

# A Survey of ED Injury Prevention Activities

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According to the National Center for Health Statistics of the Centers for Disease Control and Prevention, injuries and poisonings accounted for 35.5% of all ED visits in the United States in 2002.<sup>1</sup> The American College of Emergency Physicians has recognized the important and varied role that emergency departments can play in injury prevention.<sup>2-6</sup> They note that only a small percentage of injury deaths can be prevented with continued improvements in treatment.

Reducing deaths and disability from injury will require pervasive and successful injury prevention efforts in both community and clinical settings. Examples of interventions in the clinical setting include access to and instruction on using safety products, and screening and brief interventions for alcohol problems, intimate partner violence, or child maltreatment.<sup>7</sup> As stated by Cummings<sup>8</sup> and Rutherford,<sup>9</sup> ED clinicians have several potential roles in injury prevention including health promotion, community education, and injury surveillance. Contemporary examples of emergency department-based injury prevention efforts showing positive results are limited but notable. An emergency department-based home safety intervention that used targeted counseling made a positive impact on behavior after discharge.<sup>10</sup> An ED program using opportunistic identification and referral for alcohol misuse was associated with both lower levels of alcohol consumption during the following 6 months and reduced repeat ED visits.<sup>11</sup> ED interventions that combine safety equipment disbursement with education have been found to be effective in improving home safety practices of caregivers of young children<sup>12</sup> and increasing self reports of bicycle helmet use.<sup>13</sup> Parents of children who had mental health-related ED visits took action to limit access

to potentially lethal means of suicide (firearms, medications, and alcohol) when education on how to do so was provided.<sup>14</sup> Implementation of an emergency department-based domestic violence protocol resulted in a moderate increase in confirmed cases of abuse and improved the management offered to identified victims.<sup>15</sup>

Although the importance of injury as a public health problem is well recognized and the need for injury prevention is accepted by many leaders and practitioners in emergency medicine,<sup>3,5,7,16,17</sup> the actual extent and nature of ED involvement in injury prevention has not been documented. A literature search using common publication databases revealed no published population-based or geographic-based survey that has attempted to comprehensively measure ED involvement in injury prevention activities. Thus, little is known about the amount, type, and content of ED-based injury prevention activities.

The objectives of this study were to identify and describe injury prevention programs used in emergency departments in one state, to describe facilitators to implementation of these programs, and to suggest ways for overcoming barriers.

## Methods

### STUDY DESIGN

A cross-sectional, online survey of Pennsylvania's emergency departments was used to assess ED injury prevention activities, attitudes, and opinions about enhancing ED injury prevention activities. The University of Pittsburgh Institutional Review Board approved the protocol for the study as exempt.

### SAMPLE

A letter of introduction with a direct Web link to the survey was mailed or E-mailed to the medical director of each of 193 Pennsylvania emergency departments. The letter included background information on the survey and incentives available for respondents (including a drawing for a \$1000 gift certificate). The survey was active from March 2006 through June 2006, and all completed surveys were downloaded into an electronic database. Multiple E-mail and mail reminders were sent, and each nonresponding emergency department was called twice by phone.

### MEASUREMENT

The survey instrument was based on a similar national survey of trauma centers conducted under the auspices of the Trauma Information and Exchange Program (TIEP) of the American Trauma Society.<sup>18</sup> An advisory council of national and state injury prevention and emergency medicine researchers and practitioners assisted with revisions and piloting of the survey.

The final survey consisted of 4 sections. The first part collected demographic information about the respondent and the institution. The second part of the survey collected information about the breadth of injury prevention activities offered by the emergency department. The third section of the survey probed more deeply into 1 to 3 specific ED injury prevention activities identified as most important by the respondent. The fourth section of the survey addressed respondent attitudes and opinions about enhancing ED injury prevention capabilities. A copy of the entire survey can be downloaded at <http://www.circl.pitt.edu/mysurveys/EDSurvey.pdf>.

### DATA ANALYSIS PROCEDURES

Completed survey data were transferred into SPSS 14.0.<sup>19</sup> Responding and nonresponding emergency departments were compared using  $\chi^2$  and *t* test statistics for 6 hospital characteristics: bed count, annual inpatient discharges, annual outpatient discharges, facility type, ED level (limited, basic, general or comprehensive), and trauma center status (derived from the annual Hospital Questionnaire of the Pennsylvania Department of Health).<sup>20</sup> Frequencies (counts and percentages) were calculated for all variables. Qualitative comments from throughout the survey were extracted by one of the authors (MG) and organized into major themes. Themes are presented that capture responses not well represented in the quantitative data; comments from each theme were selected that express respondents' ideas particularly well.

