Injury and Violence Prevention

POLICY LESSONS FROM THE FIELD

APHA
AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.

CONTENTS

Suggested citation: Injury and Violence Prevention: Policy Lessons from the Field. The American Public Health Association. Washington, D.C., April 2013.

Overview

This document was written for public health practitioners working in the field of injury and violence prevention. It provides a concise overview of the role of policy in furthering injury and violence prevention goals:

- A brief history of injury epidemiology.
- Current challenges for those in the field.
- Policy lessons from tobacco control and prevention.
- An overview of the policy cycle.
- Practical resources to help practitioners educate partners and policymakers about science-based strategies addressing injury and violence prevention priorities.

Injuries Are Killing Us

Unintentional injuries are the leading cause of death in the United States for people from 1 to 44 years of age.[1] In fact, unintentional and violence-related injuries combined account for 51 percent of all deaths among those in this age group.[2]

Everyone faces some risk of fatal injury. Unintentional or violent injuries — or both — are among the top 10 causes of death for all age groups in the United States.[3] The single leading cause of injury death for people over age 72 is falling. For midlife adults ages 35 to 53, it is poisoning, especially due to overdose of prescription opioids. And for all other age groups, except children under age 2, the most likely cause of fatal injury is a motor vehicle crash.[4]

Although homicide — stemming from intimate partner abuse, gang violence or other circumstances — is the second leading cause of death for those ages 15 to 24, it is more selective yet, hitting hardest America's minority populations.[5] For example, 15- to 19-year-old black males are six times more likely to suffer death by homicide than white males in the same age group.[6] This striking health inequity has been linked to complex factors — including poverty, academic failure and a high prevalence of weapons, alcohol and illicit drugs — that necessitate a far-ranging public health response.[7]

But injuries are not only killing us, they are sending us to hospitals and emergency rooms for critical care and to social service agencies to file disability claims. In fact, the number of non-fatal injuries far outpaces that of fatal injuries. In 2010, for example, there were about 181,000 injuries resulting in death and 31 million non-fatal injuries resulting in in-patient care at a hospital or other facility (2.5 million) or emergency department treatment and release (28.5 million).[8,9] That same year, about 10 percent of all new disability claims were injury-related, making injuries the third leading cause of disability in the United States.[10] Of course, when violent or unintentional acts result in serious fractures or central nervous system damage, the disabling effects can last a lifetime.

Major causes of non-fatal injuries resulting in emergency room visits range from falls and overexertion to cuts/piercings, bites/stings, poisonings, assaults, burns and motor vehicle crashes.[11]

Injury morbidity and mortality impose a substantial economic burden in the United States. For example, the annual costs for fall-related injuries are expected to reach $54.9 billion by 2020.[12] Fraud among Medicaid beneficiaries to acquire multiple prescriptions of the same controlled substances in five surveyed states cost those state programs upwards of $60 million in drug reimbursements.[13] And the total estimated, lifetime costs associated with just one year of confirmed child maltreatment is about $124 billion.[14]

The good news is that many injuries are preventable.

The Promise of Policy

For many generations, injury episodes were largely seen as acts of God or the result of human error.[15] The car crashed because the driver was either unlucky or inattentive and going too fast on a rainy night. Overlooked, perhaps, are the lack of street lights and the unusually sharp curve in the road at a low-lying point where water collects—what some might call an *accident waiting to happen.*

Thanks to the post-World War II development of ergonomics and the establishment of injury research and injury epidemiology as scientific fields, this tendency to blame victims or fate has given way to more objective analysis of injury episodes, especially those that are highly prevalent or large-scale.

In the 1960s and 1970s, William Haddon, Jr. — widely considered the father of modern injury prevention — devised a framework showing injury episodes as outcomes of the interaction

of a person, injury vehicle or agent (e.g., an auto's kinetic energy, fire's heat energy, etc.), and the physical and social environments. [16,17] The work of Haddon and others led to the recognition that multiple points of intervention are available to prevent or minimize injuries and, importantly, a role for public policies to formalize injury prevention strategies and apply them on a population level.[18]

Consider the example of the wet, curving road mentioned above. Using the so-called *Haddon matrix,* we can identify a number of possible interventions that may be useful before, during or after the injury episode.

At the personal level:

- Assure that teenage drivers have ample driving supervision before gaining full driving privileges.
- Teach drivers how to respond if the car starts to skid.
- Teach drivers to how to respond after a crash, if they are able (e.g., to call 911 and to move themselves and their vehicle off the road to prevent secondary crashes).

At the vehicular level (i.e., the level of the injury agent):

- Make cars with anti-lock brakes to prevent skidding on wet pavement.
- Make cars with air bags, safety belts and other safety devices to minimize impact injuries.
- Install an onboard system that automatically calls 911 if an air bag deploys.

In the physical environment:

- Install signage alerting drivers of imminent curves.
- Make use of roadside barriers — such as jersey walls or impact absorbers — to keep cars on the roadway or to absorb the energy from a crash.
- Avoid placing public roads in areas difficult for emergency personnel to access.

In the social environment:

- Foster social norms — backed by laws — that encourage safety belt use and discourage driving while intoxicated, texting or using a cell phone.
- Foster social norms that encourage passers-by to report disabled vehicles on the roadside and to assist crash victims.
- Ensure funding for adequate emergency response personnel and equipment.

In fact, several of these interventions have been translated into national, state or local policy with great success. Air bags have been mandatory in all passenger cars sold in the United States since 1997. A driver airbag costs $450 per bag, but yields total benefits of $1,900. Upgrading secondary safety belt laws to primary laws — so offenders can be ticketed for lack of safety belt use without a second, concurrent violation — costs $360 per new user and yields $6,100 in total benefits.[20] And provisional licensing and midnight driving curfews for teenage drivers cost $88 per driver, with a total benefit of $680.[21]

Policy Challenges

Despite some notable success stories, researchers have observed that, overall, injury prevention lags behind other public health issues in the "strategic use of policy"[22] — an activity ranked as one of three core public health functions in 1988[23] and as one of 10 essential public health services in 1994.[24]

In part, this is undoubtedly due to challenging public health and policy environments. Based on interviews with state health officers and injury prevention directors, the Safe States Alliance notes that injury prevention has a "lower-than-expected profile" within health agencies.[25] Safe States attributes this state of affairs to competing public health priorities; competing injury and violence prevention priorities; the perception that injury prevention is "an extra," rather than a primary health department responsibility; public health leaders with scant exposure to injury prevention and difficulty forging ties among injury prevention and other public health programs.

