Legislative and Regulatory Strategies to Reduce Childhood Unintentional Injuries

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Abstract

Laws and regulations are among the most effective mechanisms for getting large segments of the population to adopt safety behaviors. These have been applied at both the state and federal levels for diverse injury issues. Certain legal actions are taken to prevent the occurrence of an otherwise injury-producing event, while other legal actions are designed to prevent injury once an event has occurred. At the federal level, effective laws and regulations have been directed at dangers posed by unsafe manufactured products or motor vehicle design. At the state level, effective safety laws and regulations have been directed at encouraging safety behaviors and regulating the use of motor vehicles or other forms of transportation.

In this article, six legislative efforts are described to point out pros and cons of the legislative approach to promoting safety. Three such efforts are aimed at preventing injury-producing events from occurring: mandating child-resistant packaging for prescription drugs and other hazardous substances, regulating tap water temperature by presetting a safe hot-water heater temperature at the factory, and graduated licensing. Three other examples illustrate the value and complexities of laws designed to prevent injuries once an injury-producing event does occur: mandatory bicycle helmet use, sleepwear standards, and child safety seat use. This article concludes with specific recommendations, which include assessing the value of laws and regulations, preventing the rescission of laws and regulations known to work, refining existing laws to eliminate gaps in coverage, developing regulations to adapt to changing technology, exploring new legal means to encourage safe behavior, and increasing funding for basic and applied research and community programs.

Further reductions in childhood injury rates will require that leaders working in the field of injury prevention together provide the creativity to devise new safety devices and programs, incentives to persuade the public to adopt a “culture of safety” as a social norm, training and education to develop new leaders and workers, and the political will to challenge the status quo and engage the public interest.
State and national government agencies conduct many large-scale, vital childhood unintentional injury prevention programs. National non-governmental organizations (NGOs) enhance these activities through collaboration and by encouraging the passage of laws and regulations. By conducting activities at a geopolitical unit above the local community or county level, economy of scale is achieved, enhancing the efficiency of scarce resources. Centrally directed activities also can improve communication, making it more likely that a local unit will share, rather than unwittingly duplicate, educational materials and other resources with other communities in the state. Some activities, particularly injury surveillance, require substantial maintenance funds that only state or large city governments can afford.

State and federal legislation and regulations have substantially enhanced children's safety. The activities resulting from such laws include issuing regulations, imposing taxes and allowing tax exemptions and other incentives and disincentives, appropriating funds to educate and train health professionals and the public, and funding research studies. This article focuses on the enactment of laws and the issuance of regulations as important vehicles to reduce childhood injuries. Using examples, the advantages, disadvantages, and barriers of various legal strategies are described, and important future challenges are noted. Examples of successful collaborations between government agencies and NGOs aimed at reducing injuries among children also are discussed.

**State and National Legislation and Regulation**

Safety legislation and regulation typically operate by mandating the manufacture of safe products or by encouraging safe behaviors. The distinction between laws and regulations is sometimes confusing. A law is legislative in nature, voted upon by members of the U.S. Congress and approved by the president, or voted upon by members of state legislatures and approved by their governors. Regulations are administrative actions based on laws, and a regulation carries the force of the law that supports it.

Jurisdiction over an issue is primarily located at either the state or federal level. The U.S. Constitution, especially Articles 1 and 8, and the 10th Amendment, determines whether responsibility for enacting a particular law lies within the powers of the federal government or whether it is the responsibility of each state. Modern manifestations of jurisdictional authority are evident in traffic laws, among others. For example, the federal government cannot pass legislation concerning motor vehicle traffic within each state, unless the sole purpose of such traffic is to carry goods or people in interstate commerce. The U.S. Congress does not have the constitutional authority to amend or repeal a state motor vehicle law. However, it can persuade state legislators to pass traffic safety legislation by diverting a portion of a state's Highway Trust Fund apportionment normally used to build roads if the state does not enact a law taking a recommended position on a specific issue. Past examples that have successfully used this fiscal inducement include the establishment of a national minimum drinking age, a national maximum speed limit, a national maximum blood alcohol concentration law, and state motorcycle helmet laws.

During the past 25 years, legislation and regulations have been used successfully in the United States to prevent childhood injuries and improve the health and safety of children and teenagers (see Table 1). These strategies have been used to change individual behavior (for example, state bicycle helmet use laws), to change a legal process (for example, state-based eligibility to obtain full driver's license privileges under graduated licensing laws), and change the way a product is manufactured.
## Table 1

**Summary of Common State and Federal Laws Targeting Child Safety**

<table>
<thead>
<tr>
<th>Law</th>
<th>Level</th>
<th>Number of States</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle helmets&lt;sup&gt;a&lt;/sup&gt;</td>
<td>State/local</td>
<td>16 states/62 local or county laws</td>
<td>Coverage varies from under 12 to under 18 years of age</td>
</tr>
<tr>
<td>Child safety seats&lt;sup&gt;b&lt;/sup&gt;</td>
<td>State</td>
<td>50 states and Washington, DC</td>
<td>Coverage varies widely by age and position in car</td>
</tr>
<tr>
<td>Drinking age</td>
<td>State</td>
<td>50 states and Washington, DC</td>
<td>Legal drinking age is 21 years old</td>
</tr>
<tr>
<td>Firearm storage</td>
<td>State</td>
<td>16 states with laws regarding safe storage One state with law regarding trigger locks</td>
<td>Requirements to keep firearms from children vary widely from under 14 to under 18 years of age; charges vary from misdemeanor to felony</td>
</tr>
<tr>
<td>Flammable Fabrics Act</td>
<td>Federal</td>
<td>—</td>
<td>Established flammability standards for fabric garments with strict standards for children's sleepwear</td>
</tr>
<tr>
<td>Graduated licensing&lt;sup&gt;b&lt;/sup&gt;</td>
<td>State</td>
<td>11 states with 3-tiered system meeting minimum NCUTLO&lt;sup&gt;c&lt;/sup&gt; criteria, including at least 6 months with learner's permit and at least 6 months with intermediate license restricting nighttime driving; 6 states with less strict criteria within a 3-tiered system</td>
<td>Steps in licensing vary widely with minimum length of permit from 0 to 12 months; most with some nighttime driving restriction; some with zero alcohol tolerance or restrictions on age or number of passengers</td>
</tr>
<tr>
<td>Motorcycle helmets&lt;sup&gt;f&lt;/sup&gt;</td>
<td>State</td>
<td>47 states have some form of helmet law; 22 states and Washington, DC, have laws covering all riders; remaining 25 vary by age</td>
<td>Coverage varies widely by age and experience from all riders to under one year and from all licenses to only first year of licensure</td>
</tr>
<tr>
<td>Poison Prevention Packaging Act of 1970</td>
<td>Federal</td>
<td>—</td>
<td>Child-resistant closures on medicines and household substances</td>
</tr>
<tr>
<td>Safety belts&lt;sup&gt;f&lt;/sup&gt;</td>
<td>State</td>
<td>14 states and Washington, DC, have primary safety belt laws; 35 states have secondary laws; New Hampshire has no mandatory safety belt use law</td>
<td>Coverage varies widely by age and position in car</td>
</tr>
</tbody>
</table>

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<sup>a</sup> Information from the Bicycle Helmet Safety Institute Web site at http://www.bhsi.org/webdocs/mandator.htm.

