



Pergamon

www.elsevier.com/locate/jsr

Journal of Safety Research 34 (2003) 473–483



www.nsc.org

Bridging the gap: Bringing together intentional and unintentional injury prevention efforts to improve health and well being

Larry Cohen^{a,*}, Ted Miller^b, Monique A. Sheppard^b, Emily Gordon^a,
Toni Gantz^a, Rebkha Atanafou^c

^aPrevention Institute, 265 29th Street, Oakland, CA 94611, USA

^bPublic Services Research Institute, Pacific Institute for Research and Evaluation, USA

^cThe After School Institute, USA

Received 26 August 2002; received in revised form 17 March 2003; accepted 28 March 2003

Abstract

Problem: Intentional and unintentional injury prevention efforts have traditionally been independent and non-integrated. Fostering collaboration between the sub-fields would enhance work within both sub-fields and advance injury prevention work as a whole. *Method:* A systematic assessment of similarities and differences between the sub-fields was performed, including an examination of relevant definitions and norms, research methods and findings, key risk and resiliency factors, and prevention strategies that would promote collaboration and better advance current prevention efforts. *Results/Summary:* Several areas exist in which injury prevention efforts could be coordinated or ideas and practices could be cross-applied, including training of practitioners, data collection and analysis, application of tools and methodologies, examination of risk and resiliency factors, and identification of funding sources and partners. *Impact on Industry:* This paper delineates how intentional and unintentional injury prevention practitioners can more effectively collaborate to promote safer environments and further reduce incidence of injury. An integrated injury prevention approach could significantly impact the underlying contributors to both types of injury, allowing practitioners within both sub-fields to achieve greater outcomes through increased credibility, reduced duplication of efforts, more efficient use of resources, and unified injury prevention messages.

© 2003 National Safety Council and Elsevier Science Ltd. All rights reserved.

Keywords: Prevention; Intentional injury; Unintentional injury; Risk and resiliency; Collaboration

1. Introduction

Current injury prevention efforts tend to be categorized into two sub-fields: unintentional and intentional injury. Efforts within these sub-fields tend to be independent and separate. Among injury prevention professionals, differences of opinion exist on whether or not intentional and unintentional injuries should be addressed together within one field or separately. While there are significant distinctions between the sub-fields, there are also significant similarities, and what has not yet taken place is a systematic assessment of these similarities and differences. Such an assessment would delineate the areas in which collaboration between the sub-fields would enhance work

within both sub-fields and advance injury prevention work as a whole.

To perform such an assessment, specific questions need to be answered: How can intentional and unintentional injury prevention practitioners and researchers build their knowledge base through shared data and research? How can mutual understanding be fostered to enhance collaboration and build a broader movement for injury prevention? What strategies and methods from intentional and unintentional injury prevention sub-fields should be applied to one another? What is needed to help practitioners with unintentional injury backgrounds apply their knowledge to intentional injury prevention, and vice versa?

In an effort to answer these questions, this paper first defines intentional and unintentional injury and examines the social norms and perceptions that have caused these two prevention sub-fields to diverge. The next section compares intentional and unintentional injury research methods and findings, highlighting ways in which coordi-

* Corresponding author. Tel.: +1-510-444-7738; fax: +1-510-663-1280.

E-mail address: larry@preventioninstitute.org (L. Cohen).

nated data collection and analysis could be advantageous to both sub-fields. The paper then delineates key risk and resiliency factors that are relevant for both types of injury. The final section of the paper describes comprehensive strategies for prevention, including ideas for collaboration and prevention strategies that can be employed to bring these two fields together to achieve greater overall injury prevention.

2. Definitions and paradigms

2.1. Definitions

From a common sense perspective, all injuries are about *people being hurt*. From a public health perspective, injuries are defined as “damage to the body resulting from acute exposure to thermal, mechanical, electrical, or chemical energy or from the absence of such essentials as heat or oxygen” (The National Committee for Injury Prevention and Control, 1989). Recently, many definitions of injury have also been expanded to include a psychological component.

While all injury prevention efforts, in theory, aim to reduce the likelihood or incidence of people getting hurt, in practice, a sharp distinction based on intent has defined and divided injury prevention efforts. Practitioners categorize injuries as either *unintentional*, injuries not caused by a person’s intent to harm, or *intentional*, also commonly referred to as violence, which can be broadly defined as “the use of physical force with the intent to inflict injury or death upon oneself or another” (The National Committee for Injury Prevention and Control, 1989). Such distinctions can be useful in advancing prevention efforts (i.e., better understanding of the causes of different types of injuries is essential to their prevention).

This differentiation by intent is not always beneficial, however, and at times may even impede injury prevention efforts. Intentional and unintentional injuries are frequently caused by the same mechanisms of injury, and practitioners from each sub-field often deal with injuries commonly associated with the other sub-field. For example, traffic crashes could result from suicide attempts, and firearm injuries could result from a child’s mishandling of a gun. While distinguishing between intent can be valuable, the distinction has become so great that the two prevention sub-fields now operate within very different paradigms and frequently fail to take advantage of their commonalities.

2.2. Implications of the differing paradigms

A major disadvantage of the distinction between injury types is the division of already limited injury prevention resources between intentional and unintentional injury prevention efforts. Unintentional and intentional injury account for more years of productive life lost than heart

disease, stroke, and cancer combined, and yet the federal research investment in injury is approximately one-third the investment in heart disease and stroke, and less than 15% the investment in cancer. The comparatively low amount of funding — \$379.7 million for injury compared to \$2,570.6 million for cancer, for example — is divided between unintentional injury, homicide, and suicide (Bonnie, Fulco, & Liverman, 1999). There is also limited state investment in injury prevention; most states are unable to secure funds specifically for injury prevention, receiving funds instead for ‘family and community health’ or ‘preventive health services’ that are difficult to earmark for injury prevention. Injury prevention funding is more often garnered for very specific efforts, such as bicycle helmet programs or firearm injury prevention, resulting in competition within and between injury prevention programs for a comparatively small pool of funds (Bonnie et al., 1999).

