Preventing Unintentional Injuries in Schools: How to Use Data to Build Partnerships and Develop Programs

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ABSTRACT

Academic achievement and high test scores are not the only indicators of a successful school. A good school is also a safe school. Unfortunately, every year in the United States, approximately 3.7 million students suffer an injury at school severe enough to require medical attention or to limit activity. Most of the injuries are preventable. Data can be extremely effective in convincing school decision makers to take action to prevent injuries. Several state and local school systems in the United States have used either ongoing surveillance systems or a one time data collection effort to describe and highlight the school injury problem, leading to the design and evaluation of injury prevention programs. This article provides examples of some of these school-related injury surveillance efforts. It illustrates how health educators can make a difference by getting involved in the creation of surveillance systems and using the generated data to make a convincing argument for school injury prevention. By forming partnerships and developing prevention programs based on local data, a health educator can lead the way to safer schools.

INTRODUCTION

Health educators who work in schools know that academic achievement and high test scores are not the only measures of a successful school. A good school is a safe school. Unfortunately, each year approximately 3.7 million students ages five to 19 years are injured at school severely enough to require medical attention or limit activity (Miller & Spicer, 1998). That is about one in every 14 students. The vast majority of these injuries – 90% – are unintentional (Posner, 2000) and not due to violence-related behavior.

Injuries are preventable, and guidance exists to help health educators and schools implement effective injury prevention practices. In this issue of the *American Journal of Health Education,* Barrios, Sleet and Mercy (2003), summarize the *School Health Guidelines* published by the Centers for Disease Control and Prevention (2001). In addition, a complementary set of school health guidelines is due to be released later this year by the Health Resources and Services Administration's Maternal and Child Health Bureau (http://www.nationalguidelines.org). These guidelines provide valuable information for health educators working in a school system. However, no single health educator can implement guidelines alone. Creating safe schools is a team effort, and to maximize the probability of success, health educators need to enlist partners and collect information that will justify prevention efforts and facilitate design of prevention programs.

ADVANTAGES OF USING INJURY DATA IN PREVENTION ACTIVITIES

Comprehensive data collection is a critical tool for injury prevention. Injury is the most common health problem treated by school health personnel (Nader, 1981), and yet many schools fail to maintain injury records. Lack of data conceals the extent of the injury problem and contributes to a false impression that school injuries are isolated and unpredictable events. In fact, data collection can document the overall pattern of injuries in a school, including where, when, how, and to whom the injuries oc-

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curred (Posner, 2000). Data collection also can demonstrate strengths or weaknesses in a school's response to injuries. In addition, data can demonstrate the cost advantages of adopting injury prevention programs and policies, rather than simply responding to injuries after they occur (Miller & Levy, 1997). Once injury prevention programs and policies are designed and implemented, continued data collection can be used to evaluate these initiatives.

Data can be convincing, and when collected well, they provide compelling evidence of a problem as well as indicate potential solutions. At a minimum, information collected should include the age, grade, and sex of each injured student as well as the activity, place of occurrence, intent, nature, and cause of each injury event. However, additional information may be useful depending on the objectives of the system, the schools' acceptance of the surveillance system and willingness to report data, and the simplicity and flexibility of the system.

APPLICATIONS OF STATE AND LOCAL SYSTEMS

Several state and local school systems in the United States have used data to not only describe and highlight the pattern of school injuries, but to design and evaluate their school injury prevention programs. The experiences described below vary widely in scope and objectives, the type of data collected or used, and the partnerships that were formed. These are examples of efforts that used data to describe the problem of injuries at school, promote school injury prevention among multiple partners, identify prevention objectives, and design and evaluate programs to meet these objectives.

Often, the drive to understand and control the problem of injuries at school is initiated by just a few committed people who recognize injury as a threat to children's health and want more information to guide their prevention and control strategies. Key partnerships then make the initiative possible. Usually the effort starts small and grows to meet the scope of the problem.

Utah

One official in the Utah Department of Health was curious about injuries occurring at school, and this led to an investigation to discover the frequency of these events. Personnel involved in the inquiry found that schools collected information on injuries occurring on school grounds, but that collection procedures were not standardized. Every district followed a different protocol. A collaborative effort by the Utah Department of Health and the Department of Education led to subsequent creation of a standardized means of collecting information on student injuries.

