The Utility of Safety Counseling in a Pediatric Emergency Department

Ilene A. Claudius, MD, and Alan L. Nager, MD, FAAP

ABSTRACT. Objective. Pediatric injuries have a significant impact on the medical system, costing lives and disabling many survivors. Although injury-prevention measures do exist, they are underutilized. A majority of families do not consistently receive counseling by a primary care provider (PCP). We attempted to demonstrate the efficacy of counseling families who presented to a pediatric emergency department with unrelated medical complaints.

Methods. A self-report questionnaire was administered to assess the home safety of patients 2 weeks to 12 years old presenting to the emergency department. Targeted counseling on areas noted to be unsafe was provided, and a 2-week follow-up telephone call was made to assess the effectiveness of the counseling. Information on previous counseling by a PCP was also collected and analyzed. Logistic regression was performed to determine significance and calculate odds ratios.

Results. Thirty-seven percent of caregivers recalled receiving any counseling at a PCP visit. Caregivers who had received prior counseling by a PCP were significantly more likely to have a safe home environment. Patients who were English speaking were significantly more likely to have received safety counseling than their Spanish-speaking counterparts. One hundred fifty families received counseling in the emergency department, and 117 were eligible for follow-up. Of these families, 39% made a positive change in the safety of their child’s environment at the 2-week telephone follow-up.

Conclusions. Caregivers receiving counseling by a PCP are more likely to provide a safe home environment for their children. Spanish-speaking patients are at particularly high risk of not receiving counseling. Of caregivers reporting unsafe practices during an unrelated emergency-department encounter, targeted counseling made a positive impact on behavior after discharge. Pediatrics 2005;115:423–427. URL: www.pediatrics.org/cgi/doi/10.1542/peds.2004-1556; pediatric, prevention, safety counseling, injury.

ABBREVIATIONS. PCP, primary care provider; TIPP, the Injury Prevention Program; CI, confidence interval.

In the United States, ~55 children die each day from injuries.1 In California alone, 35,277 children were hospitalized and 1934 were killed as a result of injuries over a 1-year period in 1997.2 For the survivors, morbidities ranging from extremity fractures to traumatic brain injury are both emotionally and financially costly. Although motor vehicle and bicycle-related incidents are the leading causes of mortality, falls, poisonings, burns, and drownings frequently result in nonfatal injuries requiring care.3–5

With appropriate knowledge and equipment, many injuries can be prevented. In a review of pediatric mortality in Arizona over a 5-year period, 91% of deaths from unintentional injury were deemed to have been preventable.6 Helmets, car and booster seats, and other tools to minimize morbidity are widely available yet grossly underutilized. Eighty percent of bicycle-related fatalities are as a result of head trauma, and helmets can reduce the severity of brain injury by 88%.7 Despite this fact, 85% of eligible children rarely or never use a helmet for bicycle riding.3 Eighty-seven percent of wrist injuries from in-line skating are preventable by using proper protective equipment.8 Poison Control Center data have indicated that only 2% of accidentally ingested medications were stored properly in a medicine cabinet.9 Despite as many as 11,3 deaths per 100 000 persons in 1998 from firearms, 19% are kept unlocked and loaded in the home.1 Effective interventions such as smoke detectors, pool fencing, and change in sleeping position are also available for burns, drownings, and sudden infant death syndrome, respectively.10–13

An American Academy of Pediatrics review of the injury-prevention literature showed a positive benefit to counseling in 18 of 20 studies.14 However, other studies have shown either a negligible effect from enhanced counseling in the primary care environment15 or a benefit only in certain areas. A review of 22 randomized, controlled trials of safety counseling in a variety of care settings showed a beneficial effect in possession of smoke alarms, use of motor vehicle restraints, and maintenance of safe water temperatures but none in use of bicycle helmets or overall injury reduction.16

No emergency treatment rendered to an injury victim is as effective as prevention. Yet, preventative measures in the emergency department have not been evaluated extensively. The epidemiology of an urban emergency department allows access to both patients who have received counseling at their primary care providers (PCPs) and those who have not. Although counseling the caregivers of a child incurring an acute injury has been proven helpful,17 an-
ticipatory guidance of children not presenting with an injury has not been studied in this environment previously.

We hypothesized that patients who had received prior counseling by the PCP would report a safer environment on presentation to the emergency department. Additionally, we anticipated that targeted counseling in the emergency department would positively impact the safety of the patient’s environment after discharge.