Another effect of the distinction relates to the particular focus, or orientation, of intervention applied within each sub-field. Intentional injury prevention initiatives tend to focus on people and their behavioral choices. Unintentional injury prevention initiatives tend to focus on the relationship between people and objects.

This difference leads practitioners to highlight different underlying contributors to injury. Intentional injury prevention practitioners tend to examine factors such as race, gender, sexual orientation, economic disparity, and geographic location, all of which influence behavior. Unintentional injury prevention practitioners tend to examine factors relating to equipment, design, and structure, all of which influence how an object or environment is used by people. Intentional injury issues and strategies may even be characterized as emotional, people-focused, and politically charged (e.g., school shootings and gun control), while unintentional injury issues and strategies may be perceived to be more neutral, design-focused, and non-controversial (e.g., playground injuries and safe play equipment).

The distinction between the *environmental* orientation of unintentional injury prevention and the *behavior* orientation of intentional injury prevention is not as extreme as it first seems. Both sub-fields have employed and benefited from both types of orientation. For example, a crucial element of the last two decades’ success in reducing unintentional injuries via traffic safety initiatives has been regulations that hold drivers responsible for their actions and behavior choices (e.g., legislation relating to driving under the influence). Similarly, intentional injury prevention practitioners have recognized the benefits of an environmental orientation rather than a primarily behavioral orientation. For example, violence prevention practitioners are increasingly examining the effects of community design and physical environment on incidence of community violence, citing well-lit streets, safe places to play, and well-maintained facilities as violence deterrents.

While each type of intervention has contributed to injury prevention successes, comprehensively addressing the causes of intentional and unintentional injury requires recognizing that *both* behavioral factors and object or physical environment factors influence individual actions and choices. Further, behavior and objects within an environment are interrelated and can strongly influence one another; to address one and not the other results in a less effective approach. Examples of this include cars with automatic seatbelts or seatbelt reminders that encourage individuals to consistently buckle up (object design shaping behavior), or the desire to be fashionable influencing the design of bicycle and motorcycle helmets and protective clothing (behavior shaping object design). By using both approaches, injury prevention practitioners not only recognize the many disparate factors that contribute to all forms of injury, but can achieve broader success by implementing interventions that address these different contributors and promote overall safety.

3. Intentional and unintentional injury research

This section examines how data and research methods can be used to identify how the two sub-fields overlap and where approaches may need to differ. While differences exist between the sub-fields when specific data related to demographics, incidence, and severity of injury are compared, data sources and collection approaches tend to be similar for both sub-fields.

3.1. Demographics

In the United States, the demographics of intentional and unintentional injury are quite similar. Both types of injuries rank high among the leading causes of death for all Americans, regardless of race, income, age, or gender. Some groups are affected by both unintentional and intentional injury at higher rates, including young people (ages 1–34), males, and ethnic minorities (Anderson, 2001; National Center for Injury Prevention and Control, 2001). Minimizing the risk and incidence of intentional and unintentional injury for these groups is a significant component of prevention efforts in both sub-fields.

Injury is often cyclical in nature, and both intentional and unintentional injuries follow morbidity cycles and cascades. Morbidity cycles occur when an injury causes another condition (e.g., post-traumatic stress disorder [PTSD], arthritis, or a fall while using a crutch). Morbidity cascades occur when serious or fatal injury results in the deaths or ill health of the injury victim's friends and family (e.g., suicide clusters, severe depression, or substance abuse). The common patterns of injury, both in terms of groups that are most at risk and injury cycles and cascades, provide a clear example of where prevention efforts and interventions may overlap and be coordinated for greater impact.

3.2. Classes

Injuries are sometimes categorized into classes: motor vehicle, home, public/community, and work. While the data in this paper do not distinguish by injury class, both intentional and unintentional injury are represented in each injury class except the motor-vehicle class, which overwhelmingly consists of unintentional injuries. A range of unintentional injuries, suicide, homicide, and assault contribute to injury in the remaining classes. Intentional injury plays a significant role even within the occupational injury class, which is often associated with unintentional injury; occupational homicide, for example, has been the second leading cause of occupational injury death since 1980 (Bonnie et al., 1999). All of these injury classes are affected by certain risk factors, such as substance abuse, economic disparity, and product design, which is discussed in more detail in the risk and resiliency factors of this paper.

3.3. Incidence and severity

While the incidence of both intentional and unintentional injury is unnecessarily high, based on reported data, unintentional injuries occur more frequently than intentional injuries. In 1996 there were over 55 million reported cases of unintentional injuries, while the number of reported intentional injuries was approximately 3 million (when rape is included as a category of intentional injury, the total number of intentional injuries increases to 4.3 million). Unintentional injuries resulted in nearly 1.8 million hospital admissions, while intentional injuries resulted in 224,000 hospital admissions, almost evenly split between self-inflicted injuries and assaults.