<sup>b</sup> Information from the Insurance Institute for Highway Safety.

<sup>c</sup> National Committee on Uniform Traffic Laws and Ordinances.
or packaged (for example, federal regulations concerning child-resistant packaging of hazardous materials). Although legislation that mandates personal behavior is often controversial, laws that address children’s safety are more acceptable to the public because historically our society has recognized the value of government regulation in protecting children who could not otherwise protect themselves. Even so, proposed safety legislation is often accompanied by controversy, and when enacted, it has certain limitations and has experienced some setbacks.

Six examples of safety legislation and regulations are discussed below. They demonstrate how legislators and administrators respond to citizens and industry advocating various positions of an issue; the incremental nature of the legal process; the long-term effectiveness of legal strategies; the limitations of the federal government in intervening at a local level; and the occurrence of unexpected, and sometimes undesirable, effects of a law. Three of these legislative efforts prevent injury-producing events from occurring (child-resistant packaging, safe hot tap water temperature, and graduated licensure), while the other three are designed to prevent an injury once an injury-producing event does occur (bicycle helmets, sleepwear standards, and child safety seats).

**Legislative Efforts to Prevent Injury-Producing Events**

**Child-Resistant Packaging Legislation**

One of the earliest, most successful applications of safety legislation to prevent specific, serious, and frequent injuries was the Poison Prevention Packaging Act (PPPA), enacted in 1970. This case exemplifies the incremental nature of the legal process and the interaction between laws and their associated regulations. Although the mortality rate from all childhood poisonings had gradually decreased since the late 1950s, an estimated 500,000 to 2 million unintentional poisoning ingestions were sustained annually by young children prior to the enactment of the PPPA in 1970. These poisonings occurred even though two new strategies, the establishment of local poison control centers and the reformulation and repackaging of children’s aspirin, were undertaken. In 1968, the number of children’s aspirin tablets was reduced to 36 per package (a sublethal dose for most two-year-olds) and the strength of each tablet was decreased to 1.25 grains (81.25 mg). In 1969, two major manufacturers of baby aspirin voluntarily improved their packaging by providing bottles with safety closures. The use of safety closures was deemed particularly important in the
subsequent decline in the number of children poisoned by ingesting baby aspirin. Based on this early success, the PPPA established special packaging requirements for 21 categories of toxic household substances and medications. Using regulations and testing protocols, child-resistant closures that could not be opened by 80% of children were developed, manufactured, and required as lids on specific categories of substances and medications during the eight-year phase-in period beginning in 1972.

The benefits of this law and its regulations were quickly realized. Aspirin (both adult and baby strength) was the first product to require special packaging. Data from poison control centers indicated that, beginning with the period preceding the 1972 safety requirement until two to three years afterwards, unintentional ingestions of children's aspirin declined by about one-half. An effect of similar magnitude was noted after other drugs came under this packaging regulation. Between 1973 and 1978, unintentional ingestions of all drugs by children younger than five years of age declined by 44%, preventing nearly 200,000 such ingestions, with more than one-half of this decline occurring during 1973 to 1974. Concomitant with these new packaging requirements, mortality of children younger than five years of age from unintentional poisoning by oral prescription drugs decreased abruptly when the law first became effective, then decreased 45% more between 1974 and 1992.

This example shows that the legislative process can be slow. The first congressional hearings took place 4 years before the law was enacted, 6 years before the first drug was regulated to be stored in child-resistant containers, 8 years before all prescription drugs were so regulated, and 14 years before the last nonprescription drug (acetaminophen) was so regulated.

The law has two notable drawbacks. First, there was no realistic way to enforce it universally, given the number of pharmacies in the United States. One study suggested that pharmacists were noncompliant when filling about one-fourth of prescription drugs. Second, child-resistant closures posed problems for many elderly and disabled persons who lacked the manual dexterity required to open such containers. Accordingly, the original law provided that these persons could have their prescription medications dispensed in non-child-resistant packaging, if so directed by the prescriber or if requested by the purchaser. To accommodate elderly and disabled adults without compromising the safety of young children, the U.S. Consumer Product Safety Commission (CPSC) revised its testing protocol in 1995 (effective for products packaged after January 1998) to accommodate older adults. The current test protocol requires that 90% of older adults can open the package twice within the allotted test period, while 80% of young children must not be able to open it. This is an example of how the regulatory process can be used to modify those aspects of a law or earlier regulations in response to the valid concerns of a special group.

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Regulating Hot Tap Water Temperature
Children sustained an estimated 12,400 scald burns in 1997, of which nearly one-fourth were caused by tap water that was too hot. Most tap water scalds occur in the bathroom and can be severe and disfiguring. Although adult (rather than sibling) supervision and testing the bathwater temperature by hand before each bath are necessary measures, a more reliable way of preventing bathtub scalds is to lower the temperature setting of the hot-water heater (see the article by DiGuiseppi and Roberts in this journal issue). The likelihood of a scald injury increases when water temperature exceeds 125°F to 130°F. The thermostat dial setting of hot-water heaters in the past was preset at the factory.
to 140°F or 150°F. These temperatures will cause a full-thickness burn in the skin of adults within two to five seconds, and even faster in children.8

One workable solution to lower residential hot-water heater temperature dial settings is to have manufacturers adjust the setting to 120°F at the factory, since homeowners rarely adjust the standard setting after the unit has been installed. This strategy was recommended in a 1978 study of upper-middle-class and indigent families in Seattle, in which the 57 homes tested had bathtub water that reached a mean of 142 ± 26°F, yet only 45% of home owners had ever attempted to reduce the hot-water heater setting.9 Presetting a lower temperature at the factory was suggested as a strategy that would reduce the likelihood of tap water scald burns associated with child abuse as well as unintentional scald burns.

The CPSC was petitioned in 1980 to mandate maximum water heater temperatures of 130°F, but the petition was denied.10 Subsequently, however, the gas heater industry did change the preset temperature to 130°F, the minimum setting available on most units. The electric heater industry, though, allowed a preset temperature of up to 160°F. Lower maximum temperatures were still needed by both industry groups. In 1980, Florida passed a 125°F preset temperature law, followed by a 120°F standard in Washington State. Other states began to form coalitions to foster the development of state laws requiring a safer factory-preset temperature. The American Academy of Pediatrics (AAP) helped through the efforts of its state chapters and by developing model state legislation. In response to these efforts, concern about a myriad of state-based regulations, and the threat of litigation, the Gas Appliance Manufacturers

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Figure 1

**Predicted Child Mortality Rate Caused by Unintentional Ingestion of Oral Prescription Drugs in the Presence and Theoretical Absence of Child-Resistant Packaging Requirements, 1964 to 1992**

Association, developed voluntary standards. The gas hot-water heater standard directed that all units should be preset at the factory to their lowest setting, and have a dial marking or detent to indicate 120°F. The electric hot-water heater voluntary standard directed that the factory preset temperature not exceed 125°F.11

These regulatory measures, in conjunction with public education, worked. In a 1983 Seattle study, the proportion of homes with a maximum hot-water temperature setting less than 130°F increased from 20% before the law to 77% five years after the law took effect. Only 8% of households adjusted their hot-water temperature setting upward anytime after installation. Concomitantly, the hospital admission rate for children with scald burns decreased by more than 50%.12 This example shows how cooperation between professional groups, advocates, state legislators, and industry representatives can establish an effective national voluntary standard.