A series of key informant interviews conducted by the American Public Health Association in 2012 confirms and expands upon these findings.[1] Although seven of eight state injury and violence prevention coordinators interviewed reported working on policy initiatives in 2011 — and five of the eight reported doing so in 2012 — all cited similar challenges. Chief among these is state laws or policies limiting state employees' interaction with legislators.

A related issue is understanding the "gray area" regarding what is and is not an allowable use of grant funding. More than one informant asked for a clearer definition of *policy.* Does it

What Do We Mean by Policy?

Authors of the landmark Institute of Medicine report, "The Future of Public Health," define *policy development* as "the means by which problem identification, technical knowledge of possible solutions and societal values join to set a course of action."[a]

CDC defines *policy* as a "law, regulation, procedure, administrative action, incentive or voluntary practice of governments and other institutions."[b]

While many momentous public health policies have been promulgated by the federal government — such as the phase-out of leaded gasoline — states, communities, school systems and businesses also implement policies with profound impact on public health for affected populations.

a. IOM Committee for the Study of the Future of Public Health. (1988). The Future of Public Health. National Academy Press: Washington, DC.

b. CDC. (2012).

The field of tobacco control has been a rich domain for public health policy development and offers up lessons applicable to injury prevention.

include guidance documents? Health department regulations? And where, exactly, is the line between education and advocacy?

Perhaps the biggest determinants of policy work, according to interview findings, are funding and the perceived priority of specific injury or violence prevention issues. Invariably, the two are closely entwined: When an issue is perceived as important, it receives a greater commitment of resources, and, conversely, when outside funding is available to support an issue, it gets bumped up the priority list.

In a tough economic environment, one respondent noted that providing "immunizations, STD testing, the very basic services" is the "top priority" for the state health agency. She said, "The only reason injury is even on the agenda is because we've been getting money from the [state] department of transportation to build our trauma registry."

Of note, the three issues most frequently cited by key informants as a policy focus in 2011 or 2012 are child passenger safety, traumatic brain injury prevention and prevention of prescription drug abuse — all of which are national priorities associated with federal funding sources.

Still, some lower profile issues have also become policy priorities in some states: novelty lighters that pose a fire hazard, reflectors on wheelchairs (in a state where someone was killed in a wheelchair on a state roadway), dog attack prevention and safe infant sleeping.

Challenges notwithstanding, the field of injury prevention has assets that might be better employed to inform policy initiatives:

- A host of natural partners, including law enforcement officers, non-profit organizations (e.g., Mothers Against Drunk Driving), healthcare providers, school officials, transportation officials and others.
- Access to state, local and national surveillance systems and CDC's Web-based Injury Query and Statistics System (WISQARS®) to quantify the prevalence and cost of preventable injuries.
- Opportunities to connect injury prevention to policy priorities, such as chronic disease prevention (e.g., by stressing the link between child maltreatment and later chronic disease development) and more effective transportation systems (e.g., by promoting complete streets that allow pedestrians, cyclists, motorists and public transit users to travel safely).
- Opportunities to coordinate intentional and unintentional injury prevention by addressing common risk factors, such as substance abuse.

CDC has named motor vehicle crashes one of six winnable battles, based on the existence of known, effective strategies to significantly improve outcomes. Reducing prescription drug overdoses is also a high priority for CDC leaders.

Lessons From The Field: Tobacco Control and Prevention

The field of tobacco control has been a rich domain for public health policy development and offers up lessons applicable to injury prevention.

In the mid-20th century, tobacco use was entrenched in the United States. An addictive habit glamorized by Hollywood, promoted through ubiquitous advertising and backed by a lucrative industry, it would not be easy to curtail. In 1964, the year the first surgeon general's report on smoking was released, 42 percent of the adult U.S. population smoked cigarettes, including a third of women and more than half of men ages 18 and over.[30,31]

The tobacco control movement has been characterized by several critical attributes.

A multi-pronged approach. Rather than focus on just one strategy, stakeholders intervened at each of the four levels described by Haddon (personal, injury agent, environmental and social). New government policies made a pack of cigarettes more costly to purchase;[32,33] changed the cigarette itself (e.g., by prompting a ban on flavorings appealing to children[34]); reduced the number of public spaces in which smoking is permitted;[35,36] and changed prevailing norms around tobacco use through social marketing and anti-tobacco campaigns.[37,38]

Persistence. Tobacco control progress has been incremental, but significant. In 1965, Congress passed the first law requiring a health warning on cigarette packages (a single, specific

warning, with all others prohibited).[39] In 1969, cigarette advertising was banned on television and radio.[40] In 1984, rotating warning labels were required on cigarette packages.[41] And in 1992, the Synar Amendment required all states to restrict tobacco sales and distribution to minors.[42] It was not until 2009 that the U.S. Food and Drug Administration gained full authority to regulate the manufacture, distribution and sale of tobacco products to protect public health.[43]

Progress was similarly incremental with regard to smoke-free public spaces (See Table 1).[44] Yet today, at least 26 states have comprehensive smoke-free laws, covering worksites, restaurants and bars.[45]

Messaging. The way an issue is framed can engage or alienate audiences and can also imply particular policy solutions.[46] For example, there is an important distinction between being anti-smoking — targeting a behavior — and anti-smoker — targeting individuals.

Reviews of media coverage of tobacco issues suggest tobacco control stakeholders have not always used optimal messaging.[47,48] In the early years of the tobacco control movement, the message was simple: Tobacco kills.[49] The public health problem was broadly defined, implying a sweeping solution: eliminating or closely regulating a dangerous product. Later messages have focused on youth smoking and deceptive industry practices, implying more limited solutions — e.g., banning cartoon characters in tobacco advertising — to address narrower problems.

Table 1. Select Milestones in the Effort to Decrease Indoor Tobacco Smoke Exposure in the United States*