This apparent difference in incidence narrows when looking at severe injuries, since the most severe type of injury (injury fatality) occurs relatively infrequently. In 1996, unintentional injuries led to 94,000 fatalities, and intentional injuries led to 51,000 fatalities (31,000 suicides and 20,000 homicides), a much less significant difference when compared to total reported injuries and hospital admissions. The relationship between severity and incidence is an inverse one, as the most frequently occurring injuries are not the most severe. For example, as indicated in Table 1, being “struck by/against” an object accounts for a high percentage of medically treated intentional injuries, but a low percentage of intentional injury fatalities. A pyramid provides a good depiction of this relationship. The base of the pyramid is wide due to the large number of events that do not result in physical injury and are of minor severity in terms of physical impairment (e.g., altercations without injury, suicide ideation, and non-fatal crashes). Injury fatalities are at the top of the pyramid in both unintentional and intentional injuries because they are the most severe as well as rare events (The National Committee for Injury Prevention and Control, 1989). In addition, the intentional injury pyramid is steeper: when an intentional injury occurs, the chance that it will

Table 1
Percent of unintentional and intentional injury victims by cause, all ages, United States, 1996

	Percent of fatal injuries		Percent of hospital admitted injuries		Percent of all medically treated injuries	
	Unintentional	Intentional	Unintentional	Intentional	Unintentional	Intentional
Burn/Anoxia	5%	1%	2%	1%	3%	0%
Cut/Pierce	0%	6%	3%	12%	11%	9%
Drowning/Submersion	5%	1%	1%	0%	0%	0%
Falls	18%	1%	54%	0%	27%	1%
Firearms	2%	63%	1%	13%	0%	3%
Motor Vehicle Occupant	43%	0%	23%	0%	13%	0%
Poisoning	14%	10%	7%	47%	6%	8%
Struck By/Against	1%	1%	4%	20%	14%	41%
Suffocation/Choking	5%	12%	2%	1%	0%	1%
Other Known Cause	2%	3%	4%	3%	2%	5%
Unknown	5%	3%	1%	3%	23%	32%
Total	100%	100%	100%	100%	100%	100%
Total	94,000	51,000	1,800,000	224,000	55,000,000	3,000,000

Source: Original computations using the methods and data sets described in Miller et al. (2000).

result in a hospital admission or death is higher than the chance of an unintentional injury resulting in a hospital admission or death (Miller, Romano, & Spicer, 2000).

The incidence of unintentional and intentional injury varies greatly by age. Both unintentional and intentional injury are leading causes of death for people ages 1–44, with unintentional injury as the leading cause of death for those aged 1–34, and intentional injury (suicide and homicide) as the second leading cause of death for those aged 10–34 (National Center for Injury Prevention and Control, 2000). Children and youth aged 0–19 years account for approximately 40% of all unintentional injuries, 14% of unintentional injury fatalities, and over 16% of unintentional injury hospitalizations (Miller et al., 2000). The 15–44 year old age group is hit hardest by intentional injury, accounting for over 60% of all intentional injuries (Hoyert, Arias, Smith, Murphy, & Kochanek, 2001). In addition, the incidence and severity of specific types of intentional and unintentional injury varies by age of injury victim. For example, unintentional falls are the ninth leading cause of injury deaths for the 1–4 age group, but the leading cause for the 65+ age group. Firearm homicide is the second leading cause of injury deaths for the 15–24 age group, but not among the 10 leading causes of death for the 65+ age group (National Center for Injury Prevention and Control, 2000).

3.4. Mechanisms and body regions

Unintentional and intentional injuries are analyzed using the same categories of injury mechanisms. These causes occur at different frequencies within and between both injury types, as seen in Table 1, and are significantly different according to chi-square tests. When examining unintentional injuries, for example, motor-vehicle crashes and falls together account for the majority of fatalities and hospital admissions. When examining intentional injuries, firearm injuries account for the vast majority of fatalities, while poisoning and being struck by/against together ac-

count for the majority of hospital admissions. Still, key points also emerge by analyzing both types of injury mechanisms together, for example, that being struck by/against accounts for few fatalities, but a significant portion of hospital admissions and treatment within both injury types.

Intentional injuries have 3.6 times as high a mortality rate as unintentional injuries. The mortality rates of various mechanisms of intentional and unintentional injury do not necessarily determine the frequency of corresponding injury fatalities. For example, as shown in Table 2, intentional drowning/submersion has a very high mortality rate, even though drowning/submersion accounts for only 1% of intentional injury fatalities. Conversely, unintentional injury due to motor-vehicle crashes has a relatively low mortality rate, while motor-vehicle injury accounts for a high percentage of unintentional injury fatalities.

Unintentional and intentional injuries differ in the body regions most severely affected by each. As indicated in Table 3, nearly half of unintentional injury hospital admis-

Table 2
Mechanism mortality rate per 1,000 hospital admitted cases in unintentional and intentional injury, all ages, United States, 1996

Mechanism	Unintentional	Intentional
Burn/Anoxia	107	177
Cut/Pierce	2	108
Drowning/Submersion	337	879
Falls	18	713
Firearms	96	531
Motor Vehicle Occupant	94	82
Poisoning	98	47
Struck By/Against	14	7
Suffocation/Choking	158	763
Other Known Cause	39	186
Unknown	254	153
Total	50	186

Source: Original computations using the methods and data sets described in Miller et al. (2000).

Table 3
Percentage of hospital injury admissions by body region of the most severe injury, 1996

Body region	Unintentional	Assault	Self-inflicted
Brain/Skull	10%	17%	12%
Face	4%	22%	8%
Neck	0%	2%	3%
Thorax	7%	14%	4%
Abdomen	3%	16%	22%
Spine/Back	13%	4%	3%
Upper Extremity	14%	14%	22%
Lower Extremity	31%	11%	21%
Hip	18%	0%	0%
Other Trunk	<1%	<1%	0%
Other Head/Neck	0%	0%	5%

Source: Original computations using the methods and data sets described in Miller et al. (2000).

sions result from injury to the lower extremities or hips, while nearly 40% of hospitalized assaults result from injury to the brain, skull, or face. Regardless of body region affected, the threat to life of the most severe hospitalized injury is comparable for unintentional and intentional injuries, as measured by the Abbreviated Injury Scale (Association for the Advancement of Automotive Medicine, 1990).