**Graduated Licensing Systems**

Young people between 15 and 20 years of age represent about 7% of all drivers, yet they are involved in 14% of all fatal crashes and 17% of all nonfatal crashes reported to the police.13 Key risk factors for deaths among these drivers include driver inexperience, male gender, speeding, low rates of safety belt use, driving at night, and alcohol or drug use. Nearly one-third of all teenage drivers killed were drinking.14 Experience level is also important; the fatality rate decreases sharply after the second year of driving.

State rather than federal laws and regulations govern motor vehicle licensure and can have a positive impact on reducing crashes and injuries among teenage drivers. The ideal licensure system would provide teenagers with sufficient opportunity to acquire the necessary experience and develop good driving skills while protecting them from high-risk situations. A graduated license system can provide such protection by adding incentives that promote safety belt use and sober driving and that discourage speeding, nighttime driving, and reckless driving. A full graduated licensing system consists of three tiers: a learner’s permit; a provisional license, usually awarded after six months of infraction-free driving; and a full license, usually awarded after two years of infraction-free driving (see Table 2). During the learner’s permit phase, teenagers may drive only when accompanied by an adult, and not at night. During the provisional phase, driving with a parent or adult is not required, but the number and/or ages of other passengers is often restricted to avoid distractions. Each phase embraces zero alcohol tolerance and mandatory safety belt use.

The effectiveness of graduated licensing systems has been reviewed.15 The first graduated licensing law adopted in New Zealand in 1987, is the only one that encompasses all the recommended components of a three-tiered
An evaluation of this law found that serious motor vehicle–related injuries decreased by 23% among 15- to 19-year-old drivers. In part, this decline in injuries was the result of teenagers driving less after the law took effect. Even adjusting for the reduced number of miles driven, however, investigators found an 8% reduction in the occurrence of serious traffic injuries.16,17

As of 1999, some 17 states have a three-tiered graduated licensing system with at least one of the core elements specified by the National Committee on Uniform Traffic Laws and Ordinances: a minimum of six months each in the learner and intermediate stages with nighttime driving restriction.18 Early indicators suggest that even programs with limited restrictions reduce crashes. For example, the crash rate for 15- to 17-year-old drivers in California and Maryland was reduced by about 5%, while in Oregon, the crash rate for adolescent male drivers decreased 16% following the implementation of graduated licensure.19

The next step is to evaluate the benefits and problems of existing graduated licensing programs. Evaluations are needed to determine which components, singly or in

Table 2

Possible Components of a Graduated Licensing System

<table>
<thead>
<tr>
<th>Level</th>
<th>Eligibility</th>
<th>Possible Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner’s permit</td>
<td>• Knowledge test (Part 1)</td>
<td>• Visually distinct license</td>
</tr>
<tr>
<td></td>
<td>• Hearing/vision screen</td>
<td>• All driving supervised by a licensed adult</td>
</tr>
<tr>
<td></td>
<td>• Basic driver education</td>
<td>• Safety belt requirement for all occupants</td>
</tr>
<tr>
<td></td>
<td>• Knowledge test (Part 2)</td>
<td>• Zero alcohol tolerance</td>
</tr>
<tr>
<td></td>
<td>• Pass on-road driving test</td>
<td>• Permit cancelled if convicted of any alcohol-related offense</td>
</tr>
<tr>
<td></td>
<td>• Nights on driving restriction</td>
<td>• Driver education</td>
</tr>
<tr>
<td></td>
<td>• Minimum number of hours driving supervised by a licensed adult</td>
<td>• Crash- and conviction-free period for advancement</td>
</tr>
<tr>
<td></td>
<td>• Advanced driver education</td>
<td>• Speed or road use restrictions</td>
</tr>
<tr>
<td></td>
<td>• Passenger restrictions</td>
<td>• Passenger restrictions</td>
</tr>
<tr>
<td>Intermediate license</td>
<td>• Successfully complete learner stage</td>
<td>• Nighttime driving restriction unless accompanied by a licensed adult</td>
</tr>
<tr>
<td></td>
<td>• Basic driver education</td>
<td>• Safety belt requirement for all occupants</td>
</tr>
<tr>
<td></td>
<td>• Knowledge test (Part 2)</td>
<td>• Zero alcohol tolerance</td>
</tr>
<tr>
<td></td>
<td>• Pass on-road driving test</td>
<td>• License revocation for any alcohol-related offense</td>
</tr>
<tr>
<td></td>
<td>• Nights on driving restriction</td>
<td>• Visually distinct license</td>
</tr>
<tr>
<td></td>
<td>• Minimum number of hours driving supervised by a licensed adult</td>
<td>• Crash- and conviction-free period for advancement</td>
</tr>
<tr>
<td></td>
<td>• Advanced driver education</td>
<td>• Minimum number of hours driving supervised by a licensed adult</td>
</tr>
<tr>
<td></td>
<td>• Passenger restrictions</td>
<td>• Speed or road use restrictions</td>
</tr>
<tr>
<td></td>
<td>• Passenger restrictions</td>
<td>• Passenger restrictions</td>
</tr>
<tr>
<td>Full license</td>
<td>• Successfully complete intermediate stage</td>
<td>• Zero alcohol tolerance for drivers under age 21</td>
</tr>
<tr>
<td></td>
<td>• Return to intermediate licensure for drivers with suspended or revoked licenses, with a crash- and conviction-free period required prior to reobtaining license</td>
<td>• Return to intermediate licensure for drivers with suspended or revoked licenses, with a crash- and conviction-free period required prior to reobtaining license</td>
</tr>
</tbody>
</table>

Note: Eleven states meet the minimum requirements for the graduated licensing systems of the National Committee on Uniform Traffic Laws and Ordinances (a minimum of six months in the learner stage and a minimum of six months in the intermediate stage with a nighttime driving restriction): California, Delaware, Florida, Georgia, Iowa, Massachusetts, Michigan, New Jersey, North Carolina, Ohio, and Rhode Island.
combination, are most effective, and the age at which restrictions are most appropriate. Potential disadvantages of graduated licensure systems should be explored. Parents of teenage drivers often depend on them to transport younger siblings, run errands, take car pool shifts, or drive to a job or an athletic event at night. Evaluation results will help shape a sensible and longer-lasting safety approach to teenage driving.