### Results

Eight of the 193 emergency departments had closed, leaving 185 functioning emergency departments in Pennsylvania at the time of the survey. Of these, responses were eventually received from 68 emergency departments, for a

TABLE 1  
**Institutional characteristics of responding and nonresponding emergency departments**

Hospital characteristics	Respondents N = 68	Nonrespondents N = 117	P value
Bed count*	197	227	.334 <sup>‡</sup>
Inpatient discharges*	2277	2709	.262 <sup>‡</sup>
Outpatient discharges*	2025	2405	.209 <sup>‡</sup>
General acute care facility <sup>†</sup>	58	96	.783 <sup>§</sup>
Comprehensive emergency department <sup>†</sup>	17	20	.254 <sup>§</sup>
Trauma center <sup>†</sup>	13	29	.375 <sup>§</sup>

\*Measured continuously—means.

<sup>†</sup>Measured categorically—yes/no.

<sup>‡</sup>Calculated using *t* tests.

<sup>§</sup>Calculated using  $\chi^2$ .

response rate of 37%. Analysis of hospital characteristics showed no statistically significant difference between respondents and nonrespondents (Table 1).

About half (49%) of the respondents were the ED medical director and 45% were the nurse manager. Respondents averaged 17 years of experience in emergency medicine. More than half (57%) had no formal injury prevention education and only 16% had received any professional injury prevention education beyond occasional lectures. Emergency departments reported that most hospital injury prevention activities (88%) were not initiated in the emergency department; community service offices and trauma centers were the hospital departments most likely to coordinate these activities (44% and 25%, respectively).

#### ED INJURY PREVENTION ACTIVITIES

Most emergency departments (90%) reported conducting at least one injury prevention activity. Most commonly, emergency departments participated in community injury prevention events (Table 2) with bicycle helmets, domestic violence, and use of car safety seats the topics most often addressed. The most frequently named topics for school programs were helmet use, seat belts, car safety seats, poison prevention, and underage drinking. Emergency departments offering “other clinical interventions” most often did patient advocacy around domestic violence and/or sexual assault and education for elderly patients about fall hazard reduction. Only 10% of emergency departments engaged in legislative advocacy. Overall, most funding for injury prevention activities (61%) came from the hospital rather

than external funding sources. About one third (34%) of emergency departments worked with external partners on these activities.

#### DESCRIPTIONS OF SPECIFIC INJURY PREVENTION ACTIVITIES

Fifty-two emergency departments (76%) detailed at least one specific injury prevention activity, 12 (18%) described at least 2 activities, and one emergency department described 3 activities, for a total of 65 activities identified as their “most important” injury prevention activities. Almost half (46%) of these activities focused on bicycle safety (Table 3). Respondents categorized the activities evenly across the following types of prevention efforts: public awareness campaigns (34%), educational materials distributed (31%), and community-based activities (31%). For more than half (54%) of the activities, respondents indicated partnering with another agency.

More than half (55%) of the activities had not been evaluated, and another quarter (23%) of respondents did not know about evaluation of the activity. The 2 most common responses to why these activities are offered were because they “respond to a specific local need” (57%) and because an individual “champion” of the cause or activity encouraged it (31%).

#### IMPLEMENTATION FACILITATORS AND BARRIERS

The 3 barriers to injury prevention activities most often identified as significant (rated 5 or 6 on a scale of 1 to 6)

TABLE 2  
Injury prevention activities conducted in emergency departments

Injury prevention activity	Respondents	Positive responses	% of responding emergency departments participating
Participates in community injury prevention events	64	42	66
Distributes educational materials	65	35	55
Sends speakers to local schools to promote safety	64	31	48
Conducts interventions in the clinical setting	62	28	45
Participates in media campaigns	63	21	33
Distributes safety equipments	63	14	22
Conducts brief interventions*	62	12	19
Has a policy or practice to discharge pediatric patients in safety seats <sup>†</sup>	62	9	15
Conducts educational activities for high risk populations	62	6	10
Advocates for injury prevention legislation	62	6	10
Conducts other injury prevention activities	62	3	5

\*Brief interventions are a specific intervention for patients with alcohol use disorders.

<sup>†</sup>Six (10%) responding emergency departments did not have pediatric patients.

were lack of time (84% of respondents), lack of funding (78%), and lack of an injury specialist on staff (58%). The activities most often identified as helpful (rated 5 or 6) in facilitating injury prevention activities were producing and distributing education materials (66%), providing and distributing safety equipment (61%), providing information on obtaining funding (61%), and facilitating partnerships with funding agencies interested in injury prevention (59%).