The Utah student injury surveillance system was developed under a Federal demonstration grant in 1984. The system covers injuries to students in grades K-12 on the way to and going home from school, on school grounds, and during field trips or athletic events. School personnel (usually the school nurse, principal, or school secretary) report an injury if the injury is treated by a medical professional and/or if the student misses one-half or more days of school due to the injury. Though reporting is voluntary, nearly all schools in all 40 local school districts have been participating since 1991. Report forms are sent to the Utah Department of Health and transferred into electronic format by Utah Correction Industries. To enhance injury reporting, the Department of Health actively encourages reporting and follows up on discrepancies or missing data for all reports received. Periodic evaluations of reporting completeness are conducted (for additional details see Spicer et al., 2002).

The surveillance system conducted by personnel at the Utah Department of Health is an example of using ongoing data collection to describe a problem and to identify risk factors that can guide prevention efforts. In 1987, when the Department of Health suspected that playground injuries were a problem in elementary school children, the surveillance system was used to examine the scope and magnitude of the problem. With evidence that a substantial number of children were being injured on playgrounds and information on risk factors to target prevention programs, the Utah Department of Health received funding to design and implement a pilot playground program in 17 schools. The data were then used to evaluate the effectiveness of the program. The evaluation found that injury rates initially increased (possibly, a phenomenon of increased reporting due to increased awareness) and then decreased. After showing that the playground program worked, the Department of Health expanded it statewide. Since then, with the aim of documenting high-risk populations and circumstances, several published analyses have been conducted using the ongoing surveillance data (Sosin et al., 1993; Junkins et al., 1999; Junkins et al., 2001; Knight et al., 2000). In addition, the Department of Health developed a report for school principals summarizing the data statewide and giving each superintendent a report that compared their school to the entire school system.

Utah's experience also highlights the value of partnerships between health and insurance loss prevention groups. School liability for student injury varies with state statute and case law, but can be large. Consequently, those responsible for administering self-insurance programs or for loss prevention in third party insurance or catastrophic coverage can be strong injury prevention partners. These agencies can advocate strongly for prevention to be a priority, can monitor or audit compliance with safety protocols and programs, and sometimes can help fund school prevention initiatives. The Utah Department of Education is self-insured through the Utah Office of Risk Management (ORM), and all 40 school districts are under the same carrier. Since the early 1990s, the ORM has been a partner with the Department of Health and has provided crucial support by participating with the Department of Health in a statewide playground safety training program for administrators, custodial staff, and teachers. This program, still in existence, sends home the message that injury prevention is important to

the Office of Risk Management and guides loss prevention.

Washington

In Washington State school sanitation and health functions are delegated to the local health agencies, rather than the State Department of Health. However, limited knowledge of the problem of unintentional injury in children and effective prevention strategies in many local agencies led the Washington State Department of Health to pursue capacity building in these areas at the local health agencies. In 1986, involvement by a local environmental health specialist and a willing local school district led to a two-year project in the Clover Park School district. The project was funded by the Tacoma County Health Department to pilot the concept of school injury surveillance and the collection of an epidemiological description of school injuries. The pilot project showed that it is possible to conduct school-based injury surveillance and led to recommendations for targeting resources to the highest injury risk environments (playgrounds, physical education classes, and competitive sports) and population (junior high school students).

Implementing these recommendations at the state level was a challenge, as state resources were scarce. The best way to confront this issue was to secure local health department participation in the program. At the time, however, the extent of local participation, interest, and expertise in injury prevention was highly variable. To encourage all local health departments to implement and evaluate the pilot project recommendations, seminars were conducted at the local health departments. Each seminar included experts in industrial hygiene, lab safety, playground, and legal authority in an attempt to instruct and encourage the local departments to implement the pilot project recommendations. These seminars convinced the school coordinator at the state Department of Health to continue the pilot project work. Eventually, collaboration between state and county officials was the basis for development of the statewide program.

With playgrounds identified as a major target for prevention, an elementary school-based injury surveillance system was developed to focus on playground injuries and to monitor other types of injuries. Several local health departments and schools were selected for training in playground hazard identification, injury surveillance, and program plan review. The data were used to document risk factors and playground equipment associated with school injury.