**Legislative Efforts to Prevent Injuries in an Injury-Producing Event**

**Bicycle Helmet Use Legislation**

Unlike the previous examples aimed at preventing injury-producing events from occurring, bicycle helmets are designed to prevent an injury when a crash event occurs. Early studies indicated that as many as 88% of serious brain injuries could be prevented by bicycle helmet use and that helmet use is inversely correlated with hospital admissions and deaths from bicycle-related head injuries. Despite these findings, a 1994 nationally representative survey indicated that only 50% of child bicyclists ages 5 to 14 owned a helmet, and only 25% of them always wore it in the past month when riding, as reported by their parents and other adults. The first mandatory bicycle helmet use law was passed in 1990 in Victoria, Australia. During the previous decade, safety experts had conducted a comprehensive, multifaceted, school- and community-based education program, yet helmet use remained only 31% among bicycle riders. One year after the legislation was enacted, helmet use (measured by observational surveys) increased to 75%, and the number of bicyclists killed or hospitalized with a head injury decreased by 51%. However, this legislation produced some unintended effects. Most importantly, a 36% decline in observed bicycle riding among Melbourne children ages 5 to 17 was noted one year after the law took effect, and reduced bicycling can be counterproductive to physical fitness. The largest decrease in riding (44%) was observed among 12- to 17-year-olds. This decline in riding was substantiated by a 24% decline in the number of bicyclists admitted to hospitals for treatment of primary injuries to areas other than the head that would not be protected by a helmet. Some observers suggested that the measured reduction in head injuries may have been attributable to the decrease in bicycling rather than to increased helmet use.

The Australian experience taught several lessons that became tenets of successful local

http://www.futureofchildren.org
injury prevention programs. First, enactment of a law should be accompanied by public education and active enforcement to achieve better public compliance. In Victoria, the state helmet use law was accompanied by enforcement at some schools—children were prohibited from riding to and from school without a helmet. Second, addressing a multifaceted problem such as bicycle-related traffic crashes may require that several aspects of the problem be attacked simultaneously. When bicycle helmet legislation passed in Victoria, a large-scale campaign was being conducted to reduce motorist speeding and intoxication, two well-known contributors to bicycle–motor vehicle crashes. Attending to the problem of risky driver behavior was designed to reduce the likelihood of a crash, while the helmet law was intended to provide additional physical protection in the event of a crash.

The Australian success encouraged lawmakers in the United States to consider similar legislation. The first mandatory helmet use ordinance was passed in Howard County, Maryland, in 1990, after two youths from the same middle school died within nine months of one another while bicycling without helmets (see the article by Klassen and colleagues in this journal issue).25 Subsequently, New Jersey enacted a similar law for children in 1992, and over the next seven years, 15 other states passed laws requiring child bicyclists to wear helmets. These laws vary in the ages covered, ranging from under 12 years of age in Pennsylvania and Tennessee to under 18 years of age in California.26 Forty-three percent of children less than 15 years of age in the United States are now covered by a bicycle helmet law.26 Legislation in seven states also mandates that educational and discount helmet programs be conducted.

Compared with the Australian experience, how effective could we expect mandatory helmet use laws to be in the United States? This was an important question, because, unlike in Australia, the argument of personal choice frequently arises in the United States. The first study evaluating the effectiveness of a bicycle helmet law in the United States was conducted in Howard County, Maryland, where observed helmet use increased from 4% before the law to 47% afterwards and did not increase significantly in two adjacent counties that lacked a law (see the article by Klassen and colleagues in this journal issue).28 The first evaluation of a state law took place in Georgia. In a household telephone survey there, the proportion of children reported to use a helmet the last time they rode a bicycle increased from 33% immediately before the law was enacted to 52% during the five months afterward.29 These results should be interpreted with caution, however, since self- or proxy reports of safety behavior may overestimate the true prevalence of a behavior.30 To verify the Georgia findings and test the validity of proxy reports for bicycle helmet use, a subsequent study was conducted in Oregon immediately following passage of that state’s mandatory helmet use law.31 Again, reported use increased substantially, from 37% to 66%, in the population affected by the law. Compared with observational surveys conducted at the same time, proxy reports overestimated true use, but the degree of change was similar (25% before to 49% after the law). Thus, self-reported use appears to be a valid proxy measure to quantify the direction and degree of change, even if it does not indicate the level of helmet use with great accuracy.

What is the effect of strict enforcement of bicycle helmet laws or regulations? In the only known evaluation of enhanced enforcement of bicycle helmet use, the city council of a small rural town in Georgia strengthened the existing state mandatory helmet use law by authorizing police to confiscate the bicycle of any child not wearing a helmet.32 Results indicate that helmet use among children increased from 0% to 71% (mean 45%) during the next five months, while helmet use among adults (not covered by the law) remained 0%. Although this is a drastic measure that may not be feasible in larger communities, some states are exploring alternative options to enforce
their laws. In Florida, for example, an elementary school–based policy was established requiring children to wear a helmet when riding to or from school. Preliminary unpublished results indicate that more than 75% of students at schools with a school policy supported by a state law wear a helmet, yet only about 45% of such students use one while riding in their neighborhoods.

**Flammable Sleepwear Regulations**

Sleepwear flammability regulations exemplify four issues: (1) the safety benefits of regulating the manufacturing of a commonly used product; (2) how difficult it is for regulations and standards to keep pace with changes in family customs, children’s fashions, and changes in the industry; (3) the interplay between various government agencies, technical experts, the garment manufacturing industry, and safety advocacy groups, all trying to be responsive to the perceived needs of the public and their particular constituents; and (4) the public confusion sometimes associated with a highly technical matter.

To reduce the flammability of nighttime garments that cause injury or death by igniting and continuing to burn, in 1971 a flammability standard was established for sleepwear worn by children approximately 12 years and younger.\(^{33}\) The performance test for this standard requires that fabric, seams, and trim of garments designated as sleepwear (for example, nightgowns, pajamas, and robes) stop burning after removal from a three-second exposure to a small open ignition source that resembles a match or cigarette lighter flame. The public often does not recognize that this flame is much less than that which would occur in a bedding or house fire, and that during the test, the fabric may ignite, as long as it self-extinguishes. Accordingly, any type of fabric may be used to make sleepwear garments, provided that it passes this test. For example, many 100% polyester fabrics pass the test, while untreated cotton fabrics generally do not.

CPSC estimates that approximately 200 to 300 burn incidents each year occur with loose-fitting daywear worn as sleepwear, mostly cotton or cotton-blend T-shirts.

Another fashionable garment to wear to bed was long underwear, which, although snug-fitting, is not sufficiently tight fitting to qualify as a safe nightwear alternative. Also, like T-shirts, long underwear was marketed as daywear and not subject to the sleepwear flammability test nor the tightness-of-fit regulation described below. The distinction between such daywear and true tight-fitting (regulated) sleepwear became blurred, confusing parents and retailers. In fact, retail stores commonly stocked regulated and unregulated products on the same shelf. To properly regulate this garment, the Commission needed to frequently revise its enforcement guidelines for manufacturers to keep pace with changes in the fashion industry, a matter quite difficult to accomplish in practice.