#### ATTITUDES ABOUT ED-BASED INJURY PREVENTION

Most respondents agreed with the basic concept of emergency department–based injury prevention. Three quarters of respondents (76%) agreed that ED personnel should play a major role in injury prevention (rated 4 to 6 on a scale of 1 to 6). However, less than a quarter of respondents (24%) were satisfied with the injury prevention efforts in their emergency department, and even fewer (22%) thought that their ED injury prevention efforts were reaching those most in need. From the qualitative comments, 3 main themes emerged around respondent frustration at their inability to pursue injury prevention activities: competing demands on their time, lack of funding for prevention work, and institutional barriers (Figure).

#### Discussion

To our knowledge, this is the first population-based study of ED injury and violence prevention activities. Most respondents reported at least some injury prevention activities and agreed that ED physicians and staff should play a major role in injury and violence prevention. Respondents also endorsed current and future prevention activities as well as training in injury and violence prevention.

There is, however, a long way to go before emergency departments play a major role in injury prevention. Despite the significant role that emergency departments play in injury treatment, most hospital injury prevention activities were initiated in hospital departments other than the emergency department. While most emergency departments were doing *some* injury prevention work, one third (33%) offered only 1 or 2 activities. Very few were involved in injury prevention policy implementation or advocacy. Few respondents were satisfied with their emergency department's injury prevention work.

Despite the fact that the science base for the practices of emergency care and injury control has evolved greatly during the past decades, evidence-based prevention activities are not the norm for Pennsylvania emergency

TABLE 3  
**Injury topics of emergency departments' most important injury prevention activities**

Injury topic	Activities addressing topic	% of activities described* N = 65
Bicycle safety	30	46
Poisoning prevention	14	22
General safety training	14	22
Child passenger safety	13	20
Domestic violence prevention	13	20
Playground safety	13	20
Fall prevention	12	19
Motor vehicle safety	12	19
Alcohol and drug prevention	11	17
First aid training	8	12
Pedestrian safety	8	12
Recreational vehicle safety	8	12
Child abuse prevention	7	11
CPR training	7	11
Other topics	7	11
Fire and burn prevention	6	9
Sexual assault prevention	6	9
Choking/suffocation prevention	5	8
Sports/recreational safety	5	8
Boating safety	3	5
Farm safety	3	5
Youth violence prevention	2	3
Homicide prevention	0	0
Suicide prevention	0	0

\*Activities could address more than one topic, so totals exceed 100%.

departments. Few programs with demonstrated effectiveness were reported as being implemented by emergency departments. In addition, the focus of injury prevention activities does not reflect the burden of injury for Pennsylvanians. For example, in 2003, only 2 of Pennsylvania's 5014 injury deaths were bicycle related, whereas more than 1600 were related to motor vehicle crashes.<sup>21</sup> Yet, almost half of the emergency departments' most important injury prevention activities addressed bicycle safety, while only one fifth addressed motor vehicle safety. Likewise, homicide and/or suicide were in the top 5 causes of injury mortality for Pennsylvanians aged 1 to 54 years in

2003,<sup>21</sup> but no survey respondents reported prevention activities dedicated to either issue among their most important activities. The scarce evaluation of injury prevention activities was not surprising. Still, with more than three quarters of respondents reporting not doing or not knowing about evaluation efforts, the lack of scientific approaches being used with prevention efforts was cause for concern.

One of the main barriers that emergency departments identified in conducting injury prevention activities was a lack of injury specialists on staff and little staff expertise in injury prevention. Lack of knowledge is likely a main reason for the minimal use of data and evidence-based injury prevention practices and the finding that most respondents did not think their efforts in injury prevention reached those in most need. Partnering with other agencies that have expertise in needed areas could help overcome this barrier; however, only one third of emergency departments reported such partnering in their general injury prevention activities.

Lack of commitment to injury prevention on the part of the ED staff and leadership was *not* reported as a significant barrier to doing this work. Rather, time and money were cited as the 2 greatest barriers to implementation of injury prevention activities. This paucity of resources for prevention activities, in spite of commitment on the part of staff, is a classic example of the "prevention paradox." There is no direct financial incentive for the emergency department to support prevention because it is not reimbursed, and the only incentive to the hospital may be the indirect benefit of community good will or positive publicity. It is harder to prove the benefit of resources put toward what did not happen rather than to treating what did happen.