MATERIALS AND METHODS
Study Population
Childrens Hospital Los Angeles has a 24-bed emergency department, with an annual census of ~62,000. The patient population is predominantly Spanish speaking and covered by Medicaid health maintenance organization insurance. We conducted a prospective study of a convenience sample of patients to determine the efficacy of an intervention aimed at improving home safety. The study was approved by the Committee on Clinical Investigations.

Study Design
While in the emergency department, English- or Spanish-speaking caregivers of children aged ≥12 years were asked to complete a 10- to 11-item questionnaire to assess their child’s safety. Age-appropriate questionnaires were created for children aged <1 year, 1 to 3 years, 4 to 6 years, and 7 to 12 years and targeted areas of morbidity and mortality frequently seen in the emergency department. The subjects addressed are listed in Table 1. We encountered difficulty finding a previously validated survey that suited our purposes. Many tools, such as the Framingham Safety Survey, contain questions that are important for anticipatory guidance but beyond the scope of emergency-department injury prevention. Therefore, our questionnaires were formulated to address the topics discussed on the American Academy of Pediatrics–endorsed TIPP (the Injury Prevention Program) sheets.18 Information on prior counseling by a PCP or clinic was also obtained by specifically asking if a PCP had ever discussed any of the topics on the questionnaire with the caregiver. These questionnaires were translated and back-translated by our language and culture department.

Caregivers of patients identified by the questionnaire as having areas of unsafe behavior were then counseled on that specific area(s) by the research assistant and treating physician (either attending or resident). The children were not counseled independently but were present while safety topics were discussed with their caregivers. Language-appropriate handouts discussing the identified unsafe behavior were also provided for each specific area of concern in either Spanish or English. These handouts were also based on the material contained in the TIPP sheets but were written to address each individual area of concern, to contain contact information for local resources, and be understandable on a fifth-grade level (versus the estimated 6.3-grade-level TIPP sheets). They were tested for intelligibility on 10 fifth-graders being treated in our department. A native Spanish speaker, also fluent in English, was responsible for administration of questionnaires and initiation of counseling. Her training, supervision, and review of questionnaires were provided in all cases by the principal investigator (L.A.C.) to ensure accuracy. The same research assistant also contacted caregivers for follow-up.

Two weeks after the emergency-department encounter, the caregiver was contacted and asked a series of open-ended questions to assess changes made in response to the counseling. Only changes in behaviors that had been identified as unsafe on the initial questionnaire were included in the data analysis. Patients were excluded if they were unavailable for follow-up (n = 27), were seen for a problem directly resulting from the unsafe behavior identified (n = 2), or remained hospitalized at the time of follow-up (n = 3). One additional patient who had not owned a bicycle helmet was eliminated when a diagnosis of hemophilia was made and an alternative helmet was provided to the family.

TABLE 1. Areas of Safety Assessed in Questionnaire According to Age

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Areas of Safety Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 y</td>
<td>Sleep position, exposure to smoking</td>
</tr>
<tr>
<td>1-3 y</td>
<td>Possession of a walker</td>
</tr>
<tr>
<td>4-6 y</td>
<td>Storage of medication, storage of cleaning supplies, paints, and care</td>
</tr>
<tr>
<td>7-12 y</td>
<td>Use of seat belts, use of smoke detector, possession of a firearm</td>
</tr>
</tbody>
</table>

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and 2 reported 4. No family had deficiencies in caregivers reported 1 area of unsafe behavior, but 33 eligible and available for telephone follow-up. Most years. Of the 150 patients enrolled, 117 (78%) were These children ranged in age from 2 weeks to 12 safe behavior were identified in 150 (32%) families. changing an unsafe behavior in response to emergency-department included previous counseling by a PCP, language of preference, age of child, and combinations of these variables. Epidemiologic data on the subjects and factors influencing the likelihood of caregivers changing an unsafe behavior in response to emergency-department counseling were evaluated by using the \( \chi^2 \) test.

**RESULTS**

Of 506 questionnaires administered, areas of unsafe behavior were identified in 150 (32%) families. These children ranged in age from 2 weeks to 12 years. Of the 150 patients enrolled, 117 (78%) were eligible and available for telephone follow-up. Most caregivers reported 1 area of unsafe behavior, but 33 caregivers reported 2 areas of concern, 11 reported 3, and 2 reported 4. No family had deficiencies in >4 safety-related behaviors. Table 2 lists the epidemiology of the patients with unsafe areas identified and of those available for follow-up. There was no significant difference in the epidemiology of the 150 patients identified as having unsafe behaviors and the 117 included in the final analysis. The patients were seen for various complaints ranging from upper respiratory infections to chronic diagnoses to minor trauma. Because any patient with a condition remotely related to an identifiable unsafe behavior was excluded, the minor traumas included were mainly uncomplicated lacerations and ground-level falls not related to a recreational activity or walker. Lack of helmets and personal protective equipment, lack of appropriate vehicle restraints, access to ingestible toxins (medications or household supplies), and use of walkers were the most common issues identified. Other injury risks were identified less frequently (Table 3). Although asked, no patient in our study admitted to gun ownership, leaving the child alone in the car, or access to an ungated pool.