3.5. Data sources and collection

While significant similarities and differences exist when comparing intentional and unintentional injury data, methods of data collection and analysis are similar and vital to prevention efforts in both areas. Currently, injury data collection often occurs independently within each sub-field, even though injury prevention surveillance systems generally collect data on all injuries, focusing on mechanisms of injury as opposed to intent. Data reporting is also often specific to each injury type. For example, the National Safety Council's (2002) *Injury Facts* compiles detailed information on the causes of injury-related fatalities, but presents on unintentional injury alone, despite the fact that firearms and homicide contribute significantly to fatality within most classes of injury (Bonnie et al., 1999).

Data for both sub-fields come from three primary sources: medical records, law enforcement records, and surveys. Medical sources include emergency room visits, hospital stays, and insurance data on medical costs. Law enforcement sources include 911 calls, arrests, and police crash reports. Surveys are used to probe injury causes and longer-term consequences of injury and are also used when record systems are lacking. This overlap both in terms of data sources and the type of data collected suggests that both sub-fields would benefit from coordinating data collection and presentation. Combining data and research findings could allow practitioners and researchers to more easily analyze injury data as a whole, would result in less duplication of effort, and could ease the data reporting demand placed on medical and law enforcement services.

4. Risk and resiliency factors

While each sub-field has risk and resiliency factors specific to it, intentional and unintentional injuries share many common risk and resiliency factors. Identifying the underlying contributors shared by both types of injury highlights areas in which work can be done that would simultaneously reduce both intentional and unintentional injury.

4.1. Risk factors

4.1.1. Alcohol and substance abuse

One of the clearest intersections between intentional and unintentional injury is the degree to which alcohol and other drugs act as risk factors. In the United States, more than half of all homicides involve drugs or alcohol, about half of all fatal crashes involve alcohol, and 40% of deaths due to residential fires involve alcohol (Smith, Branas, & Miller, 1999). Alcohol is also involved in half of all drownings and suicides in the 15–24 year old age group. Reducing and preventing drug abuse, specifically the misuse of alcohol, would have substantial impact on both intentional and unintentional injury rates.

4.1.2. Economic disparity

Economic disparity is a risk factor for both intentional and unintentional injuries. People with lower socioeconomic status are more likely to be victims of or witnesses to injuries than people with more financial resources (Bernard, 1990; Blau & Blau, 1982; Hawkins, 1993). This is sometimes due to having less access to the resources that contribute to safety. For example, although low-income parents who own child safety seats consistently use them, toddlers from low-income families are much less likely than other children to ride in these seats because their parents are generally less able to purchase them. In such situations, financial constraints play a direct role in securing safety. Both unintentional and intentional injury prevention efforts would be enhanced through initiatives that focused on improving low-income individuals and families' socioeconomic status and access to services and products that enhance safety.

4.1.3. Discrimination and bias

Discrimination and bias can negatively influence communities and individuals in ways that may increase their risk of intentional and unintentional injury. Hate and bias can directly lead to violence (e.g., hate-motivated assaults on individuals), and discriminatory policies and practices can result in unsafe environments or less protection for certain groups of people (e.g., the lack of consistent laws against workplace discrimination based on sexual orientation). In addition, discrimination and bias may lead to a number of behavioral and environmental factors that contribute to injury, including poor mental health, alcohol and substance abuse, and community deterioration. As certain ethnic minorities are at higher risk for intentional and unintentional

injury (including African Americans, Hispanics, and Native Americans; National Center for Injury Prevention and Control, 2001) it is also important to address how issues of bias related to race and ethnicity are framed within injury prevention research and practice.

4.1.4. Built environment

The physical environment can be another risk factor contributing to both intentional and unintentional injury. Closely linked to issues of economics and discrimination, community deterioration and hazardous neighborhood conditions tend to be concentrated in low-income communities. As poverty rates are higher for Hispanics and blacks than they are for whites (Dalaker, 2001; Keppel, Percy, & Wagener, 2002) community deterioration can disproportionately affect these groups. This may lead to greater incidence of intentional and unintentional injury due to substandard housing conditions, increased exposure to toxins and physical hazards, lack of safe recreational facilities, and poorly lit and maintained public roads and buildings. Physical environments that are well designed and maintained may reduce the incidence of intentional and unintentional injury within a community and promote an increased sense of safety among community residents.

4.1.5. Product design

Badly designed products can dramatically increase the risk of injury and cause widespread harm to all elements of the population. Consumer products are associated with approximately 21,400 deaths and 29 million injuries annually (Bonnie et al., 1999). Examples of poor product design include cars without airbags, unsafe playground equipment, and firearms without built-in safety mechanisms. Conversely, many products provide safety benefits that enhance injury prevention efforts, such as seatbelts, bicycle helmets, and bulletproof vests. Reducing product-related deaths and injuries and promoting the use of safety-enhancing products would substantially decrease the overall incidence of injury annually.

4.1.6. Risk taking behavior

Risk taking behavior and the role of peer pressure are also commonly involved in both intentional and unintentional injury. For example, in the event of an argument, peer pressure can quickly escalate the situation and lead to a violent altercation. Similarly, peer pressure can lead to dangerous driving or driving while inebriated.

4.1.7. Mental health

Diagnosable mental disorders such as depression play a major role in adult suicide (National Institute of Mental Health, 1999) and in children can contribute to violent behaviors later in life (National Institute of Mental Health, 2000). Depression can also contribute to risk taking behavior, especially in adolescents, which can then lead to a higher risk of unintentional injury. Recognizing the signs of

mental disorders early in children and adults and ensuring adequate support and treatment could help to reduce incidences of self-inflicted, violent, and unintentional injury.

4.1.8. Timing

Another risk factor for both intentional and unintentional injuries is timing; a large share of services for injuries occurs during leisure time. For example, several studies have shown that young drivers are more likely to be involved in crashes when driving at night and on weekends (Simons-Morton, Hartos, & Leaf, 2002).