The question, then, is how to support emergency department-based injury prevention activities. Given increasing demands on emergency departments, it is vital to use limited resources (time, money, and personnel) in the most effective ways. The evidence base for secondary prevention in the emergency department is growing. Studies of brief interventions for alcohol use disorders in the clinical setting (screening with a standardized tool and motivational interviewing to identify the patient's willingness to change) and screening and referral for intimate

➤ **Competing demands/lack of time**

*“While I support injury prevention there are significantly more important problems in Pennsylvania ED's. How can I promote injury prevention with hold patients in the hallways and suturing in the waiting room?”*

*“Feeling very bad we don't do injury prevention, and wondering how other small rural hospitals devote any time to it.”*

➤ **Lack of funding**

*“The staffing at [our ED] is sufficient to keep the clinical services moving in the right direction, but there is no funding for prevention activities.”*

➤ **Institutional barriers**

*“Unfortunately, the trauma service has decided that this work is 'theirs' and they refuse to work with us in the ED to make it happen. The trauma service has an injury prevention program and their own coordinator/educator. Most of her work is done inpatient.”*

FIGURE

Narrative Comments about Emergency Departments' Challenges to Injury Prevention.

partner violence have been demonstrated to be effective in decreasing alcohol consumption and identifying patients who are experiencing violent relationships.<sup>11,15</sup> These types of intervention may serve as models for similar secondary prevention efforts around other injury issues and risk factors.

Using well-evaluated model programs is another critical way for emergency departments to ensure that their limited resources are being used most effectively. For example, research has found that distributing bicycle helmets as part of a multifaceted educational campaign and *with behavioral contracting* is effective at increasing bicycle helmet use.<sup>13</sup> However, of 30 emergency departments reporting activities to address bicycle safety, only 5 indicated a combination of equipment distribution and distribution of educational materials or conducting a safety class.

Working with academic and community partners offers another way to maximize effectiveness of injury prevention efforts without increasing the demand on ED clinicians. Public health schools and academic programs may provide technical assistance, program evaluation, program

oversight, and student workers in partnership with emergency departments. Local businesses interested in investing in the community may contribute to the purchase of safety products or sponsor specific programs. Involvement in community coalitions that are advocating change enhances the reach of the coalition and provides real-world stories to put a face on the injury problem. In general, we need to foster collaboration between emergency medicine and public health. This collaboration should support both the short term needs for evidence-based injury prevention efforts in emergency departments as well as longer term needs to encourage legislation and health care reimbursement structures that support health promotion and injury prevention.

#### Limitations

Several limitations to this study must be noted. The 37% response rate, despite a generous incentive and intensive follow-up efforts, is low, which illustrates the lack of time experienced by ED clinicians and the low internal priority given to injury prevention. This response rate is in contrast

to that obtained in the similar survey of U.S. trauma centers from which this survey was derived. The survey of trauma centers, which are required to conduct injury prevention and often have a dedicated injury prevention staff person, had almost twice the response rate. The respondents of this ED study appeared to be representative of the general population of emergency departments in Pennsylvania, but these data may not be representative of emergency departments nationally. Finally, this study collected information on the quantity and description of injury prevention activities but had no way to assess the quality of activities that were reported.

### Implications for Emergency Nurses

Emergency nurses play an integral role in educating patients and their families about health risks and how to minimize them. In addition, emergency nurses can be effective advocates for environmental change as their professional experiences allow them to “put a face” on the injury problem. Emergency nurses have demonstrated their commitment to injury prevention through organized programs such as EN CARE, sponsored by ENA. This program provides opportunities for nurses to obtain certification as ENA Injury Prevention Providers and also provides program models for implementation. As an example of this commitment to injury prevention activities, ENA is currently developing tools to teach nurses about screening and brief intervention for alcohol problems.

Emergency nurses have the opportunity to be leaders in the development and implementation of injury prevention programs based in the emergency department. Training and certification in injury prevention by ENA or other organizations will guide emergency nurse efforts in all arenas and help them advocate for evidence-based programs. In the emergency department, primary prevention efforts might focus on individual counseling about injury hazards relevant to the patient (eg, ensuring that actions to minimize the risk of falls is discussed with all patients older than 60 years who have neurologic deficits). Secondary prevention efforts include implementing an alcohol screening and intervention program.

There also are roles for emergency nurses in injury prevention efforts at the hospital level and in the community. Emergency nurses can encourage systems level injury

prevention actions: hospitals can pair with partners in the for-profit sector to offer bike helmets, child-safety seats, or smoke detectors, or they can be a primary sponsor of a local Safe Kids chapter. In the community, emergency nurses can become involved with coalitions and organizations that promote injury prevention (such as MADD, local domestic violence centers, and Safe Kids). Emergency nurses' unique perspective on the burden of injury in their community can lend support to these groups in their work to advocate for community and individual change.

### Conclusions

In summary, this survey highlights the generally large disconnect between the practice of emergency medicine aimed at acute care of individual patients and responding to the public health need for injury prevention efforts. Emergency departments are overextended in terms of time, money, and personnel even in accomplishing their primary mission of patient care. Given these limited resources, the optimal initial approach to ED-based injury prevention may be implementation of effective secondary prevention interventions for at-risk patients. Developing external partnerships with injury prevention experts and community stakeholders can take efforts beyond the emergency department. The use of data to focus efforts on local issues, and to measure the effectiveness of programs, also is important in ensuring that community needs are met.

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