1971	The surgeon general proposes a federal ban on smoking in public places.
1973	The Civil Aeronautics Board requires no-smoking sections on all commercial airline flights.
1974	Connecticut passes the first state law mandating smoking restrictions in restaurants.
1983	San Francisco passes a law instituting smoking restrictions in private workplaces.
1986	A report of the surgeon general focuses entirely on the health consequences of involuntary smoking; Americans for Nonsmokers' Rights becomes a national group.
1988	A congressionally mandated smoking ban takes effect on all domestic airline flights of two hours or less.
1990	The congressionally mandated smoking ban is extended to all domestic airline flights of six hours or less.
1991	A National Institute for Occupational Safety and Health bulletin recommends secondhand smoke be reduced to the lowest level possible in workplaces.
1992	The Joint Commission on Accreditation of Healthcare Organizations requires applicant hospitals to develop policies prohibiting on-site smoking; U.S. Environmental Protection Agency classifies secondhand smoke as a group A carcinogen known to be harmful to humans.
1994	The U.S. Department of Defense bans smoking in all indoor military facilities; the Occupational Safety and Health Administration proposes a rule banning smoking in most U.S. workplaces.
1997	A federal executive order establishes smoke-free environments in federally-owned facilities.
2000	A congressionally mandated smoking ban takes effect on all international flights departing from or arriving in the United States.
2002	Delaware enacts a comprehensive smoke-free law; Florida voters approve a ballot measure amending the state constitution to require most workplaces and public places to be smoke-free.
2003	Dozens of U.S. airports become smoke-free; Connecticut, New York enact comprehensive smoke-free laws.
2004	Massachusetts, Rhode Island enact comprehensive smoke-free laws.
2005	North Dakota, Vermont, Montana, Washington enact 100 percent smoke-free workplace and/or restaurant and/or bar regulations.
2008	Illinois, Maryland, Iowa, Pennsylvania enact 100 percent smoke-free workplace and/or restaurant and/or bar regulations.
As of 1/4/09	16,505 municipalities across the U.S. — encompassing 70 percent of the U.S. population — are covered by a 100 percent smoke-free provision in workplaces and/or restaurants and/or bars.

*Source: National Research Council. (2010). "5 The Background of Smoking Bans." Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence. Washington, DC: The National Academies Press. Accessed 21 September 2012

New government policies made a pack of cigarettes more costly to purchase;[32,33] changed the cigarette itself (e.g., by prompting a ban on flavorings appealing to children[34]); reduced the number of public spaces in which smoking is permitted;[35,36] and changed prevailing norms around tobacco use through social marketing and anti-tobacco campaigns.[37,38]

Of course, the tobacco industry has its own messaging. After first trying to undermine the credibility of scientific findings, the industry recast itself as a positive economic force in the community and a protector of core American values, such as free choice and individual rights.[50,51]

Tobacco control stakeholders have countered by focusing on individuals' right to clean air in public spaces. As Table 1 shows, this effort has succeeded in expanding smoke-free spaces. The changed environment, in turn, has changed social norms.

Partnering. The tobacco control movement has welcomed numerous partners, ranging from the traditional — e.g., health care providers — to the non-traditional — e.g., restaurateurs, former tobacco industry employees — to the glamorous — e.g., actor Yul Brynner. It has especially sought to influence potential future smokers by reaching out to them directly and through peers and role models.

The tobacco control movement has benefited from a vast and rigorous science base that includes more than 30 reports of the surgeon general,[53] findings from a global laboratory network for the study of tobacco products[54] and two professional, peer-reviewed journals dedicated to tobacco-related research…Today an estimated 19 percent of U.S. adults ages 18 and over smoke cigarettes[57] — less than half the proportion of adult smokers in 1964.

A strong science base. Although quantitative and qualitative data may not be sufficient to inform the opinions of policymakers, they are nonetheless important in the policymaking process.[52] The tobacco control movement has benefited from a vast and rigorous science base that includes more than 30 reports of the surgeon general,[53] findings from a global laboratory network for the study of tobacco products[54] and two professional, peer-reviewed journals dedicated to tobacco-related research. Importantly, major tobacco control policies, such as the Synar Amendment, have been studied in detail to gauge their efficacy.[55] Researchers have even devised a simulation model for policymakers to project the outcomes of recommended policies.[56]

The cumulative effect of tobacco control efforts related to policy is striking. Today an estimated 19 percent of U.S. adults ages 18 and over smoke cigarettes[57] — less than half the proportion of adult smokers in 1964.

Public Policy and Injury Prevention

U.S. voters overwhelming support prevention policies that help people lead healthier lives. In fact, nearly three quarters (71 percent) favor investing more in prevention and believe prevention is worthwhile *even if it doesn't save money.*[58]

Fortunately, it sometimes does.

The Moving for Better Balance falls prevention program for older adults, for example, has been shown to save $1.80 for every dollar invested.[59] The Triple P Positive Parenting Program costs $13 per child and saves society an estimated $47 per dollar spent, by reducing child maltreatment.[60] And one of the most comprehensive, state patient medication review and restriction programs achieved savings of more than $1.5 million per month through a 33 percent decrease in emergency department visits, a 37 percent decrease in physician visits and a 24 percent decrease in prescriptions.[61]

If 80 percent of U.S. hospitals and physicians implemented traumatic brain injury treatment guidelines, savings would include 3,607 lives and $4.15 billion annually, considering medical costs ($262 million), rehabilitation costs ($43 million) and societal costs ($3.84 million) combined.[62]

All of these interventions are effective and cost-saving.

Many other injury and violence prevention strategies — including smoke alarm laws, a 55-mile-per-hour speed limit, Life Skills Training to prevent youth substance abuse, and impact-absorbing playground surfacing — are cost-effective; that is, they reduce injury episodes for a reasonable price.[63] Each of these strategies costs less than $30,000 per quality-adjusted life year (QALY) saved, compared with, for example, at least $165,000 per QALY saved with intensive dietary counseling for adult patients with known risk factors for diet-related chronic disease — a recommended clinical preventive service.[64,65]

But an intervention's effectiveness and cost are only two pieces of the policy puzzle. According to one model of the policy process, policymaking is most likely to occur when three streams converge.[66] The *problem stream* brings an adverse situation to the attention of policymakers so it comes to be recognized as a problem worthy of government intervention. The *policy stream* offers up possible solutions, ideally with data demonstrating effectiveness at an acceptable cost. And the *political stream* affords decision makers room to act without unacceptable political consequences, such as loss of constituents' support.

In other words, policies are most likely to be adopted when (1) the problem is clear, relevant and compelling; (2) a solution is ready and actionable; and (3) key stakeholders are supportive, or at least unopposed.

Achieving Solutions: The Policy Cycle

CDC has developed a framework depicting the domains or stages of the policy process.[67]

As shown in Figure 1, the first domain is ***problem identification,*** which entails clarifying and framing the problem or issue in terms of its effect on population health. Activities that fall under this domain include:

- Collecting, summarizing and interpreting information relevant to a problem or issue, such as nature of the problem, causes of the problem.
- Defining the characteristics of the problem or issue, such as frequency, severity, and scope.
- Identifying stakeholders, especially community members affected by the problem. Identifying gaps in the data.
- Framing the problem or issue in a way that lends itself to potential policy solutions.

Figure 1. Centers for Disease Control and Prevention Policy Framework

The second domain is ***policy analysis,*** i.e., identifying policy options to address the problem/issue and using quantitative and qualitative methods to evaluate and prioritize policy options based on their effectiveness, efficiency and feasibility. For example:

- How will the policy affect morbidity and mortality?
- What are the political and operational factors associated with its adoption and implementation (i.e., feasibility)?
- What are the costs to implement the policy?
- And how do implementation costs compare with policy benefits and with the costs and benefits of alternative policy solutions?