The Commission sought other mechanisms to ensure sleepwear safety. Returning
to the tightness of fit issue, the Commission specified the maximum measurements that could exist at various body sites for each size. In general, the dimensions of such tight-fitting sleepwear required a tighter fit than long underwear provided. A struggle between fire/burn prevention advocates and the Commission began when the latter published an advance notice of proposed rulemaking in 1993 (made final effective January 1997) that would, among other things, amend the original sleepwear flammability standard to exempt tight-fitting sleepwear defined according to the revised specifications. Because this coincided with the wish by industry to satisfy consumer demands for a wider array of sleepwear and the use of more comfortable fabric such as cotton, safety advocates claimed that the Commission was bowing to industry pressure. The Commission would like to address the hazard created when families use loose garments not intended as sleepwear, which are not flame-resistant (long underwear and loose T-shirts). To address this, CPSC is trying to offer a safe alternative to long underwear—tight-fitting sleepwear—which could then be made of cotton or other more comfortable fabric. The industry wants to be responsive to perceived customer demand and new fashion trends. Safety advocates, including the Safe Children's Sleepwear Coalition, prefer to abolish the 1997 and 1999 exemptions and return to the original standard. This group believes that a tight fit will not be achieved in practice under the revised standards, since the garment manufacturing industry will adopt the use of cotton materials, while parents are likely to purchase larger sizes than intended by the regulations to obtain a loose, more comfortable fit for their children. This issue illustrates how well-intended and effective safety regulations can have difficulty keeping up with changes in fashion and industry, and how changes in regulations can confuse the public and create conflict.

Motor vehicle crashes cause many preventable deaths and injuries to child occupants. One of the most important aspects of protection afforded to small children riding in vehicles is the proper use of a child safety seat.

Commission was bowing to industry pressure. This opinion was given more credence when the industry subsequently notified the Commission of problems related to the specified measurement sites that made prototypes of tight-fitting sleepwear difficult to make or uncomfortable. The manufacturers proposed the CPSC adopt a new, generally larger, set of dimensions in its standard, in addition to permitting the use of cotton-based fabrics. In January 1999 the Commission amended the 1997 exemption, adjusting the points of measurement, although not technically enlarging the allowable measurements themselves. This position was upheld in June 1999, even after a review by the General Accounting Office.

To advocates, the process suggests that CPSC relaxed the flammability standard over time by allowing cotton fabrics to be used, provided the garment was tight-fitting, then later allowing the fit to be relaxed, in effect circumventing the intent of the original standard. The debate is fueled by confusion about an admittedly complex subject with complex regulations, incomplete public information, and the appearance (to some) that the Commission is bowing to industry pressure.

Child Safety Seat Laws and Regulations

Motor vehicle crashes cause many preventable deaths and injuries to child occupants. One of the most important aspects of protection afforded to small children riding in vehicles is the proper use of a child safety seat. In many communities, using a child safety seat for every ride has become a social norm. The National Highway Traffic Safety Administration (NHTSA) of the U.S. Department of Transportation estimates that child restraints—including child safety seats, belt-positioning boosters for preschoolers and early-elementary-age children, and safety belts—saved the lives of 3,894 children between 1975 and 1997. This number is particularly impressive considering the relatively mild public response to the problem, both in terms of federal and state resources as well as the degree of public attention paid to injury prevention.

Three important prerequisites were needed before state governments could
consider child occupant protection laws. First, regulations were needed for the manufacture of child safety seats according to a prescribed set of safety and performance standards. Accordingly, the NHTSA revised Federal Motor Vehicle Safety Standard No. 213, and in doing so, incorporated dynamic crash test standards for the first time. A set of biomechanical dummies, one weighing 17 pounds to simulate a 9-month-old infant and another weighing 33 pounds to simulate a 3-year-old, then needed to be designed so that crash tests could be conducted with prototype child safety seats. These tests measured the forces acting on many parts of the body and the degree of protection afforded by the child safety seat. Based on these test results, a set of design and test standards was codified and required for the manufacture of all child safety seats. Second, the public needed to be convinced that safety seat use was an important, effective measure that outweighed its inconvenience. This was accomplished through ongoing educational and promotional programs such as child safety seat giveaways and rentals provided through many government and nongovernment agencies, in particular the AAP, the National SAFE KIDS Campaign (NSKC), vehicle manufacturers, insurance companies, and the International Association of Chiefs of Police. Third, child safety seats needed to become widely available and affordable. This was eventually achieved by increased public demand, which increased manufacturers’ supply and reduced the per-unit cost.

The first state law mandating the use of child safety seats in motor vehicles took effect in Tennessee in 1978, due largely to the work of Robert Sanders, M.D., a Tennessee pediatrician working in public health. Subsequently, observed safety seat use among children younger than four years of age in Knoxville and Nashville increased from 8% to 29% within 2½ years. By comparison, observed child safety seat use in Lexington and Louisville, Kentucky (where no safety seat law existed), only increased from 11% to 14%. This legislative success, coupled with the availability of affordable, effective child safety seats, led to the passage of mandatory child safety seat laws in all 50 states by 1985.

As legislation became successful at increasing child safety seat use, another problem became evident—improper safety seat use. The NHTSA estimates that child restraints are 71% effective in reducing the likelihood of death in motor vehicle crashes when installed correctly in a vehicle in which the safety belts, seats, and child safety seats are compatible. However, because many child restraints are either not being used correctly or installed in vehicles with seats or safety belts that are not fully compatible, the practical effectiveness is reduced to 50% to 59%. Incorrect safety seat use is quite common. Although nearly 80% of children were restrained in a recent study in Kentucky (after a law took effect), only 20% were restrained properly. In four other states, although 85% of infants and 60% of children under age four were restrained, only 20% were restrained properly. The two main problems are the poor fit or frank incompatibility between certain child safety seat models and certain vehicles when used in certain seating locations, and misunderstanding by the user.

One technological solution is the use of a universal child restraint attachment system. The European ISOFIX standard and the Canadian CANFIX standard preceded American efforts in this regard. These systems have fixed struts that emerge from the bench and lock into all child safety seats equipped with the corresponding component. Since the problem of car seat incompatibility was recognized in 1991, federal agencies and vehicle manufacturers in the United States have pursued universal fittings, but the need for global harmonization and the large number of types of vehicle models and manufacturers slowed development. However, the NHTSA recently adopted vehicle manufacturing regulations that require all 1999 and newer model cars to include a rear-mounted tether that secures the top of a safety seat, as well as a pair of six-inch fixed...
struts that secure its bottom. The regulation extends to all new light trucks and multipurpose vehicles beginning in 2000. This regulation should make child safety seats universally compatible with all new vehicles so that families can correctly and easily move safety seats to other seating positions or other vehicles as needed.

Car safety seat checkups have indicated that, despite good intentions and a high educational level about the subject, parents may not know or understand how a child should be placed in a child safety seat, or how the seat should be installed in an older-model vehicle.

Both government and NGOs have been concerned about the low rate of child safety seat use, as well as the high rate of incorrect use, particularly among disadvantaged families. Concerned experts from industry, government regulatory and research agencies, universities, community groups, and the public gradually developed partnerships and working coalitions to address incorrect safety seat use. At the federal level, these partnerships were developed among two or three agencies, while at the community level, coalitions often involved a dozen or more groups working together.