4.1.9. Media

Media can play a role in promoting norms, particularly risk taking behavioral norms. Mass media portrayals often glamorize risk and depict violent injuries as normative and unintentional injuries as accidents. For example, the depiction of breathability and visibility in burning buildings or the lack of resultant injury from a high-speed car chase is dangerously misleading. In addition, while the relationship between real life violence and television and movie violence has been documented, powerful entertainment industry lobbyists have impeded regulation of the industry. An examination of the way the media portray risk and fault is crucial to the injury prevention field as a whole.

4.2. Resiliency factors

4.2.1. Financial capital

Families and communities with adequate financial resources are often better able to promote and sustain the well being of children and families, even when they face serious injury risks. Financial capital can help reduce the risk of injury by ensuring basic needs (such as food, shelter, and health care) and by providing enhanced opportunities for education, physical activity, and other stimuli that decrease the likelihood of high-risk behaviors.

4.2.2. Community facilities

Parks, recreation centers, and community centers can provide places where adults and children can engage in activities with less risk of injury. These spaces offer opportunities for adults to safely exercise and relax and for children to safely play. Having these resources can be especially important for youth, reducing their risk of injury through play in unsafe places and even protecting against alcohol and substance use. Many studies have shown that the healthiest American communities — places people have identified as desirable for raising children, with good schools, responsive local governments, and steady economies — typically have large and stable public institutions at their core (Nakano & Williamson, 1994).

4.2.3. Community partnership and support

People and their social networks are a community's "social capital," often its greatest resource. Strong social

capital has been shown to correspond with significant increases in physical and mental health, academic achievement, and local economic development, as well as lower rates of homicide, suicide, and alcohol and drug abuse (Buka, 1999; Wandersman & Nation, 1998). Participation in cooperative networks fosters mutual trust and increases community members' willingness to intervene in the supervision of children, participate in community-building activities, and maintain public order. Such networks also produce and enforce social sanctions and controls to diminish negative behavior and reduce the incidence of crime, juvenile delinquency, and access to firearms within communities (Putnam, 1995; Veenstra, 2001).

4.2.4. Parenting/role models

Attachment to parents, parental supervision, and consistency of discipline are the most important family protective factors in preventing delinquency in youth (Huizinga, Loeber, & Thornberry, 1995; Robins, West, & Herjanc, 1975). Preventing youth delinquency can help prevent high risk behavior and serious injury victimization (Loeber, Kalb, & Huizinga, 2001).

4.2.5. Access to decision makers

Having access to decision makers can provide families and individuals with the opportunity to voice their opinions and concerns about unsafe elements of their neighborhood or concerns about larger policy decisions such as workplace safety legislation. Examples of access include community partnerships with the local police department, organized meetings attended by local officials, or supporting local leaders who represent community interests in larger political forums. Access to decision makers can empower people to take action for the well being of their community, and can encourage them to think proactively about how to make the places they live and work risk- and injury-free.

5. Strategies for prevention

While differences between intentional and unintentional injuries are important to distinguish, there are many similarities that point to an opportunity for injury prevention practitioners to share data, techniques, and theories. Currently, many advocates and practitioners within each sub-field often feel uncomfortable and ill equipped to address issues within the other sub-field, and opportunities for communication and partnerships can be missed. The effectiveness of practitioners' work may be reduced because common risk factors, such as alcohol, are not always addressed jointly or, as in the case of poverty, are prioritized much more in one sub-field than the other. Collaboration between practitioners would strengthen existing injury prevention efforts; in addition, collaboration between injury prevention and other disciplines could allow for further sharing of tools, strategies, and resources. Perhaps the

clearest lessons are the need for injury prevention practitioners to work collaboratively, both within the injury prevention field and with other disciplines, and the importance of a multifaceted approach.

5.1. Partners for collaboration

When considering potential collaborators in both unintentional and intentional injury prevention initiatives, many of the same groups come to mind: public health practitioners such as epidemiologists, injury specialists, and health care providers; national and local justice departments; educational groups and school administrators; community-based agencies; and local police. While the work of specialized sub-groups, such as conflict resolution educators or seatbelt advocates, is often more relevant to either unintentional or intentional injury prevention, these groups generally all play a significant role in both types of injury prevention.

Collaborative work between these various groups would allow intentional and unintentional injury prevention practitioners to accomplish a broad range of goals that reach beyond the capacity of any single individual, group, or organization. An important component of prevention efforts, coalition building can allow organizations working in injury prevention to share resources, reduce duplication of efforts, coordinate services, and attain greater credibility on an issue. Forming coalitions both between unintentional and intentional injury groups and between injury groups and other disciplines is key to achieving injury prevention outcomes (Cohen, Baer, & Satterwhite, 2000).

Identifying innovative partners is important to both sub-fields, and partners who have contributed to one type of injury prevention also may make valuable contributions to the other. For instance, the involvement of businesses in both intentional and unintentional injury prevention efforts has raised awareness of injury prevention issues and has had a significant impact on injury prevention outcomes. For example, Johnson & Johnson founded and continues to support the National SAFE KIDS Campaign, which focuses on unintentional injury prevention among youth, and the Corporate Alliance to End Partner Violence has brought domestic violence awareness into workplaces and the public arena. Other potential partners include chambers of commerce, local stores, unions, media, youth, city planners, transportation engineers, and manufacturers.

Collaborative partners can also be individuals. For example, survivors have a great deal to contribute to both sub-fields of injury prevention. They can become key advocates of an injury prevention effort and are frequently the driving forces of an injury prevention movement. Survivors also play a vital role in keeping a group focused on its purpose and away from turf issues or petty struggles. Anecdotal stories from survivors are very powerful and can be used to push prevention measures or explain the details of an injury event. Candy Lightner is arguably the most

PHASES	EPIDEMIOLOGIC DIMENSION			
	Human Factor (Host)	Agent or Vehicle	Physical Environment	Sociocultural Environment
Pre-event				
Event				
Post-event				

Fig. 1. The haddon matrix.

well-known example of a survivor who led an influential injury prevention effort: after her daughter was killed in a drunk driving crash, Lightner founded Mothers against Drunk Driving (MADD), which has played a seminal role in changing legislation, awareness, and norms related to drunk driving.

