

Positioning North Carolina for Leadership in Injury Control: A Call to Action

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For most types of injury and violence, mortality and morbidity rates in North Carolina are worse than those of the nation. The costs in lives and dollars are enormous. The state has not provided the necessary resources for tackling the problem, devoting barely \$6 per death to preventive efforts and failing to ensure that the public health workforce is adequately trained. At the same time, North Carolina has numerous excellent academic and community-based resources that can enable further capacity development. This article suggests the following 6 key steps for moving the state forward to prevent injury: making a serious financial commitment, training practitioners, supporting safety-promotion initiatives, creating a stronger culture of safety, addressing disparities, and improving data systems.

People with fewer resources are likely to live in less safe homes, to drive cars with fewer safety features, and to accept more-hazardous jobs, while also having more limited access to health care. As our population ages, injuries create new challenges; older persons have higher case-fatality ratios than younger persons, given the same severity and type of injury.

North Carolina has higher fatality rates than the nation overall for most types of injury (Table 1) [1, 2]. There are many hazards that are exacerbated by rural living, including the risks associated with agricultural work, travel on rural roadways, and distance from trauma care centers. North Carolina also has the 15th largest percentage of residents who are living below the federal poverty level [3].

The problem of falls, as discussed in the policy forum contributions by Schneider and colleagues [4] and Proescholdbell and Harmon [5], is substantial in North Carolina and could increase as the population ages. Although information on injury problems within the state's

growing Latino population is hard to discern, this population, like other minority groups, faces multiple health disparities, including special challenges associated with language barriers (eg, a large number of workers whose native language is not English work in construction, which is one of the most dangerous occupations).

At the same time as North Carolina exhibits mortality and morbidity levels above the national averages, the state has unusual capacity to address injury prevention and control, as discussed in the policy forum of this issue of the *NCMJ*. But to produce positive outcomes, action must be taken to marshal these resources. Some of the many resources available in the state are listed in Table 2. They include the University of North Carolina (UNC) Injury Prevention Research Center, one of 11 centers of excellence in injury control funded by the Centers for Disease Control and Prevention and one of only two that have been continuously supported since 1987. UNC is also home to the Highway Safety Research Center,

Table 1.
Fatality Rates in North Carolina and the United States, by Select Injury-Related Cause or Intent, 2007

Cause or intent	Deaths per 100,000	
	North Carolina	United States
Motor-vehicle event	19.92	14.63
Firearm	12.31	10.35
Suicide	11.88	11.47
Unintentional poisoning	10.08	9.90
Homicide	7.44	6.09
Fall	6.99	7.77
Fire and burn	1.79	1.25
Drowning	1.08	1.14
Occupational event ^a	4.2	3.8

Note. All data are per 100,000 population and from [1], unless otherwise indicated.

^aData are per 100,000 workers and from [2]

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Table 2.
Select North Carolina Resources for Addressing Injury and Violence Prevention

Affiliation, organization	Web site	Major activities
University		
UNC Injury Prevention Research Center	http://www.iprc.unc.edu	Research (violence, sports/recreation injury, occupational safety, home safety), training of professionals, program and policy evaluation
UNC Highway Safety Research Center	http://www.hsrc.unc.edu	Research, program and policy evaluation
Division of Occupational and Environmental Medicine, Duke University School of Medicine	http://dukeoccmcd.mc.duke.edu	Research, training professionals
Injury Prevention Program, East Carolina University	http://www.ecu.edu/cs-dhs/ecuem/ECIPP.cfm	Research, community-based programs
Department of Emergency Medicine, UNC School of Medicine (NC DETECT)	http://www.ncdetect.org	Surveillance of emergency department visits
State of North Carolina		
Injury and Violence Prevention Branch, Division of Public Health	http://www.injuryfreenc.ncdhhs.gov	Coordination of state injury efforts, surveillance, program and policy development, technical assistance
Office of the Chief Medical Examiner and Child Death Review	http://www.ocme.unc.edu	Child death review, technical assistance in development of prevention efforts
Department of Labor	http://www.nclabor.com	Education and enforcement of labor safety standards, including OSHA and child labor protections
Office of EMS	http://www.ncems.org	Oversight of state trauma registry and EMS data, coordination of emergency medical services and trauma system
Department of Insurance	http://www.ncdoi.com	Oversight of Safe Kids program, development of building codes, oversight of the fire service
Department of Mental Health, Developmental Disabilities, and Substance Abuse Services	http://www.ncdhhs.gov/mhddsas/	Maintain controlled substances reporting system, oversee state epidemiological workgroup on substance abuse
Other		
North Carolina Child Fatality Task Force	http://www.ncleg.net/Document Sites/Committees/NCCFTF/Homepage/	Policy development and advocacy
Prevent Child Abuse–North Carolina	http://www.preventchildabusenc.org	Training of professionals, program and policy development, advocacy
Carolinas Poison Control Center	http://www.ncpoisoncenter.org	Clinical service, public and professional education

Note. EMS, emergency medical services; NC DETECT, North Carolina Disease Event Tracking and Epidemiologic Collection Tool; OSHA, Occupational Safety and Health Administration; UNC, University of North Carolina.

which has led research and intervention development in road safety for more than 3 decades. Researchers are conducting nationally recognized work on injury control, not only at UNC-Chapel Hill, but also at North Carolina State University, East Carolina University, UNC-Greensboro, Duke University, and Wake Forest University.