Helpful analytical tools can include meta-analysis, decision analysis, cost-effectiveness analysis and simulation modeling. As shown in the Haddon matrix, there may be policy opportunities at one or more points of intervention: personal level, injury agent level, environmental level and/or social level. Change may also take place at different bureaucratic levels: institutional, local, statewide or national.

The third domain is ***strategy and policy development*** — identifying the strategy for getting the policy adopted and determining how the policy will work. This entails:

- Identifying how the policy will operate in practice.

- Determining what is needed for policy enactment and implementation (i.e., understanding the jurisdictional context, information gaps and capacity needs).
- Defining strategies to engage stakeholders.
- Possibly drafting the law, regulation, procedure or other policy document.

The fourth domain is ***policy enactment*** — following internal/external procedures for getting the law, regulation, procedure, administrative action, incentive or voluntary practice enacted or instituted.

Once a new policy has been successfully approved, the next step — the fifth domain — is ***policy implementation.*** This entails:

- Translating the enacted policy into operational practice.
- Defining implementation standards.
- Identifying indicators and metrics to monitor uptake and ensure full implementation.
- Evaluating policy impacts.
- Coordinating resources and building capacity of personnel to implement the policy.

In some cases, such as graduated driver licensing, implementation may require only administrative changes within a government agency that is compelled to follow state law. In other cases, the process may be more complex and costly, necessitating new fiscal commitments, law enforcement efforts or the coordinated actions of multiple agencies. Continued evaluation and monitoring by various stakeholders may be important to assure that the intent of a new policy is achieved in practice and to identify opportunities for improvement.

In addition to these five domains, CDC's policy framework identifies two overarching domains that must be considered throughout all stages of the policy process: (1) stakeholder engagement and education and (2) evaluation and dissemination of evaluation results.

Stakeholder engagement and education encompasses several activities:

- Identifying key stakeholders, including policy supporters and opponents (e.g., community members, decision makers, and commercial and nonprofit entities).
- Assessing relevant stakeholder characteristics, such as their knowledge, attitudes and needs (Stakeholders may not perceive the problem in the same way as practitioners do and may have ideas for novel solutions that should be considered).
- Implementing communication strategies and delivering relevant messages and materials.
- Soliciting stakeholder input and feedback.

There are many creative ways to engage stakeholders, working alone or with partners. For example, two researchers at the Johns Hopkins Center for Injury Research and Policy (CIRP) spent one day per week in the Maryland General Assembly as staff volunteers for a state legislator and, through testimony and informal sharing of research findings, helped to convince the legislature to extend Maryland's child passenger safety seat law to include children up to age 8. The Johns Hopkins CIRP also produced a publication for state policymakers describing injury problems in Maryland and possible policy solutions.[69] The guide was distributed to lawmakers and promoted at a briefing before a key legislative committee, in an op-ed published by a local newspaper and through other means.

The Georgia Health Policy Center at Georgia State University has convened trauma and

Johns Hopkins Center for Injury Research and Policy produced a publication for state policymakers describing injury problems in Maryland and possible policy solutions. The guide was distributed to lawmakers and promoted at a briefing before a key legislative committee, in an op-ed published by a local newspaper and through other means.

Even with a comprehensive and well-coordinated effort, however, injury and violence prevention professionals/stakeholders should be prepared for a lengthy process. Policy advances often occur incrementally over many years. Yet it is also true that successful interventions may achieve the status of "best practices" and, like graduated driver licensing, diffuse broadly nationwide, benefitting diverse populations.

injury prevention experts to develop an interactive, interdisciplinary systems model that researchers, policymakers and others can use to discover "the most promising leverage points" for programmatic or policy change to prevent injury.[70] This interactive approach educates policymakers, engages them in the identification of injury prevention priorities *and* simultaneously facilitates policy development.

Although proposed policy solutions must be evidence-based, injury and violence professionals/stakeholders will want to be familiar enough with the policy process to understand that lawmakers and other stakeholders are often not trained to distinguish among different types of scientific evidence, such as systematic reviews of multiple studies versus a single primary investigation. These same stakeholders will also want to understand that evidence is just one factor among many that are considered when policymakers deliberate over a policy option. Moreover, other factors, such as competing sources of information and compelling anecdotes may hold equal or greater value in shaping opinions.[71]

It will likely be helpful to present both readily understandable and concise quantitative data, as well as qualitative data to make the case for change.[72] In so doing, public health professionals can draw from the full range of applicable sciences — such as epidemiology, sociology and economics — to define the policy solution in terms meaningful to decision makers and other stakeholders, including the public.[73]

Policy evaluation, the other overarching domain, focuses on assessing each step of the policy cycle, including policy impacts and outcomes. It involves:

- Defining evaluation needs, purposes and intended evaluation uses and users.
- Answering prioritized evaluation questions. For example, was the problem defined in a way that prioritized action? How and to what extent were stakeholders engaged? Is the policy being implemented as intended? What is its impact?
- Disseminating evaluation results and facilitating their use to improve the policy and its implementation.

The most robust evaluations will utilize numerous forms of evidence — including quantitative and qualitative information — from a variety of sources, including some beyond the usual public health data sets (e.g., focus groups, tax revenue data, 911 call logs, etc.).[74]

It will likely be helpful to present both readily understandable and concise quantitative data, as well as qualitative data to make the case for change.[72] In so doing, public health professionals can draw from the full range of applicable sciences — such as epidemiology, sociology and economics — to define the policy solution in terms meaningful to decision makers and other stakeholders, including the public.[73]

SUCCESS STORY

Graduated Driver Licensing: Managing the Environment to Reduce Teen Auto Crashes in North Carolina

The high rate of automobile crashes involving teen drivers has been well known to researchers since at least the early 1970s when the concept of graduated driver licensing (GDL) was developed at the University of North Carolina Highway Safety Research Center. Rather than attempting to change teens' behavior through educational campaigns or law enforcement efforts, GDL works by changing the environment in which teens drive to minimize the biggest risks — lack of experience, nighttime driving, multiple teen passengers — while young, novice drivers develop the cognitive abilities needed to drive safely.

The first attempt to introduce GDL to North Carolina legislators, in the 1970s, went nowhere, said Robert Foss, PhD, director of UNC's Center for the Study of Young Drivers. About 10 years later, New Zealand became the first country in the world to adopt GDL and produced evaluation data showing good results. "That raised the issue again for us in the 1990s," Foss said.