After the counseling, 39% of caregivers reported a positive change in an unsafe behavior identified. Eight families corrected additional unsafe behaviors not included in our questionnaires. All patients, regardless of changes made, appreciated the counseling when asked during the follow-up telephone call. The changes that were made are reported in Table 4. No epidemiologic factors consistently predicted the likelihood of a postintervention change. Although parents of children <1 year old changed their behavior slightly more often than the others (52% vs 37%, respectively), this difference was not statistically significant \( (P = .158) \). There also was no statistically significant difference in the changes made by English versus Spanish speakers \( (P = .133) \). The very large percentage of patients insured by Medicaid (thereby presumed to be of lower socioeconomic status), of Latin origin, and presenting with a female caregiver made analysis of these factors impossible.

Of 157 caregivers who received counseling previously had an odds ratio of 1.49 of reporting a safe home environment on initial presentation to the emergency department \( (95\% \text{ confidence interval} \ [\text{CI}]: 1.002–2.217) \), which was significantly different from those who had not received prior counseling \( (P = .048) \). Conversely, caregivers not receiving counseling had an odds ratio of 0.67 \( (95\% \text{ CI}: 0.451–0.998) \) of providing a safe environment for

**Statistical Analysis**

Statistics were performed using STATA (Stata Corporation, College Station, TX). Significance and odds ratios used to determine the effect of prior counseling were evaluated by univariate logistic regression. Multivariate logistic regression was applied to those demonstrating significance. The dependent variable was the existence of a safe home environment on presentation to the emergency department. Independent variables considered included previous counseling by a PCP, language of preference, age of child, and combinations of these variables. Epidemiologic data on the subjects and factors influencing the likelihood of caregivers changing an unsafe behavior were evaluated by univariate analysis of these factors impossible.

**TABLE 2. Characteristics of Patients With Unsafe Home Behavior**

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Percentage of Total ( (N = 150) )</th>
<th>Percentage of Those Available for Follow-up ( (N = 117) )</th>
<th>( P ) Value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>55</td>
<td>55</td>
<td>.77</td>
</tr>
<tr>
<td>Female</td>
<td>45</td>
<td>45</td>
<td>.77</td>
</tr>
<tr>
<td>Insurance, Medicaid</td>
<td>&gt;95</td>
<td>&gt;95</td>
<td>NA</td>
</tr>
<tr>
<td>Race, Latin origin</td>
<td>&gt;95</td>
<td>&gt;95</td>
<td>NA</td>
</tr>
<tr>
<td>Language of preference</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>23</td>
<td>21</td>
<td>.91</td>
</tr>
<tr>
<td>Spanish</td>
<td>77</td>
<td>79</td>
<td>.91</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 y</td>
<td>22</td>
<td>24</td>
<td>.192</td>
</tr>
<tr>
<td>1–3 y</td>
<td>24</td>
<td>20</td>
<td>.192</td>
</tr>
<tr>
<td>4–6 y</td>
<td>21</td>
<td>23</td>
<td>.192</td>
</tr>
<tr>
<td>7–12 y</td>
<td>33</td>
<td>33</td>
<td>.192</td>
</tr>
</tbody>
</table>

* No significant differences were evident between the group enrolled and the group available for follow-up. NA indicates not applicable.