Bystanders are also potential partners. In the groundbreaking curriculum *Aggressors, Victims, and Bystanders*, author Ronald Slaby discusses bystanders' roles in intentional injury prevention and suggests methods of helping bystanders better understand how they can reduce violence (Slaby, Wilson-Brewer, & Dash, 1994). These ideas can also be used in unintentional injury prevention, since bystanders can discourage risk taking in a variety of environments, such as at the swimming pool or while driving.

In addition, as successful injury prevention often happens locally, community-level partnerships are critical. When collaborating with community members on injury prevention issues, it is important to remember that overall safety —

reducing the likelihood and incidence of *people being hurt* — is the ultimate goal, and that the classification of injuries as intentional or unintentional may not be significant. Collaborative efforts will benefit more from a comprehensive understanding of injury and injury prevention as a whole. Practitioners and researchers who want to collaborate with communities ideally should have training and experience in both intentional and unintentional injury so that they are better able to assist communities with the prevention of a diverse range of injuries.

5.2. Tools and methodologies

Practitioners in both intentional and unintentional injury prevention must contend with those who think that prevention is only education. Regardless of the type of injury being addressed, primary prevention always meets with a great deal of resistance. In different ways, unintentional and intentional injury prevention successes have illustrated the importance

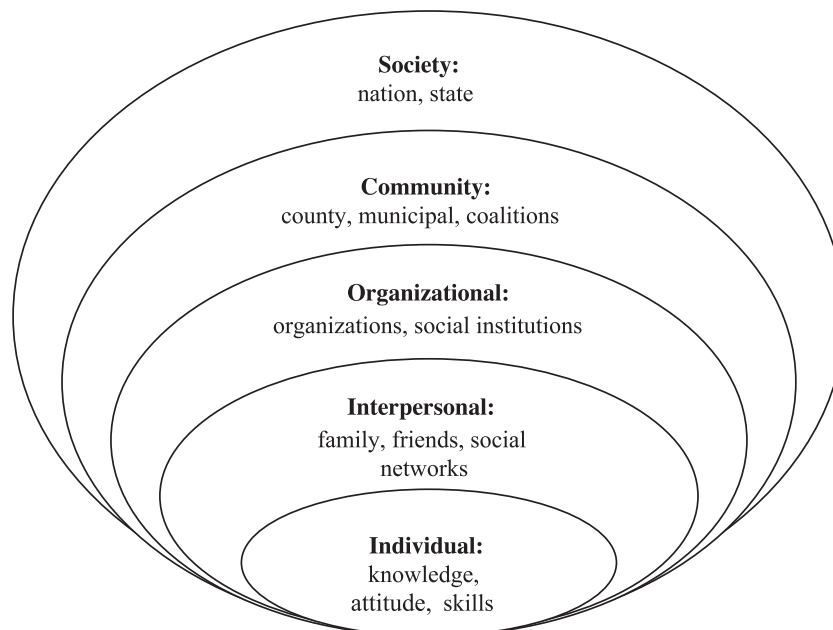


Fig. 2. Socioecological model.

Level of Spectrum	Definition of Level
1. Strengthening Individual Knowledge and Skills	Enhancing an individual's capacity to prevent injury or illness and promote safety
2. Promoting Community Education	Reaching groups of people with information and resources to promote health and safety
3. Educating Providers	Informing providers who will transmit skills and knowledge to others
4. Fostering Coalitions and Networks	Bringing together groups and individuals for broader goals and greater impact
5. Changing Organizational Practices	Adopting regulations and shaping norms to improve health and safety
6. Influencing Policy and Legislation	Developing strategies to change laws and policies to influence outcomes

Fig. 3. Spectrum of prevention.

of multifaceted approaches that impact the agent or environment of injury. The traditional divergence in approach between the two sub-fields can be used to enhance each sub-field's knowledge of prevention strategies and tools.

Injury prevention practitioners are commonly faced with the difficulty of implementing a comprehensive strategy, and tools and frameworks have emerged from each sub-field that could be applied within the other. For example, the Haddon matrix (Fig. 1), which was developed with a focus on unintentional injury (traffic safety) and is useful in understanding the development of the phases of an injury event, is already being applied to multiple violence prevention areas. The socioecological model (McLeroy, Bibeau, Steckler, & Glanz, 1988) (Fig. 2) initially had more prominence in violence prevention, and is useful in understanding the broader factors that impact individual behavior. It can be a useful framework for injury prevention efforts, as various networks and institutions, including schools, communities, and legislative bodies, play a large role in creating safe environments for individuals. The Spectrum of Prevention (Fig. 3) was developed as a tool for general prevention strategy and is useful in developing both intentional and unintentional injury prevention activities as part of a comprehensive prevention approach. Levels 1–4 of the Spectrum emphasize building skills and raising awareness and support among individuals, communities, and professionals, while levels 5–6 emphasize industry and government changes that influence environment, policy, and design (Cohen & Swift, 1999).

Specific strategies that are more common either in intentional or unintentional injury prevention can also be applied to the other sub-field. As previously discussed, there are advantages to applying behavior-based and environment-based interventions to both sub-fields. Incorporating risk and resiliency factors into intervention design is more common in intentional injury prevention efforts but as shown, has significant relevance for unintentional injury prevention. In addition, certain strategies are common within both types of injury prevention and have been very

effective within each, including media and marketing campaigns and policy and legislative change.