Washington State's example demonstrates how, after receiving evidence generated from a pilot project that demonstrated the need for school injury prevention, local health departments were willing and able to learn injury prevention techniques and apply the techniques to school settings. Positive results attributed to the project include training local health staff on hazard identification, improved risk communication in the school environment, and promotion of school inspections and injury surveillance in the state's schools. (For more detail, see Washington State Department of Health, 1998.)

New York City

New York City, where the school injury surveillance system grew out of a concern over the city's legal liability for injuries at school, provides an example of a partnership between a health educator and an insurance loss prevention group. The New York City Board of Education Division of Student Support Services (the office responsible for injury claims against the schools) collaborated with the New York Academy of Medicine's Office of School Health Programs to develop a surveillance system. The information generated by the system helped the city develop a risk management program and the *Safety Makes Sense* project. *Safety Makes Sense,* run by the Office of School Health Programs, in partnership with the Board of Education of the City of New York, is designed to integrate unintentional injury prevention information within a coordinated school health program that extends into the homes of students and their families. A handbook for elementary schools was developed which addresses the need for a multifaceted approach to injury prevention, staff roles and responsibilities, and strategies for classroom and school wide safety activities. Training is conducted for interdisciplinary teams of administrators, teachers, counselors, school nurses, aides, secretaries, food service personnel, parent leaders, and others to raise their awareness of potential hazards and motivate school wide collaboration to prevent unintentional injuries in and around school. (For additional information see Eichel and Goldman, 2001.)

Massachusetts

The experience of personnel at one Massachusetts high school shows that occasionally injury prevention surveillance and programs grow out of efforts to meet others needs. When students began to report illness after renovations to Needham High School in Needham, Massachusetts, the town's health officer and the school nurse instituted a surveillance system to track all health and safety incidents at the schools. Although the system was not designed with injuries in mind, the data generated from the system revealed an alarming number of injuries to students and provided information that was used by school personnel to develop injury prevention programs at several schools. For example, playground and gym equipment was repaired or replaced, a bike helmet program was implemented, and additional teacher aides were posted on playgrounds to enhance supervision.

Wyoming

The above examples illustrate how ongoing injury surveillance efforts generated by school personnel and other interested participants led to prevention activities. The Wyoming Health Department took a different approach to promote school based and broader child injury prevention efforts. They convinced hospitals in the state to record the nature and cause of all child injury discharges over six sample weeks during the year, and then combined this information with childhood injury mortality data. With free technical assistance from the Children's Safety Network Economics and Insurance Resource Center, they estimated

the costs of the injuries recorded. The Health Department reported their findings to the state Parent Teacher Association (PTA). The data were so convincing that the State PTA adopted child injury prevention as a statewide priority.

CHALLENGES TO COLLECTING AND USING INJURY DATA

While this article has focused on uses and advantages of data for injury prevention activities, it is helpful to be aware of the challenges to implementing and sustaining a school injury surveillance system, as well as ways to overcome the challenges. One of the keys to using data is to understand the limitations and to make sure these are noted in all reports and summary information. All the data systems described in this article rely on voluntary reporting. As a result, some schools may not report their injury data at all, while others may participate on a regular basis. Regardless of whether a system is mandatory or voluntary, some injury events may not be reported, some events may be less likely reported than other events, or the information provided may be incomplete, thus skewing the picture of injury in the state. For example, injuries that occur after school at sporting events may be less likely to be captured by a school injury surveillance system. In addition, what constitutes a school injury is not always clearly defined: does a system include injuries that occur only during official school hours? Does the system include injuries that occur during sporting events or sports practice after school?

Another reason for incomplete reporting of injury events may be the sensitivity of the information. From the perspective of the school, the variable "supervision at the time of the event" could be used to direct blame and fault, possibly increasing liability exposure. In Utah's experience, the school districts strongly opposed providing this information and, consequently, it was left off the reporting form. From the perspective of the injured student and his/her family, details regarding an injury and its outcome may be sensitive information that they do not want shared with other agencies.