The HSRC procured funding for a small study to determine if there were legal barriers, opinion barriers or logistical complications for licensing agencies that might preclude a GDL system in North Carolina. The answer was no.

Next, North Carolina obtained funding from the National Highway Traffic Safety Administration to examine the issue further. "We began looking in great detail into North Carolina teen crash data and the principles of GDL," Foss said. "One of the things that wasn't understood well at the time was the big difference in crashes between 16-, 17- and 18-year-olds. We pulled it apart and found 16-year-olds were far more likely to crash than even 17-year-olds; it's not an issue of youth, it's an issue of lack of experience combined with youth."

Luckily, the head of the N.C. Highway Safety Program at the time happened to be a retired newspaper publisher, who immediately issued press releases saying, "N.C. is trying to lead the nation in traffic safety."

Foss said, "Nobody outside a small group of researchers had any clue how bad the teen crash problem was, but this put it on the radar. Within a few weeks there were news stories and editorials in most major state papers encouraging the legislature to enact GDL. You cannot overestimate the value of that kind of coverage. Legislators were hearing (1) this is a huge problem and (2) here is a ready-made solution—GDL — that makes so much sense." The solution wasn't costly for the state or difficult for the licensing agency.

Moreover, most teens would have easy access to driving mentors in the form of their parents. "It was a wonderful case of a policy that is pretty easily implemented if you can pass the authorizing legislation," Foss said.

Fortunately, the head of the state highway safety program, Joe Parker, adopted GDL as his cause célèbre. This was "absolutely essential," according to Foss: "He knew this state and he was a bulldog. He was determined to make this happen."

Parker organized a series of community forums across the state. The media, the public and local legislators were all invited. Typically, Foss said, UNC researchers presented the data and described GDL, followed by presentations from an emergency responder or other health professional and a police officer.

"This was a brilliant move," Foss said. "Once again it got the issue out into the media: This is a problem; here's the solution." But rather than being a media campaign, it was simply "getting the understanding (of the issues) to the public through news coverage."

UNC researchers also presented the case for GDL to the Governor's Highway Safety Commission and the state's Child Fatality Task Force — a standing committee in the legislature with bipartisan representation from the N.C. House and Senate, as well as various public health and child welfare entities. Both the highway safety commission and the task force made GDL their No. 1 recommendation.

The first GDL bill was introduced near the end of the 1995 legislative session, too late for much action. GDL proponents decided to wait until the next regular legislative session in 1997 (since the 1996 session was abridged). From then on, Foss said, "Every time another teen driver was killed in a crash, the news coverage mentioned that the legislature was considering changes to the licensing system to address this problem. [The media were] just reporting what was going on, but it brought a lot of pressure on the legislature."

The next GDL bill was introduced early in the 1997 session with most of the state's 100 senators signing on as cosponsors. It passed both houses with overwhelming majorities.

When new research was published demonstrating much higher fatality rates for teen drivers with multiple teen passengers, Foss said, a legislator on the Child Fatality Task Force expressed interest in adding a passenger restriction and asked whether North Carolina crash data showed the same pattern as national data. The answer was yes, and a passenger limit for intermediate (Level 2) drivers was added to the GDL system in 2002.

Subsequent research showed that, in North Carolina, GDL was associated with:

- A 57 percent reduction in fatal crashes involving 16-year-old drivers.[75]
- A 36 percent reduction in hospitalization rates for 16-year-old drivers.[76]
- A 10 percent reduction in crash incidence of 16- and 17-year-olds (combined) for at least five years after being licensed, compared with crash incidence for pre-GDL licensed teens.[77]
- This last finding suggests that not only does GDL reduce auto crashes during the licensing process, but produces more capable drivers, at least for the first five years of driving. An additional encouraging finding was that most parents and teens really enjoyed spending time together during the supervised driving phase.[78]

North Carolina's GDL System

Level 1: Twelve months of supervised driving.

Level 2: Six months of restricted driving.

Only supervised driving 9 p.m. to 5 a.m.

≤ One passenger under age 21. (Added 2002.)

Levels 1, 2 and 3, until age 18:

All occupants must wear seat belts.

No cell phone use. (Added 2006.)

SUCCESS STORY

Blueprint for Action: A Public Health Approach to Preventing Youth Violence in Minneapolis

Between 2003 and 2006, the leading cause of death for 15- to 24-year-olds in the city of Minneapolis was homicide. During this period, 80 youths died violent deaths, most within the same six-square-mile area of North Minneapolis.

The problem was distressingly clear to city leaders; the solution was not. Officials had already enlarged the police force, created a juvenile crime unit and established precinct-based community crime prosecutors, with only limited success.

Minneapolis Mayor R.T. Rybak recalled leaving yet another youth's funeral and thinking, "What do we do next? And how do we lead the community through this?"

As luck would have it, the chair of the city council's health committee represented the neighborhood most affected by the violence. Gretchen Musicant, Minneapolis commissioner of health, said this elected official approached the health agency: "She said, 'Isn't there a public health approach to this?'"

That "simple invitation," said Musicant, prompted a large-scale, multi-pronged effort that continues today. The Minneapolis Department of Health & Family Support, which had been looking for ways to intervene, arranged for a series of speakers to address the City Council, discussing the root causes of youth violence. At the same time, the health agency created a modest grant program for community groups looking to stem the violence and worked with the nonprofit Minneapolis Foundation to convene three meetings with a representative group of community and government stakeholders, including two City Council members. The group, said Musicant, "was a coming together of people who were ready to do something."

At the end of the series of meetings, the group suggested the council pass a resolution declaring youth violence a preventable public health problem and establishing a youth violence prevention steering committee. The two council members who had participated in the group took up at the issue at the council level and a resolution was passed in November 2006.

Musicant said, "At that point, we were able to get the mayor's direct involvement. He became a co-chair of the new steering committee (established January, 2007), along with representatives from the Minneapolis Foundation and General Mills Foundation". The Minneapolis Foundation funded a consultant, who guided the steering committee through a year-long process to create the city's Blueprint for Action. The process included consultation with experts on youth development and violence, assessment of existing youth violence prevention programs, examination of wide-ranging data related to youth in Minneapolis and, importantly, listening to youths themselves.

The resulting Blueprint for Action lays out four broad goals:

- Connecting every youth with a trusted adult.
- Intervening at the first sign that youth are at risk for violence.
- Restoring youth who gone down the wrong path.
- Unlearning the culture of violence in the community.

Among the blueprint strategies are youth mentoring programs, an employment program for teens ages 14 to 18, a community-based juvenile supervision center to intervene with young people picked up for low-level criminal offenses, an anonymous tip line for youths to call or text when they encounter a situation that might lead to violence, and culturally-specific programs to bring peace and healing to the community, such as Native American drum circles.