6. Conclusions/next steps

Injury prevention is a complex problem that cannot be solved with simple solutions. Although the fields of unintentional and intentional injury prevention benefit from in-depth specialization, addressing injury as a whole would foster healthier, safer communities that are more resilient and less susceptible to all types of injury.

This paper offers some strategies and suggestions on how unintentional and intentional injury prevention efforts can overlap; continued exploration and an ongoing dialogue between intentional and unintentional injury prevention practitioners and leaders is required to further the process. In particular, further analyses need to be performed to assess the specific costs and benefits related to merging the two sub-fields. A recent example of a coordinated unintentional and intentional injury prevention approach is the SafeUSA partnership, a broad collaborative of government, nonprofit, and commercial agencies, whose goals include developing a national violence and injury prevention strategy. An assessment of this initiative and similar approaches would be beneficial to understanding the advantages and disadvantages associated with coordinated injury prevention efforts.

As this paper has shown, there are several promising areas for integration of the two sub-fields, including research, intervention, and prevention strategies. Yet another area that could benefit from integration of the two sub-fields is training. Cross-fertilization and joint training of practitioners and advocates is critical to developing the skills and expertise within each type of injury prevention as well as furthering a shared understanding of overall injury prevention. For example, intentional and unintentional injury prevention practitioners can participate together in training or train each other on issues such as data collection or

general prevention methodology. Such training would operate both as a skill building opportunity as well as a chance for intentional and unintentional injury prevention practitioners to network with one another.

It is also critical for administrators and policy makers to address the problem of categorical funding sources that require applicants to apply for funding that will only support one sub-field. Practitioners could ensure that funders see the added benefit of comprehensive injury approaches, and funders could reduce the distinction between the sub-fields by funding projects and programs that address multiple types of injury.

The advantages of coordinating intentional and unintentional injury prevention initiatives are many. A coordinated approach can further injury prevention across other disciplines, issues, and organizations and significantly impact the underlying societal problems that contribute to both types of injury. In addition, injury prevention practitioners working together can achieve greater outcomes through increased credibility, deliver a unified injury prevention message, and build momentum for and advance the field of injury prevention overall.

Acknowledgements

Support for this paper comes from Children's Safety Network contracts issued by the Maternal and Child Health Bureau, Health Resources and Services Administration, U.S. Department of Health and Human Services. Opinions expressed are the authors' alone and may not reflect the views of the funding agency.

Special thanks to the staff of Children's Safety Network agencies and to Stephanie Bryn for their participation in a training on intentional and unintentional injury, from which many of the concepts for this paper emerged.

References

- Anderson, R. N. (2001). Deaths: Leading causes for 1999. [Electronic version] *National Vital Statistics Reports*, 49(11). Hyattsville, MD: National Center for Health Statistics.
- Association for the Advancement of Automotive Medicine. (1990). *The Abbreviated Injury Scale, 1990 revision*. Des Plaines, IL: Author.
- Bernard, T. J. (1990). Angry aggression among the "truly disadvantaged." *Criminology*, 8(1), 73–96.
- Blau, J. R., & Blau, P. M. (1982). The cost of inequality: Metropolitan structure and violent crime. *American Sociological Review*, 47, 114–129.
- Bonnie, R. J., Fulco C.E., Liverman C. T. (Eds.) (1999). *Reducing the burden of injury: Advancing prevention and treatment*. Washington, DC: National Academy Press.
- Buka, S. (1999). Results from the project on human development in Chicago neighborhoods. In *Conference Syllabus: Building on Our Success: 13th Annual California Conference on Childhood Injury Control and 6th Annual State and Territorial Injury Prevention Directors' Association Conference, October 25–27, 1999* (pp. 167–172) San Diego, CA.
- Cohen, L., Baer, N., & Satterwhite, P. (2000). Developing effective coalitions: an eight step guide. In M. E. Wurzbach (Ed.), *Community Health Education and Promotion: A Guide to Program Design and Evaluation* (2nd ed.) (pp. 144–161). Gaithersburg, MD: Aspen Publishers.
- Cohen, L., & Swift, S. (1999). The spectrum of prevention: Developing a comprehensive approach to injury prevention. *Injury Prevention*, 5(3), 203–207.
- Dalaker, J. (2001). Poverty in the United States: 2000. *Current Population Reports, Series P60–214*. Washington, DC: U.S. Census Bureau.
- Hawkins, D. F. (1993). Inequality, culture, and interpersonal violence. *Health Affairs*, 12(4), 80–95.
- Hoyert, D. L., Arias, E., Smith, B. L., Murphy, S. L., & Kochanek, K. D. (2001). Deaths: Final data for 1999. *National Vital Statistics Reports*, 49(8). Hyattsville, MD: National Center for Health Statistics.
- Huizinga, D., Loeber, R., & Thornberry, T. P. (1995). *Urban delinquency and substance abuse: Recent findings from the Program of Research on the Causes and Correlates of Delinquency*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency.
- Keppel, K. G., Pearcy, J. N., & Wagener, D. K. (2002). Healthy People 2000: Trends in racial and ethnic-specific rates for the health status indicators: United States, 1990–98. *Healthy People Statistical Notes*, 23. Hyattsville, MD: National Center for Health Statistics.
- Loeber, R., Kalb, L., & Huizinga, D. (2001). *Juvenile delinquency and serious injury victimization*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency.
- McLeroy, K. R., Bibeau, D., Steckler, A., & Glanz, K. (1988). An ecological perspective on health promotion programs. *Health Education Quarterly*, 15, 351–377.
- Miller, T., Romano, E., & Spicer, R. (2000). The cost of unintentional childhood injuries and the value of prevention. [Electronic version] *The Future of Children*, 10(1), 137–163.
- Nakano, D., & Williamson, T. (1994). *Piece by piece: Grassroots building blocks of a transformed economy*. (Retrieved February 6, 2002, from <http://www.ncesa.org/html/piecebyp3.html>).
- National Center for Injury Prevention and Control. (2001). *Injury fact book 2001–2002*. Atlanta, GA: Centers for Disease Control and Prevention.
- National Center for Injury Prevention and Control. (2000). *10 leading causes of injury deaths by age group – 1998*. Atlanta, GA: Centers for Disease Control and Prevention.
- National Institute of Mental Health. (1999). *Depression research at the National Institute of Mental Health fact sheet* (NIH Publication 00-4501). Bethesda, MD: Author.
- National Institute of Mental Health. (2000). *Child and adolescent violence research at the National Institute of Mental Health fact sheet* (NIH Publication 00-4706). Bethesda, MD: Author.
- National Safety Council. (2002). *Injury Facts*. Itasca, IL: Author.
- Putnam, R. (1995). Bowling alone: America's declining social capital. *Journal of Democracy*, 6(1), 65–78.
- Robins, L. N., West, P. A., & Herjanc, B. L. (1975). Arrests and delinquency in two generations: a study of black urban families and their children. *Journal of Child Psychology and Psychiatry*, 16, 125–140.
- Simons-Morton, B. G., Hartos, J. L., & Leaf, W. A. (2002). Promoting parental management of teen driving. *Injury Prevention*, 8(Suppl. II), ii24–ii31.
- Slaby, R. G., Wilson-Brewer, R., & Dash, K. (1994). *Aggressors, victims, and bystanders: Thinking and acting to prevent violence*. Newton, MA: Education Development Center.
- Smith, G. S., Branas, C. C., & Miller, T. R. (1999). Fatal nontraffic injuries involving alcohol: A metaanalysis. *Annals of Emergency Medicine*, 33(6), 659–668.
- The National Committee for Injury Prevention and Control. (1989). *Injury prevention: Meeting the challenge*. New York: Oxford University Press.
- Veenstra, G. (2001). Social capital and health. [Electronic version] *ISUMA*, 2, 72–81.
- Wandersman, A., & Nation, M. (1998). Urban neighborhoods and mental health: Psychological contributions to understanding toxicity, resilience, and interventions. *American Psychologist*, 43(6), 647–656.