Confidentiality of information is critical to a successful surveillance system. When a system is created, a protocol that guards both school and student confidentiality is needed. These safeguards could include using an anonymous numbering system instead of names and social security numbers to identify the injured, keeping the data on a password protected computer in a locked office, and restricting access to the entire data set or to specific details within the data. Reports should present the data in aggregate form. Restricted details may include dates, description of the injury event, or any information that would permit identification of the injury event even if names and other identifying information are excluded.

These challenges can be addressed through careful planning and monitoring of the surveillance system. More specific recommendations for health educators are described in the following section.

GUIDING PRINCIPLES

The examples above show a wide variety of experiences in forming constructive partnerships for injury prevention, developing surveillance systems, and using them to promote and guide injury prevention efforts. The catalyst for implementing the system and continuing its use to develop and monitor programs can range from curiosity, to a tragic event, to a concern for high insurance claims against the schools. Some efforts involve only one school; others involve schools statewide, while still others start small and then expand.

This article has emphasized the importance of forming partnerships with parties that have interest in reducing the toll of injuries on students and their families. Table 1 presents a list of potential partners and possible information valuable to each that can be used to recruit partners to school prevention efforts. Recruiting partners is only the first step in the process.

Once the partners have been identified, objectives of the surveillance system must be formulated. First, define the nature of the problem to be addressed. The problem may be general (e.g., all injuries) or specific (e.g., playground injuries). Problem definition is important for determining the structure and content of the surveillance system and for specifying case definition. Further issues to consider are whether data/information about the problem already exists or whether it is necessary to collect more specific data, and whether the surveillance effort will be short- or long-term.

When it comes to the challenge of creating an injury surveillance system, starting with a small pilot project that collects data from just a few schools or school districts is a manageable and affordable starting point. The pilot study can test the data collection form and obtain feedback from the people completing and submitting the forms. Pilot projects are an excellent tool to fine-tune the collection process. The data generated also can be used to advocate for a larger system.

The surveillance system should be able to describe, track, and monitor the injury prevention problem. Generally, the data are reported in the form of written reports geared toward the target audience. Analysis and interpretation of the data that go beyond the raw statistics should draw out the most important findings. Ideally, the system will be flexible enough to identify new and emerging hazards and efficient enough to do so in a timely manner.

The ultimate purpose of a surveillance system is for use in planning interventions. A surveillance system should be able to illustrate the scope of the problem in order to justify the need for intervention and should improve the understanding of risk factors in order to design prevention programs. Once prevention programs are in place, the system should be able to measure the programs' impact.

Development of a school based surveillance system can benefit from lessons learned from the examples described here. Both the Utah and Washington school injury surveillance systems have been evaluated for simplicity, flexibility, and acceptability; the quality of data collection; and

Table 1. Potential Partners in Prevention for Health Educators and Information from an Injury Surveillance System

Potential Partner	Information useful to the partner
State Department of Health	State injury rates, risk factors
Local Health Departments	Local area-specific data
Public Health Researchers	Human, agent, and environmental risk factors; nature and cause of injury
School Nurses	Response/treatment of injury; emergency medical services' role
Insurance Loss Prevention Groups	Cost of injuries
Department of Education/School Superintendents	Student days lost from school, treatment of the injury, cost of injury to the school, equipment involved, school sports-related injuries
Parent-Teacher Organizations, Student Groups	Student days lost from school, involvement of drugs and alcohol
Department of Transportation	School bus/transport-related injuries
Consumer Product Safety Commission	Equipment involved, playground injuries

the usefulness of the system (Washington State Department of Health, 1998; Spicer et al., 2002). These evaluations provide insight into the strengths and limitations of the systems and ways in which the data have been used.

When parents send their children to school, they expect the environment to be safe and conducive to learning and growth. Health educators can play a vital role in a team effort to define the school injury problem and develop and evaluate programs aimed at preventing school injuries. Defining the problem starts with collection and analysis of surveillance data. Using information generated by the surveillance system, a health educator and other interested partners can make a convincing argument for school injury prevention. The data can describe the school injury problem, underscore the serious threat to health, and be used in design of prevention initiatives. Later, the data can be used to demonstrate the impact of these initiatives or to suggest ways to make the initiatives more effective. By forming partnerships and developing programs based on valid data, a health educator can lead the way to safer schools.

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