In the early 1990s, the NHTSA assembled a child safety seat misuse team of experts from research, rulemaking, policy, and other groups. The team established a four-year national child safety seat distribution program developed through collaboration with the NSKC, a grassroots program with safety coalitions in all states. The NSKC was begun in 1988 with critical support from Johnson & Johnson. Through more than 250 local coalitions, the NSKC strives to implement comprehensive, multifaceted, community-based injury prevention programs that address the major causes of serious childhood injuries. With NHTSA support, the NSKC has raised public awareness concerning the lack of child safety seats, and it has distributed safety seats to many families. Senior NSKC staff also have met with members of Congress and their staffs to help them better understand the problem of safety seat misuse and find viable solutions. The NSKC developed a comprehensive state legislative program that included model state legislation for passenger safety. The NSKC then monitored the development of state legislation, identified gaps in age groups or seating location, and held leadership workshops to train local advocates to work with their legislators.

The national child safety seat effort, facilitated by the NHTSA, was substantially boosted by funds provided by General Motors Corporation (GM) to NGOs. As part of a 1995 legal settlement between the DOT and GM related to an alleged defect affecting the safety of certain pickup trucks, GM provided $8 million over two years for a nationwide child safety seat distribution program that targeted low-income families and those with special needs children. The four principal organizations chosen to administer this program included one NGO and three federal agencies.

In this article, the relationship between NGOs and legislative and regulatory agencies is explored. NGOs exert a strong influence on government, either by collaborating with state or federal agencies in conducting local projects or by independently encouraging the adoption of laws and regulations. NGOs include professional organizations, nonprofit groups, philanthropists, industry, and special interest groups. The section below describes two NGOs that helped increase the correct use of child safety seats by collaborating with federal agencies and the business community. Additional key NGOs engaged in injury prevention activities are included in the Appendix at the end of this article.
program and distribute child safety seats were the NSKC, the National Easter Seal Society, the Safe America Foundation, and the National Association of Children's Hospitals and Related Institutions. Through local chapters and constituent members of these organizations, about 200,000 child safety seats were distributed nationwide. The next year, GM donated $10.6 million to the NSKC to promote correct car seat and safety belt use. The NSKC developed and distributed information in English and Spanish to teach parents and caregivers about correct child safety seat and safety belt use. More than 400 local GM dealers participated in two-hour child passenger safety workshops. Dealerships began conducting car seat checkup events where local experts, largely trained by NHTSA staff, reviewed child safety seat hardware for correct size, fit, and installation, and taught its correct use. Based on the success of this program, GM recently committed another $5 million to the NSKC to provide thousands of child safety seats to needy, minority, at-risk families. The NSKC has partnered with the National Council of La Raza and the National Association for the Advancement of Colored People (NAACP) to ensure that the program reaches Hispanic and African-American families and that correct safety seat use is reinforced in culturally appropriate ways. This is an example of partnership among several nonprofit grassroots organizations, a federal agency, and industry.

Future Challenges

Future challenges for using legal strategies to reduce the occurrence of childhood injuries may be grouped into five categories: (1) assessing the relative success of existing laws and regulations, compared with their human, societal, and dollar costs; (2) maintaining existing legal actions of demonstrated value by withstanding efforts of budget managers to reduce their scope and of special interest groups to rescind laws; (3) refining existing laws to make them more effective and, where possible, to fill gaps in coverage with regards to age groups or situations; (4) keeping pace with technology by using new techniques and methods to enhance safety and regulate the unsafe effects of new devices; and (5) exploring new legal means of encouraging safe behavior while maintaining individual freedom of choice.

Assessing the Value of Laws and Regulations

Before adopting additional legal actions, an assessment should first be made of the
relative success or failure of those federal laws and regulations, state laws, local ordinances, and administrative actions that have not yet undergone formal evaluation. The personal cost of these strategies should be measured in terms of both dollars and the effect on individual freedom lost for a greater good. For the latter, however, no standardized or universally accepted measure yet exists. Success in injury prevention is generally measured in terms of lives saved, crashes or injuries avoided, or reduced injury severity. A scale that indicates a sense of value to the consumer (parent and/or child) would be useful to measure the success of legal efforts. It is important to evaluate the benefit of a particular law compared with broadscale public education or positive industry- or school-based incentives such as reduced insurance premiums for well-performing students. The relative effect of legislation, alone or combined with varying degrees of enforcement and public education, also should be examined.

As discussed previously, graduated licensure is one example of a legislative strategy

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that appears promising, but it requires further evaluation to identify which aspects are most effective. Specifically, how much incremental benefit would be derived from extending the hours of curfew versus postponing the entry age of driving via a learner’s permit versus extending the duration of the provisional phase?

The relative effectiveness of new safety methods, compared with traditional methods, also must be evaluated. For example, Congress has appropriated funds to establish a toll-free telephone number for a national poison control center to augment the dwindling number of local poison control centers. These centers have experienced substantial financial pressures in recent years as hospital and state budgets have reduced or eliminated their funding. However, the effectiveness of a nationally coordinated telephone line, compared with the previous widespread availability of local poison control centers, deserves further study.

Maintaining Existing Laws and Regulations That Work

Public will is expressed through laws. However, once established, a law is vulnerable to attack from special or single interest groups that seek to overturn the law in subsequent legislative sessions, particularly if its safety benefits have not been well documented or publicized. The interest within the garment manufacturing industry to modify long-standing and successful regulations concerning children’s sleepwear illustrates this point. Two other examples—a national speed limit law and state and local legislation mandating bicycle helmet use—also demonstrate the need for injury prevention specialists and health professionals to be constantly vigilant, protecting the existence of successful strategies.

The national speed limit law, established in 1973 to conserve gasoline during a shortage created by the Arab oil embargo, was credited with saving many lives. Congress voted to rescind the law in 1995 in response to pressure by the National Motorists Association (a membership organization devoted to protecting the interests of North American motorists), governors and legislators from some western states, and others. These groups voiced the public’s apathy about the risks associated with speeding, which emerged once the threat of a gasoline shortage no longer existed. Warnings that the number of highway traffic fatalities would increase if the law was overturned—as it had in 1987, when some states adopted a 65 mph limit on rural highways—were largely ignored. These warnings had been correct, however, and in the 12 states that subsequently adopted higher speed limits, fatalities increased by 12% on interstates and freeways and by 6% on all roads combined.54

Mandatory bicycle helmet use laws for children have similarly come under attack. Residents of some states argue that these laws infringe on the individual’s right to choose his or her own behavior, and some people question the added benefit of helmet use. Although no state law has been rescinded, a local helmet use law in Seymour, Connecticut, that covered both adults and children was overturned in 1999, a year after it was passed. Other local helmet use laws also have been attacked.

Refining Existing Laws

The adoption of new state laws, particularly those that mandate personal behavior, is typically an incremental process. The language adopted is most often the result of compromise, in which certain aspects desired by safety experts and advocates are deleted or restricted in scope. Without compromises, such as restricting the age limits affected by a bicycle helmet bill, the legislation would not likely pass. However, these compromises may leave unintended gaps in coverage. Consequently, safety experts and advocates need to identify and prioritize the importance of such gaps and judge the ease with which a law could be amended during subsequent legislative sessions.