Larry Cohen, MSW (Policy Analysis, Group Counseling)

Mr. Cohen is founder and Executive Director of Prevention Institute in Oakland, California. He trains and consults nationally and internationally on topics such as health promotion, strategy and policy development, coalition building, and injury and violence prevention. He has authored many publications related to expanding primary prevention practice and promoting comprehensive strategies to improve public health. Mr. Cohen developed the Spectrum of Prevention, a tool for developing effective prevention strategy, and “Eight Steps to Effective Coalition Building.” He is Senior Advisor on Violence Prevention to the Federal Office of Maternal and Child Health, Health and Human Services through the Children’s Safety Network and previously directed the Center for Injury and Violence Prevention at Education Development Center (EDC). Prior to his work at EDC, he was the Director of Prevention at the Contra Costa County Health Services Department.

Ted R. Miller, Master of City Planning; MS Operations Research; Ph.D. Regional Science (Economics)

Dr. Miller is the Center Director for the Public Services Research Institute at the Pacific Institute for Research and Evaluation in Calverton, Maryland. He has led more than 150 studies, including 25 surveys, dozens of statistical analyses of large databases, and more than 50 economic analyses. His primary emphasis areas include health economics, injury prevention, substance abuse prevention, and in earlier years, housing, economic development, environmental, and public finance analyses. He founded and directs the Children’s Safety Network Economics and Insurance Resource Center, which has worked since 1992 to forge child safety partnerships between insurers and advocates. Dr. Miller is an internationally recognized safety economist with over 100 publications. He is a leading expert on injury and violence incidence, costs, and consequences, as well as substance abuse costs.

Monique A. Sheppard, MS Biostatistics; Ph.D. Health Policy and Management (Public Health - Injury Control)

Dr. Sheppard is an Associate Research Scientist at the Pacific Institute for Research and Evaluation (PIRE) in Calverton, Maryland. She contributes to research projects as an injury epidemiologist. For over two years she has managed the Children’s Safety Network Economics and Insurance Resource Center where she provides technical assistance in data and cost analyses to facilitate efforts to prevent child and adolescent injury and violence. Dr. Sheppard also works extensively with PIRE’s Maternal and Child Health Bureau funded Poison Technical Assistance Center. Prior to her work at PIRE, Dr. Sheppard was the Chief of Staff for the Commissioner of Health for Baltimore City. Previously, she served as the Baltimore City Health Department’s injury prevention and domestic violence program coordinator and as an injury epidemiologist at the Maryland Department of Health.

Emily Gordon, BA (Urban Studies, U.S. History)

Ms. Gordon was a Program Assistant at Prevention Institute, where she worked primarily on nutrition and physical activity promotion and injury and violence prevention. Her research interests include the role that city planning and the built environment can play in prevention work.

Toni Gantz, BS (Speech)

Ms. Gantz is a Program Coordinator at Prevention Institute in Oakland, California. Her project work includes traffic safety, injury and violence prevention, evaluation, and communications and outreach. Her background is in health promotion, education, and youth development. Prior to working at Prevention Institute, Ms. Gantz was a Director at SCORE! Learning Centers.

Rebka Atnafou, MPH

Ms. Atnafou is the Director of The After-School Institute (TASI). She manages the capacity-building component of city and state efforts to increase the quality and quantity of after-school opportunities for young people ages 6 to 18 throughout Baltimore City and Central Maryland. Prior to joining TASI, Mrs. Atnafou was the after school strategist for the Safe and Sound Campaign working on Baltimore’s After School Strategy. She previously worked on national youth violence and HIV/AIDS prevention efforts at the Education Development Center in Newton, Massachusetts.