**TABLE 3. Frequency of Unsafe Behaviors**

<table>
<thead>
<tr>
<th>Identified Problem</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>No bicycle helmet</td>
<td>43</td>
</tr>
<tr>
<td>Household supplies accessible to child</td>
<td>29</td>
</tr>
<tr>
<td>No car/booster seat</td>
<td>22</td>
</tr>
<tr>
<td>Use of walkers</td>
<td>29</td>
</tr>
<tr>
<td>Exposure of child to smoking</td>
<td>21</td>
</tr>
<tr>
<td>Medications accessible to child</td>
<td>17</td>
</tr>
<tr>
<td>Smokes around child</td>
<td>16</td>
</tr>
<tr>
<td>No personal protective gear for sports</td>
<td>10</td>
</tr>
<tr>
<td>No smoke detector</td>
<td>12</td>
</tr>
<tr>
<td>Infant not sleeping on back</td>
<td>3</td>
</tr>
<tr>
<td>Hot liquids near child</td>
<td>2</td>
</tr>
<tr>
<td>Left child alone in bath</td>
<td>1</td>
</tr>
<tr>
<td>Did not wear seatbelt</td>
<td>1</td>
</tr>
<tr>
<td>Gun in home</td>
<td>0</td>
</tr>
<tr>
<td>Left child alone in car</td>
<td>0</td>
</tr>
<tr>
<td>Ungated pool</td>
<td>0</td>
</tr>
</tbody>
</table>
their children. There were no significant differences between the epidemiology of patients whose caregivers had received counseling and those who had not except for language of preference. English-speaking families were significantly more likely (P = .029) to have received previous counseling than Spanish-speaking families, with an odds ratio of 1.56 (95% CI: 1.05–2.33). Frequently, patients in the “no-counseling” group were fully immunized, indicating that they had multiple encounters with clinics or PCPs for which this counseling could have taken place.

**DISCUSSION**

As the price of injury care has risen 42% in 1 decade,\(^1\) prevention has become an increasingly cost-effective use of practitioners’ time. The National Public Services Research Center estimates that counseling caregivers of children 0 to 4 years old could save $230 million annually in acute costs.\(^2\) Adding the cost of treating older children and young adults and providing chronic care for the disabled places this number at $441 billion. Alternatively, each safety measure can be thought of as having its own savings price tag, with each car seat saving $1360, each helmet saving $395, and each smoke detector saving $890.\(^3\) The time spent counseling each family in this study was minimal, 10 minutes on average (including obtaining consent), because the counseling was targeted. With a 39% improvement in home safety, this translates into a monetarily effective use of time.

The safety of children and prevention of tragedy clearly supercede the financial importance of injury prevention. Traditionally, the setting for counseling has been during an outpatient visit with a PCP. PCPs have a relationship with their patients and an opportunity for continuity of care that emergency-department physicians do not. It is unfortunate that we found only a third of caregivers recalling having received such counseling. It is clear that many of these families may have actually received prior counseling that was not remembered, emphasizing the need for safety assessment and intervention at each PCP visit. However, even if there is some recall bias, this low number is consistent with previous studies. Quinlan et al\(^4\) contacted 1596 families with children, and only 39.3% recalled receiving any counseling by their PCP at any time. Our study also found a striking difference in the number of Spanish speakers who recalled having been counseled when compared with English-speaking caregivers. In noting this, our study quantifies how far health care is from bridging the linguistic and cultural differences in our patients and identifies this as an area for significant improvement in provision of primary care.

This gap between policy and practice may necessitate use of alternative strategies. It has been shown that counseling families of a child brought in with an injury has a beneficial effect on their future safety.\(^5\) Our study indicates that even in patients without a related injury, the emergency department is a reasonable setting to deliver targeted counseling.

The limitation of our data is the reliance on self-report. However, even by self-report, 32% of our caregivers admitted to at least 1 grossly unsafe behavior. Attempts were made to minimize errors in self-reporting by asking nonleading, nonthreatening, open-ended questions without prompts. Verifying the caregivers’ statements by in-home visits would be technically very difficult and possibly unsafe. Therefore, most studies on the impact of counseling are forced to rely on self-report. Overall, our data should be generalizable to most English- and Spanish-speaking caregivers. However, some studies have indicated a lower use of safety devices in lower socioeconomic strata, similar to our study population. Therefore, given the composition of our patient population, we may have seen a higher number of families reporting an unsafe environment than a care provider located in a more affluent catchment area.\(^6\) Finally, there were some unsafe behaviors not endorsed by our population. Notably, the lack of reported firearm ownership is not consistent with the general population and makes it difficult to comment on the effectiveness of intervention in this important area.

**CONCLUSIONS**

It is clear from our data that counseling by the PCP plays a powerful role in child safety. Patients who had received this counseling were much more likely to report a safe environment before any intervention. It is unfortunate that many patients are not receiving this counseling, and Spanish-speaking patients are especially at risk. This is the first study to demonstrate that counseling can be performed effectively in the emergency department even in patients who are not being seen for an acute injury. The impact of our counseling was positive, with 39% of families improving the safety of their child’s environment after a brief session of targeted counseling.

**ACKNOWLEDGMENT**

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**REFERENCES**

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