Once the Blueprint was completed, the city council acted again, adopting the plan and its recommendations and creating an ongoing executive committee to oversee its implementation. The council also provided funding for the city's first youth violence prevention coordinator and elevated the position higher in the health agency than would normally be the case for its grade, so that the new coordinator would report directly to the city health commissioner, a short step away from the mayor.

The 2008 city budget included $175,000 to support implementation of Blueprint strategies. In addition, $110,000 was provided by the city and $610,000 by Hennepin County (where Minneapolis is located) to fund the juvenile supervision center. Additional support has been obtained from other sources, including the U.S. Department of Justice.

Because violence prevention became such a priority for the community, the nonprofit Peace Foundation hired a lobbyist to bring the issue to the attention of the state legislature, which, in May, 2009, passed a law stating that community-based violence prevention programs may apply to the state commissioner of health for technical assistance, including assistance applying for federal and private foundation funding.

"State-level attention has brought greater visibility and more legitimacy to the issue of youth violence prevention," Musicant said.

The city's transparent government reporting system, Results Minneapolis, assures an annual program assessment. Each year, the City of Minneapolis and Minneapolis Public Schools chart progress on 18 indicators that map to the Blueprint. For example, the school system uses a survey of students to track six indicators to measure youth connection to trusted adults (e.g., student participation in after-school programs and help from family members with homework). The Minneapolis Police Department compiles data about youth arrests and detention.

In the first two years of the initiative, violent crime fell 43 percent, as measured by youth assault arrests and school suspensions for violence-related incidents.

Each year, the city convenes a public forum so stakeholders can review the data. "It's a very public accountability," Musicant said.

Minneapolis expanded the initiative from the original five neighborhoods to 22 neighborhoods in 2009. Musicant said Minneapolis's experience has shown that engaging stakeholders in the policy process can make a difference. "The crisis of juvenile crime cannot be arrested away," she said.

For more information about youth violence prevention in Minneapolis, go to *http://www.minneapolismn.gov/health/yvp*.

Conclusion

A rich history of successful, high-level interventions — from Minneapolis's blueprint for youth violence prevention to graduated driver licensing across the country — demonstrates the power of injury and violence prevention policies to change behavior, prevent disability and save lives. That being so, the full range of policy options should be considered by state and local injury and violence prevention coordinators and their partners as they seek to address priority issues within their jurisdictions. When engaged in policy-related activities it is important to be aware of statues and regulations concerning the use of funds from the varying funding sources. Jurisdictions considering legal or other policy initiatives should seek the assistance of state or local legal counsel. Additional guidance for CDC funded recipients may be found at *www.cdc.gov/od/pgo/funding/grants/foamain.shtm.*

Throughout the policy process, it will be useful to engage as many potential stakeholders to navigate the policy process. Fellow partners might:

- Commit in-kind and monetary resources to the effort.
- Work with legislators and other government authorities in ways not open to government employees and those organizations receiving federal funding such as non-profits.
- Help educate and engage the public.
- Help establish the targeted issue as a policy priority (for example, by demonstrating its impact on diverse constituencies).

Even with a comprehensive and well-coordinated effort, however, injury and violence prevention professionals/stakeholders should be prepared for a lengthy process. Policy advances often occur incrementally over many years. Yet it is also true that successful interventions may achieve the status of "best practices" and, like graduated driver licensing, diffuse broadly nationwide, benefitting diverse populations.

Resources

Children's Safety Network
www.childrenssafetynetwork.org
Offers data and technical assistance on a wide range of injury topics.

Consumer Product Safety Commission
www.cpsc.gov
Provides data and other information relating to the prevention of injury and death associated with consumer products.

Fatality Analysis Reporting System
www-fars.nhtsa.dot.gov
Provides detailed data on fatal motor vehicle crashes.

Government Accountability Office
www.gao.gov
Provides reports on a wide range of topics, including health care and consumer protection.

Insurance Institute for Highway Safety
www.iihs.org
A nonprofit organization dedicated to reducing crashes on the nation's roads. The website provides research, statistics and information on relevant state laws and regulations.

National Center for Injury Prevention and Control
www.cdc.gov/injury
CDC's Injury Center is a major resource for public health professionals, policy makers, researchers and others who share the center's vision of making injury and violence prevention "the premier public health achievement of the 21st Century."

National Conference of State Legislators
www.ncsl.org
A bipartisan organization that provides research and technical assistance on priority state issues. The NCSL website includes bill summaries and legislative databases.

Pacific Institute for Research and Evaluation
www.pire.org
An independent, nonprofit public health organization. Provides medical cost data, links to published literature and more.

PolicyLink
www.policylink.org
A national research and action institute advancing economic and social equity by "lifting up what works."

PublicHealthResearch.org
www.publichealthresearch.org
A forum to share resources that increase the efficacy, affordability and availability of public health research.

Safe States Alliance

www.safestates.org

A professional association serving state and local injury and violence professionals.

Society for the Advancement of Violence and Injury Research

www.savirweb.org

A professional organization that provides leadership and fosters excellence in the science of violence and injury prevention and care.

Other Possible Data Sources

Emergency Medical Service data

Hospital admissions/discharge data

Hospital emergency department data

Police homicide data

State child fatality review data

State death certificate data

State department of transportation data

State legislative bill tracker

State prescription drug monitoring system and other state surveillance systems

References

1 National Vital Statistics System, National Center for Health Statistics, CDC. (2008). 10 leading causes of death by age group, United States — 2008. Available at: http://www.cdc.gov/Injury/wisqars/pdf/10LCD-Age-Grp-US-2008-a.pdf.

2 Ibid.

3 Ibid.

4 Bergen G , Chen LH, Warner M, Fingerhut LA. (2008). Injury in the United States: 2007 Chartbook. Hyattsville, MD: National Center for Health Statistics. Accessed 12 January 2012. Available at: http://www.cdc.gov/nchs/data/misc/injury2007.pdf.

5 National Vital Statistics System, National Center for Health Statistics, CDC. (2008). 10 leading causes of death by age group, United States — 2008. Accessed 12 January 2012. Available at: http://www.cdc.gov/Injury/wisqars/pdf/10LCD-Age-Grp-US-2008-a.pdf.

6 Children's Defense Fund. (2007). America's Cradle to Prison Pipeline. Washington, DC: Children's Defense Fund.

7 UNITY. (2011). Fact Sheet: Violence and Health Equity. Oakland, CA: UNITY.

8 National Center for Injury Prevention and Control, CDC. Web-based Injury Statistics Query and Reporting System (WISQARS) Fatal Injury Reports, National and Regional, 1999-2010. Atlanta, GA: http://webappa.cdc.gov/sasweb/ncipc/mortrate10_us.html. Data accessed 26 February 2013.

