh, NC: Injury and Violence Prevention Branch, North Carolina Division of Public Health; 2010. http://www.ncdoi.com/OSFM/Safekids/Documents/OMD/NC_UnintentionalPoisoningData.pdf. Accessed January 3, 2011.
6. North Carolina Institute of Medicine (NCIOM) Task Force on Child Abuse Prevention. *New Directions for North Carolina: A Report of the NCIOM Task Force on Child Abuse Prevention*. Morrisville, NC: NCIOM; 2005. <http://www.nciom.org/wp-content/uploads/NCIOM/projects/childabuse/chapters/finalCAPreport.pdf>. Accessed January 3, 2011.
7. Injury and Violence Prevention Branch, North Carolina Division of Public Health. *Building for Strength: North Carolina's Strategic Plan for Preventing Injuries and Violence 2009-2014*. Raleigh, NC: Injury and Violence Prevention Branch, North Carolina Division of Public Health; 2010. <http://www.injuryfreenc.ncdhhs.gov/FullIVPStrategicPlan.pdf>. Accessed January 3, 2011.