The state health department has a strong tradition of attention to injury control, having developed its agenda in the late 1980s in response to a report of the Governor's Task Force on Injury Prevention and Control. In addition, North Carolina is a leader in tracking data on injury. The North Carolina State Center for Health Statistics and the Injury Epidemiology and Surveillance Unit in the North Carolina Division of Public Health have been generating injury-related data for many years. The state Office of the Chief Medical Examiner has an exemplary system of gathering and using death data for research, and it oversees the child fatality review process statewide. North Carolina is one of 18 states participating in the National Violent Death Reporting System, and the North Carolina Disease Event Tracking and Epidemiologic Collection Tool, operated by the Department of Emergency Medicine at the UNC-Chapel Hill School of Medicine, provides data on visits to emergency care, allowing rapid identification of case clusters. In addition, the North Carolina trauma registry has been in operation for more than 20 years, collecting standard data from trauma centers statewide [6]. North Carolina has a regional poison-control center at Carolinas Medical Center [7] and has strong partnerships that address child maltreatment [8] and violence against women [9].

Numerous other state and local agencies and organizations have played important roles in promoting safety. For example, North Carolina has a statewide Safe Kids network that organizes community efforts to reduce the incidence of unintentional injury among children, a dedicated fire service, and numerous nonprofit organizations that address injury problems such as intimate-partner violence and rape. The Child Fatality Task Force has a long tradition of advocacy for safety policies [10], and a recent report by the North Carolina Institute of Medicine (NCIOM) Task Force on Prevention outlined key areas for attention [11]. North Carolina has made considerable progress in recent decades, but there is much left to do.

Call to Action

First and foremost, the state must make a commitment to ensure that its infrastructure is adequate to address injury and violence prevention. While some states have annual appropriations for their state health department injury program, North Carolina does not. In fact, data from a recent year suggested that the funds devoted by the Division of Public Health to injury prevention in North Carolina totaled less than \$6 per injury-related death [12]—barely more than the price of a latte at a local coffee shop. Although resources are limited, the cost of *not* preventing injury is enormous. In

the United States, the lifetime cost of injuries occurring over a single year total \$406 billion, with medical expenditures in 2006 topping \$68.1 billion, a figure exceeded only by the expenditures for heart disease [13].

Second, as part of infrastructure development, North Carolina needs to ensure that practitioners throughout the state are properly trained in principles of injury prevention. Imagine a cardiac surgeon without formal training in surgery or anatomy, or a pediatrician not schooled in the principles of child development! Yet, professionals throughout the state who should be tackling injury prevention have had inadequate opportunities to receive training in the principles of injury prevention. We need to ensure adequate training of professionals in public health and other health-related fields. These training efforts can be innovative and cost relatively little. One example is the PREVENT program (available at: <http://www.prevent.unc.edu>), which has focused on moving prevention into the work of clinical and service professionals. Initiated in 2003, PREVENT is a national training program operated by the Injury Prevention Research Center that has already trained more than 900 practitioners to engage in the primary prevention of injury and violence. This type of training, as recommended for funding by the NCIOM Task Force on Prevention [14], will help practitioners use scarce resources wisely by relying on evidence-based strategies and or by using rigorous evaluations to create new evidence.

Third, the state must continue to support strong legislation that promotes safety on North Carolina roads and in workplaces, homes, schools, and health care facilities. It is not enough to rely on the education of individuals, with the hope that they will be able to individually prevent injuries. As with most public health issues, injury and violence solutions need to rely on policy change, regulatory approaches, and environmental modifications to achieve population-level change. These include policies that ensure safe environments. Examples include limits on child participation in farm labor, various traffic-safety measures cited in the commentary by Garrison and Smith [15], and building codes that promote fire safety and reduce risks of carbon monoxide poisoning. In the promotion of safety, increases in taxes have been shown to have positive effects. For example, the NCIOM Task Force on Prevention recommended increased taxes on alcohol sales as one means of reducing the toll of multiple mental health, injury, and violence problems, ranging from assault to motor-vehicle crashes, that are closely related to alcohol consumption [14].

Fourth, there is a need to foster cultures of safety in workplaces, schools, and health care facilities. Measures for achieving this objective include reducing inappropriate prescriptions of narcotics, ensuring that school athletic programs use proper techniques in returning concussed athletes to play, and implementing firearm safety practices, such as those outlined by Coyne-Beasley and Lees [16] in their policy forum contribution.

Fifth, ethnic and racial disparities in injury risk must be

addressed, and the cultural appropriateness of strategies for prevention must be ensured. For example, young parents living far from their families must have adequate support in learning how to practice positive parenting skills that enable safe disciplinary practices, and they must have access to quality child care facilities [8]. Plus, it is important to ensure that businesses employing immigrants follow safety procedures in construction and agriculture, two of the state's most dangerous industries [17].