9 National Center for Injury Prevention and Control, CDC. Web-based Injury Statistics Query and Reporting System (WISQARS) Non-fatal Injury Reports, 2001-2011. Atlanta, GA: http://webappa.cdc.gov/sasweb/ncipc/nfirates2001.html. Data accessed 26 February 2013.

10 Council for Disability Awareness. (2011). Long-term Disability Claims Review, 2011. Accessed 12 January 2012. Available at: http://www.disabilitycanhappen.org/research/CDA_LTD_Claims_Survey_2011.asp.

11 CDC National Center for Injury Prevention and Control, Office of Statistics and Programming. (2009). National estimates of the 10 leading causes of nonfatal injuries treated in hospital emergency departments, United States — 2009. Accessed 12 January 2012. Available at: http://www.cdc.gov/Injury/wisqars/pdf/National_Estim_10_Leading_Causes_Nonfatal_Injuries_Tx_Hospital-ED_US2009-a.pdf.

12 Englander F, Hodson TJ, Terregrossa RA. (1996) Economic dimensions of slip and fall injuries. Journal of Forensic Science, 41(5), 733-46.

13 GAO. (September 2009). Fraud and Abuse Related to Controlled Substances Identified in Selected States. Available at: http://www.gao.gov/new.items/d09957.pdf.

14 Xiangming F, Brown D, Florence C, Mercy J. (2012). The economic burden of child maltreatment in the US and implications for prevention. Child Abuse and Neglect, 36(2), 156-165.

15 Waller JA. (1994). Reflections on a half century of injury control. American Journal of Public Health, 84(4), 664-670.

16 Haddon W, Suchman EA, Kleiin D. (1964). Accident research: methods and approaches. New York, NY: Harper & Row.

17 Haddon W. (1972). A logical framework for categorizing highway safety phenomena and activity. Journal of Trauma, Injury, Infection and Critical Care, 12, 193-2007.

18 Haddon W. Advances in the epidemiology of injuries as a basis for public policy. Public Health Reports, 95, 411-421.

19 Pacific Institute for Research and Evaluation. (2012). Injury Prevention: What Works? A Summary of Cost-Outcome Analysis for Injury Prevention Programs (2012 Update). Waltham, MA: Children's Safety Network. Accessed 5 October 2012. Available at: http://www.childrenssafetynetwork.org/sites/childrenssafetynetwork.org/files/InjuryPreventionWhatWorks2012.pdf.

20 Ibid.

21 Ibid.

22 Swahn MH, Hankin A, Houry D. (2011). Using policy to strengthen the reach and impact of injury prevention efforts. Western Journal of Emergency Medicine, XII(3), 268-270.

23 IOM Committee for the Study of the Future of Public Health. (1988). The Future of Public Health. National Academy Press: Washington, DC. Accessed 17 January 2012. Available at: http://www.nap.edu/catalog.php?record_id=1091.

24 CDC. 10 Essential Public Health Services. Accessed 17 January 2012. Available at: http://www.cdc.gov/nphpsp/essentialservices.html.

25 Safe States Alliance. (2011). Making the Case for Injury and Violence Prevention. Atlanta, Georgia: Safe States Alliance.

26 Ibid.

27 Safe States Alliance. (2009). Issue Brief: Effective Transportation Policies Require Injury Prevention Strategies. Atlanta, GA: Safe States Alliance. Accessed 31 January 2012. Available at: http://www.safestates.org/associations/5805/files/IVP%20and%20Transportation%20Policy%20%20Safe%20States%209%2009%20update%206%2010.pdf.

28 Cohen L, Miller T, Sheppard MA, Gordon E, Gantz T, Atnafou R. (2003). Bridging the gap: bringing together intentional and unintentional injury prevention efforts to improve health and well being. Journal of Safety Research, 34, 473-483.

29 CDC. Winnable Battles Website. Accessed 24 January 2010. Available at: http://www.cdc.gov/WinnableBattles/index.html.

30 Surgeon General's Advisory Committee on Smoking and Health and US Public Health Service, Office of the Surgeon General. (1964). Smoking and Health. United States Public Health Service, Office of the Surgeon General.

31 CDC Office on Smoking and Health. (1999.) Achievements in public health, 1900-1999: tobacco use – United States, 1900-1999. Morbidity and Mortality Weekly Report, 48(43), 986-993.

32 Public Law 111-3. The Children's Health Insurance Program Reauthorization Act of 2009.

33 Campaign for Tobacco-free Kids. State cigarette excise tax rates and rankings. Accessed 26 January 2012. Available at: http://www.tobaccofreekids.org/research/factsheets/pdf/0097.pdf.

34 US Food and Drug Administration. Flavored tobacco ban effective September 22, 2009. Accessed 26 January 2010. Available at: http://www.fda.gov/TobaccoProducts/ProtectingKidsfromTobacco/FlavoredTobacco/default.htm.

35 National Research Council. (2010). "5 The Background of Smoking Bans." Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence. Washington, DC: The National Academies Press. Accessed 25 January 2012. Available at: http://www.nap.edu/openbook.php?record_id=12649&page=109.

36 Campaign for Tobacco-Free Kids. Smoke-free Laws. Accessed 25 January 2012. Available at: http://www.tobaccofreekids.org/what_we_do/state_local/smoke_free_laws/.

37 McMillen R and Mississippi Tobacco Data. (2009). The National Social Climate of Tobacco Control, 2008. Mississippi Department of Public Health: Jackson, MS. Accessed 26 January 2012. Available at: http://www.socialclimate.org/wp-content/themes/thesis_182/custom/images/us_scs_08_Report.pdf.

38 Zhang X, Cowling DW, Tang H. (2010). The impact of social norm change strategies on smokers' quitting behaviours. Tobacco Control, 29(Suppl 1), i51-i55.

39 Public Law 89-92. Cigarette Labeling and Advertising Act of 1965.

40 Public Law 89-92, §1334. Public Health Cigarette Smoking Act of 1969.

41 Public Law 98-474. Comprehensive Smoking Education Act of 1984.

42 Public Law 102-321, §1926. State law regarding sale of tobacco products to individuals under age of 18.

43 Public Law 111-31. Family Smoking Prevention and Tobacco Control Act.

44 National Research Council. (2010). "5 The Background of Smoking Bans." Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence. Washington, DC: The National Academies Press. Accessed 25 January 2010. Available at: http://www.nap.edu/openbook.php?record_id=12649&page=109.