Child motor vehicle occupant protection laws are an important example of where critical gaps in legislation exist. Typically, certain ages, seating locations, or vehicles registered

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out of state are excluded from the laws. Most state laws do not address the key transition stage between preschool and early elementary school. By about four years of age, most children have outgrown their child safety seat but are too short to fit properly into an adult three-point shoulder-lap safety belt until they reach seven to nine years of age. To prevent the upper portion of the shoulder belt from lying across the child's neck (rather than the chest, as designed), a belt-positioning booster seat should be used to elevate the child to the proper height.42 Presently, few states require booster seats to be used, however, and the public is largely unaware of the benefit or even the existence of these devices. A national program is needed to educate families to increase the use of booster seats, and state legislatures need to consider bills that would cover children during this transition period. Since children vary so much in size at any given age, legislators should base transition requirements on body weight rather than age.

Legislation also should be refined around the ability of police to enforce safety belt and child safety seat laws. Presently, two types of state laws exist concerning safety belt use. Primary enforcement laws in 17 states and the District of Columbia permit police to stop and cite a driver solely because an occupant covered under the law is unrestrained. Secondary enforcement laws (in 33 other states) allow police to cite a driver only if he is stopped for another offense. New Hampshire still has no mandatory safety belt law. On the other hand, all 50 states plus the District of Columbia have some type of law requiring the use of child safety seats. Currently federal agencies are directing efforts toward converting secondary laws into primary laws at the state level. A systematic review of occupant restraint laws for adults found that, compared with no law, a primary law was associated with a 1.5- to 4.1-fold increase in observed safety belt use and a 3% to 31% decrease in traffic fatalities.55 A secondary law was associated with a 2.1- to 2.6-fold increase in safety belt use and a more modest decrease in traffic fatalities. Even though the transition from secondary to primary enforcement laws probably has merit, more certainty on this issue would be welcome. Accordingly, more rigorous evaluations should be done in those states where such laws are being changed.

**Developing Regulations to Adapt to Changing Technology**

Technological progress poses challenges for injury prevention. One challenge is to adopt new methods and devices that could reduce the incidence or severity of childhood injuries. For example, radar and laser technologies are used to measure vehicle speed, although these technologies were originally developed for other applications.

Air bags have reduced front-seat fatalities by about 27% in frontal crashes and 11% overall, but approximately 70 children have sustained a lethal injury from an air bag as it deployed during a low-impact crash that in itself would not have been fatal.

Another challenge is to monitor new safety devices for unexpected consequences and to manage such consequences. Perhaps the best publicized example of this is the untoward interaction between children and air bags. Air bags have reduced front-seat fatalities by about 27% in frontal crashes and 11% overall, but approximately 70 children have sustained a lethal injury from an air bag as it deployed during a low-impact crash that in itself would not have been fatal. The impact on the head or neck by the air bag as it deployed at more than 200 miles per hour close to the child was the mechanism of injury. The NHTSA mandated the placement of front-passenger seat air bags in all cars beginning in model year 1998, and in all light trucks the following year. Solutions to reduce the risk of air bag–related injuries also were proposed. These included participating in a large-scale national educational campaign to warn parents of these dangers and that all children 12 years of age and under should sit in the back seat where a front-passenger air bag cannot reach. However, this was not popular because many parents insist that their infant ride in the front seat where they can better attend to their needs. Sometimes a child cannot be seated in the back, as when a parent is transporting more than three young children in a sedan or when the vehicle lacks

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a back seat entirely. Accordingly, the NHTSA is encouraging the development of long-range solutions, including air bags that deploy with less force and air bag systems that do not deploy if the passenger weight or seating position indicate that the air bag might cause injury. Meanwhile, the NHTSA approved regulations that, effective January 1998, permit the installation of an on-off switch in certain situations, such as for a medical need or critically short adult drivers.59

Exploring New Legal Means to Encourage Safe Behavior

Many barriers discourage the adoption of new legislation or regulation concerning personal behavior. First, the public is often unaware, or even denies, that a particular behavior or product poses a real threat. Therefore, it seldom spontaneously encourages elected officials to seek legal means to reduce injury risk. Second, a delicate balance exists between passing legislation aimed at altering personal behavior and the freedom to choose one’s behavior. Many legislators are wary of legislation that may infringe on this freedom, on the grounds that, in a democracy, free but informed will should determine such decisions. Legislators do consider such bills, however, because the consequences, especially the cost of medical care and disabilities, are likely to be borne by the public rather than by individuals. Legislators also take children into special consideration because they are not considered legally competent to make informed choices. Accordingly, ample precedent exists to use legal means to encourage safe behaviors, and such laws and regulations often are effective. Third, legislators are wary of passing legislation that is difficult or futile to enforce or that carries no penalty. Police are reluctant to enforce such laws, particularly if they sense that local judges will not support them by convicting violators. Finally, concern exists among some minority groups that additional laws established to mandate behavior will be used by the police and courts to indiscriminately harass or preferentially punish them, particularly when police are granted additional powers to enforce laws.

Against this negative background, substantial room exists for using the legal system to help reduce childhood injuries. In recent years, product liability suits and federal regulations have become more widespread in an effort to hold manufacturers accountable for injuries that occurred as a result of unsafe products. For example, the GM settlement previously described was a landmark case in which an alleged unsafe product was re-engineered and a major occupant protection safety program was put into place as part of the penalty assessed. In another example, concerns of legal liability arising from failure to meet the recommended guidelines of the CPSC have led to a widespread upgrading of playgrounds in schools, public parks, and day-care centers. Finally, many commonly used products, including car safety seats, air bags, and sports equipment, contain lengthy instructions and even warning stickers to educate consumers on their proper use. However, these are at least

In a litigious society, manufacturers’ concern over the threat of lawsuits is a powerful mechanism to improve product safety through standard setting or better design, when possible, and occasionally even by voluntary removal from the market when no other option will suffice.

Another alternative used by the legal system to promote certain behavior changes is to create positive incentives, such as through the tax system. Tax incentives have already been used widely to encourage behavior change in other areas. One example is the creation of tax credits and exemptions designed to modify behaviors that affect the environment, such as the use of solar power in homes during past oil shortages. These approaches could be successful if applied to safety issues as well.
Conclusion
Enacting safety-related legislation at the state and federal levels is a powerful way to encourage change in individuals and populations. In the past 25 years, the incidence rates of many unintentional childhood injuries have decreased dramatically, in part due to the effective use of legislation and regulation. For maximum effectiveness, laws, regulations, and policies must be supported by the public and adequately enforced at the community level. There, a principal challenge is to coordinate the many public and private groups involved in childhood unintentional injury prevention to produce a critical mass for action. In the near term, national agencies and organizations should implement strategies known to work, and evaluate others that show promise.

Substantially greater funding for injury prevention activities is needed from the public and private sectors, industry, and major philanthropic organizations. The Institute of Medicine has reviewed the United States’ need for better injury prevention three times. In its latest report, issued in 1999, this body recognized that “support for injury research has been seriously inadequate when measured against the magnitude of the injury problem. . . . By any measure of social burden (deaths, years of potential life lost, disability or disability-adjusted life years, and economic costs), injuries exact a major toll.” The report also noted that, at the National Institutes of Health, for every $1 spent to support injury research in 1996, $13 was spent on cancer research, $7 was spent for HIV/AIDS, and $4 was spent for heart disease. Further, resources were considered insufficient to provide state public health departments with adequate infrastructure to undertake effective initiatives.