Sixth, there must be continuous improvement in the state's ability to monitor progress, with good public health surveillance systems and close integration of surveillance and prevention efforts throughout the numerous sectors responsible for injury control (eg, public health, law enforcement, labor, education, health care, emergency and disaster response, traffic safety, fire protection, social services, and insurance). The formation of the Injury and Violence Prevention State Advisory Council by the Division of Public Health is an important step forward [11]. It is also time to reconsider the creation of a legislative or governor's task force to ensure multisectoral attention to injury control in North Carolina at the highest levels. The main objectives of the task force should involve reviewing progress on injury control efforts and building on the state's tremendous poten-

tial to improve the quality of life among all residents, including those born and raised in North Carolina, those arriving as immigrants, and those passing through while serving at one of the state's military bases.

Conclusion

North Carolina has excellent capacity to reduce the major burden of injury and violence but, to achieve this public health goal, needs to fully mobilize this capacity through a coordinated effort. We must acknowledge that, as a discipline, public health must often rely on policy and regulatory measures to protect the whole population. North Carolina is home to one of the first systems of county health departments in the country. Let's use and expand that infrastructure to rejuvenate our attention to the health problem that robs our population of more years of potential life than heart disease and cancer combined. We have the capacity to be the most forward-looking and progressive state in reducing the terrible toll that injury and violence take on our citizens. To do so, we must demonstrate the political will to engage in bold preventive measures, especially in these difficult financial times, to achieve the payoffs for our populace. **NCMJ**

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REFERENCES

1. WISQARS [database online]. Atlanta, GA: Centers for Disease Control and Prevention; 2010. <http://www.cdc.gov/injury/wisqars/index.html>. Accessed November 14, 2010.
2. Table 6. Incidence rates of nonfatal occupational injuries and illnesses by industry and case types, 2007: North Carolina. US Bureau of Labor Statistics Web site. <http://www.bls.gov/iif/oshwc/osh/os/pr076nc.pdf>. Accessed November 14, 2010.
3. Small area income and poverty estimates: estimates for the United States, 2008. US Census Bureau Web site. <http://www.census.gov/cgi-bin/saie/national.cgi?year=2008&ascii=>. Accessed November 14, 2010.
4. Schneider EC, Shubert TE, Harmon KJ. Addressing the escalating public health issue of falls among older adults. *N C Med J*. 2010;71(6):547-552 (in this issue).
5. Proescholdbell S, Harmon KJ. Epidemiology of injury and violence in North Carolina. *N C Med J*. 2010;71(6):537-541 (in this issue).
6. Becher RD, Meredith JW. Trauma systems: improving trauma outcomes in North Carolina. *N C Med J*. 2010;71(6):574-578 (in this issue).
7. Ford MD. Unintentional poisoning in North Carolina: an emerging public health problem. *N C Med J*. 2010;71(6):542-546 (in this issue).
8. Zolotor AJ. Preventing child maltreatment in North Carolina. *N C Med J*. 2010;71(6):553-555 (in this issue).
9. Macy RJ. Violence against women in North Carolina. *N C Med J*. 2010;71(6):556-560 (in this issue).
10. Vitaglione T. Injury prevention: aspects of the legislative response. *N C Med J*. 2010;71(6):534-536 (in this issue).
11. Rhyne SB, Schiro S. Injury prevention: North Carolina's challenge and capacity to respond. *N C Med J*. 2010;71(6):531-533 (in this issue).
12. Injury and Violence Prevention Branch, North Carolina Division of Public Health. Funding for injury and violence prevention in North Carolina. In: *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; 2009:13-14. <http://www.injuryfreenc.ncdhhs.gov/FullIVPStrategicPlan.pdf>. Accessed February 21, 2011.
13. Soni A. *The Five Most Costly Conditions, 1996 and 2006: Estimates for the U.S. Civilian Noninstitutionalized Population*. Medical Expenditure Panel Survey. Statistical brief no. 248. Rockville, MD: Agency for Healthcare Research and Quality; 2009. http://www.meps.ahrq.gov/mepsweb/data_files/publications/st248/stat248.pdf. Accessed February 21, 2011.
14. North Carolina Institute of Medicine (NCIOM) Task Force on Prevention. *Prevention for the Health of North Carolina: Prevention Action Plan*. Morrisville, NC: NCIOM. <http://www.nciom.org/wp-content/uploads/NCIOM/projects/prevention/finalreport/PreventionReport-July2010.pdf>. Accessed November 14, 2010.
15. Garrison HG, Smith JL. Is fatality-free travel on North Carolina's streets and highways feasible? It's time to think the unthinkable. *N C Med J*. 2010;71(6):561-564 (in this issue).
16. Coyne-Beasley T, Lees AC. Fatal and nonfatal firearm injuries in North Carolina. *N C Med J*. 2010;71(6):565-568 (in this issue).
17. Castillo DN, Higgins S. Occupational injury in North Carolina. *N C Med J*. 2010;71(6):569-573 (in this issue).