45 CDC. (2011). State smoke-free laws for worksites, restaurants, and bars --- United States, 2000-2010. Morbidity and Mortality Weekly Report, 60(15), 472-475.

46 Wallack L, Dorfman L, Jernigan D, Themba M. (1993). Media advocacy and public health: power for prevention. Newbury Park, CA: Sage.

47 Lima JC, Siegel M. (1999). Tobacco settlement: an analysis of newspaper coverage of a national policy debate, 1997-98. Tobacco Control, 8(3), 247-253.

48 Menashe CL, Siegel M. (1998). The power of a frame: an analysis of newspaper coverage of tobacco issues—United States, 1985-1996. Journal of Health Communications, 3, 307-325. Available at: http://test.scripts.psu.edu/users/n/x/nxy906/COMPS/messageframing/media%20framing%20lit/menashesmokingframes.pdf.

49 Ibid.

50 Ibid.

51 Jacobson PD, Soliman S. (2002). Co-opting the health and human rights movement. Journal of Law and Medical Ethics, 30, 705-715.

52 Brownson RC, Chriqui JF, Stamatakis KA. (2009). Understanding evidence-based public health policy. American Journal of Public Health, 99(9), 1576-1583.

53 Reports of the Surgeon General, US Public Health Service. Accessed 26 January 2012. Available at: http://www.surgeongeneral.gov/library/reports/index.html.

54 WHO Tobacco Laboratory Network (TobLabNet). Accessed 26 January 2012. Available at: http://www.who.int/tobacco/global_interaction/toblabnet/en/.

55 DiFranza JR, Dussault GF. (2005). The federal initiative to halt the sale of tobacco to children—the Synar Amendment, 1992-2000: lessons learned. Tobacco Control, 14, 93-98.

56 Levy DT, Bauer JE, Lee H. (2006). Simulation modeling and tobacco control: creating more robust public health policies. American Journal of Public Health, 96(3), 494-498.

57 CDC. (2011). Vital signs: current cigarette smoking among adults ≥ 18 years—United States, 2005-2010. Morbidity and Mortality Weekly Report, 60(33), 1207-1212.

58 Greenberg Quinlan Rosner Research. (2011). A New Direction for Prevention and Public Health. Recent Key Findings and Strategy from Research Conducted on Behalf of the Trust for America's Health and the Robert Wood Johnson Foundation. Washington, DC: Trust for America's Health. Accessed 31 January 2012. Available at: http://healthyamericans.org/assets/files/TFAHmessagingpresentation42011.pdf.

59 Carande-Kulis V, Beattie BL, Stevens J. (2010). The business case for interventions to prevent fall injuries in older adults. Injury Prevention, 16(Suppl), A249.

60 Foster EM, Prinz RJ, Sanders MR, Shapiro CJ. (2008). The costs of a public health infrastructure

for delivering parenting and family support. Children and Youth Services Review, 30(5), 493-501.

61 Coolen, P. (2009). "Medicaid: Patient Review and Coordination Program." Presentation given at CDC's State Strategies for Preventing Prescription Drug Overdose conference, January 2009. Presentation notes are accessible through Safe States (www.safestates.org).

62 Faul, M, Wald, M, Rutland-Brown, W, Sullivent E, Sattin, R. (2007). Using a cost-benefit analysis to estimate outcomes of a clinical treatment guideline: testing the brain trauma foundation guidelines for the treatment of severe traumatic brain injury. Journal of Trauma, 63(6), 1271-8.

63 Pacific Institute for Research and Evaluation. (2012). Injury Prevention: What Works? A Summary of Cost-Outcome Analysis for Injury Prevention Programs (2012 Update). Waltham, MA: Children's Safety Network. Accessed 5 October 2012. Available at: http://www.childrenssafetynetwork.org/sites/childrenssafetynetwork.org/files/InjuryPreventionWhatWorks2012.pdf

64 Maciosek MV, Coffield AB, Edwards NM, Flottemesch TJ, Goodman MJ, Solberg LI. (2006). Priorities among effective clinical preventive services. Results of a systematic review and analysis. American Journal of Preventive Medicine, 31(1), 52-61.

65 U.S. Preventive Services Task Force. (March 2011). Behavioral Counseling in Primary Care to Promote a Healthy Diet, Topic Page. Accessed 10 February 2012. Available at: http://www.uspreventiveservicestaskforce.org/uspstf/uspsdiet.htm.

66 Kingdon JW. Agendas, alternatives and public policies. (1984). New York: Longman.

67 CDC Office of the Associate Director for Policy (OADP). (2012). Policy Process. PDF available upon request; contact ADpolicy@cdc.gov.

68 Pollack KM, Samuels A, Frattaroli S, Gielen AC. (2010). The translation imperative: moving research into policy. Injury Prevention, 16(2), 141-142.

69 Ibid.

70 Ferencik R, Minyard K. (2011). Systems thinking in injury prevention: an innovative model for informing state and local policies. Western Journal of Emergency Medicine, 12(3), 273-274.

71 Lomas J. (2000). Connecting research and policy. ISUMA: Canadian Journal of Policy Research, 1, 140-144.

72 Brownson RC, Chriqui JF, Stamatakis KA. (2009). Understanding evidence-based public health policy. American Journal of Public Health, 99(9), 1576-1583.

73 Bugeja L, McClure RJ, Ozanne-Smith J, et al. (2011). The public policy approach to injury prevention. Injury Prevention, 17, 63-65.

74 Ibid.

75 Foss RD, Feaganes JR, Rodgman EA. (2001). Initial effects of graduated driver licensing on 16-year-old driver crashes in North Carolina. JAMA, 286(13), 1588-1592.

76 Margolis LH, Masten SV, Foss RD. (2007). Traffic Injury Prevention, 8, 35-38.

77 Masten SV, Foss RD. (2010). Long-term effect of the North Carolina graduated driver licensing system on licensed driver crash incidence: a 5-year survival analysis. Accident Analysis & Prevention, 42, 1647-1652.

78 Goodwin AH, Waller MW, Foss RD, Margolis LH. (2006). Parental supervision of teenage drivers in a graduated licensing system. Traffic Injury Prevention, 7, 224-231.

Acknowledgements

The American Public Health Association would like to thank the Safe States Alliance and the Society for the Advancement of Violence and Injury Research for their contributions to this document

This publication was supported by the Cooperative Agreement Number 5U38HM000459 from the Centers for Disease Control and Prevention. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

APHA
AMERICAN PUBLIC HEALTH ASSOCIATION
For science. For action. For health.

800 I Street, NW • Washington, DC 20001-3710 • 202-777-APHA • fax: 202-777-2534 • www.apha.org