Interest and financial investment in injury prevention are necessary to develop a “culture of safety,” in which safety becomes a social norm. The field of injury prevention needs creative talent and ideas from researchers, practitioners, and industry. It needs incentives to encourage individuals, families, and communities to become safety conscious and practice good safety techniques. It needs to train, develop, and encourage health professionals to deal with a quickly changing environment. Finally, it needs its political leaders to have the courage and tenacity to challenge the status quo, to engage the public interest in this arena, and to manifest hope in their children by investing in their future through injury prevention.

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Appendix

Key National Resource Organizations for Children’s Safety

Nongovernmental Organizations
Advocates for Highway and Auto Safety
An alliance of consumer, health, and safety groups and insurance companies and agents working together to make America’s roads safer. Advocates encourage the adoption of federal and state laws, policies, and programs that save lives and reduce injuries.
www.saferoads.org (202) 408-1711
Appendix (continued)

**American Academy of Pediatrics**
A professional organization committed to the attainment of optimal physical, mental, and social health of all infants, children, adolescents, and young adults. The Web site provides information and materials not only for pediatricians, but also for parents, advocates, and policymakers.
www.aap.org (800) 433-9016

**American National Standards Institute**
A membership organization involved in product safety. ANSI promotes and facilitates the establishment of voluntary consensus standards, systems to assess conformity, and accreditation of third-party product certification.
wwwansi.org (212) 642-4900

**American Society for Testing and Materials**
Provides a forum for producers, consumers, and representatives of government and academia to develop standards by consensus. Activities encompass areas including metals, paints, plastics, textiles, petroleum, construction, energy, the environment, consumer products, medical services and devices, computerized systems, and electronics.
wwwastm.org (610) 832-9585

**Children's Safety Network**
Fosters the development and inclusion of injury and violence prevention strategies into maternal and child health services. Four CSN Resource Centers are funded by the Maternal and Child Health Bureau at the Department of Health and Human Services.
wwwedcorg/HHDCsn (617) 969-7101

**The Foundation Center**
A guide to foundations that provides detailed information on the interests and restrictions of individual foundations and on the money they have granted. The center has offices and libraries that cover all 50 states.
wwwfdncenterorg (800) 424-9836

**Injury Control Resource Information Network**
Provides comprehensive listings of injury control resources through the Internet.
wwwinjurycontrolcom/icrin

**Insurance Institute for Highway Safety**
An independent research and communications organization wholly supported by automobile insurers. IIHS is dedicated to reducing highway crash deaths and injuries, and property damage losses. Institute research and communications products are used worldwide by policymakers, automakers, and consumers.
wwwhwysafetyorg (703) 247-1500

**Juvenile Products Manufacturers Association**
A national trade association of companies that manufacture and/or import infant products such as cribs, car seats, strollers, bedding, accessories, and decorative items. JPMA developed a certification program for juvenile products, publishes materials outlining safe product use and safety measures for home and car, and sponsors Baby Safe Month each September to raise awareness of important safety issues.
wwwjpmaorg
Appendix (continued)

**Mothers Against Drunk Driving**
Seeks effective solutions to the problems of drunk driving and underage drinking. MADD supports people who have experienced an alcohol-related event in their family or among their friends. Specific attention is paid to programs that encourage designated drivers, responsible partying, and awareness of drinking and driving during the holiday season, as well as programs that help youth defend their choice not to drink or not to drive while impaired. The work of the organization is conducted through the media, legislators, educational workshops, federal highway funding sanctions, public awareness education, and networking with other concerned citizens and safety groups.

www.madd.org (800) get-MADD

**National Fire Protection Association**
A membership organization that advocates scientifically based consensus codes and standards, research, and education for fire and related safety issues.

www.nfpa.org (800) 344-3555

**National Program for Playground Safety**
Serves as a public resource for the latest information on playground safety and injury prevention. Available information includes playground safety data, inspection, training, and materials distribution.

www.uni.edu/playground (800) 554-PLAY

**National SAFE KIDS Campaign**
Coalitions work as a nationwide movement to prevent childhood unintentional injury through education. Web site includes Spanish- and English-language information, family safety checklist, and a variety of injury topics affecting children, including bicycle safety, firearm safety, fall prevention, and water safety.

www.safekids.org (202) 662-0600

**National Safety Council**
An international public service organization with a mission “to educate and influence society to adopt safety, health, and environmental policies, practices, and procedures that prevent and mitigate human suffering and economic losses arising from preventable causes.”

www.nsc.org (800) 621-7619

**Snell Memorial Foundation**
A nonprofit organization that conducts research, education, testing, development, and certification of helmet safety standards.

www.smf.org (916) 331-5073

**Government Organizations**

**Centers for Disease Control and Prevention/ National Center for Injury Prevention and Control**
A federal research agency within the Department of Health and Human Services. Web site provides links to fact sheets, publications and resources, research grants, funding opportunities, a “what’s new” section, scientific and surveillance data, links to other CDC centers and injury-related Web sites, and information about the center. NCIPC administers an extramural grant program of over $20 million, with grants awarded annually to researchers, universities, and other organizations. NCIPC also supports 55 state and community injury prevention programs and comprehensive injury control research centers throughout the United States. In addition to conducting research, surveillance, intervention, and evaluation studies, these centers serve as training centers and resources to the public, media, and allied health professionals.

www.cdc.gov/ncipc (770) 488-1506

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Appendix (continued)

Maternal and Child Health Bureau
MCHB, within the Department of Health and Human Services, works to promote and improve the health of the nation’s mothers and children through providing funds and resources for state and local programs, and through the Healthy Start Initiative and the Emergency Medical Services for Children program.
www.mchb.hrsa.gov (301) 443-0205

National Highway Traffic Safety Administration
A federal regulatory agency within the U.S. Department of Transportation responsible for reducing deaths, injuries, and economic losses resulting from motor vehicle crashes through setting and enforcing safety performance standards for motor vehicles, and through grants to state and local governments. Web site includes information on recalls of automobiles and associated equipment.
www.nhtsa.dot.gov (800) 424-9393

State Health Departments
Provide resources, injury surveillance data, programmatic information, and funding information. The State and Territorial Injury Prevention Directors Association (STIPDA) can provide contact information to locate injury professionals in a particular state health department.
www.stipda.org (770) 690-9000

U.S. Consumer Product Safety Commission
An independent federal regulatory agency that helps keep American families safe in their homes by reducing the risk of injury or death from consumer products. Web site provides information on unsafe and recalled products and can be used to report injuries from consumer products.
www.cpsc.gov (800) 638-2772

Network of Government and Nongovernmental Organizations
National Bicycle Safety Network
NBSN is a coalition of public and private organizations and agencies working together to prevent all types of bicycle-related injuries and to promote safe bicycling as a viable transportation alternative by exchanging information on programs, legislation, and research, and by sharing resources.
www.cdc.gov/ncipc/bike


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