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Surveillance of Injuries

In this issue of *Public Health Reports*, van Beeck et al.¹ illustrate the immense value of using existing data sources to extract basic information about injuries. Our goal in the United States should be to reach a point at which valiant efforts like these authors' will be a supplement to, rather than a substitute for, an injury surveillance system that routinely collects, analyzes, and provides timely dissemination of basic information.

Surveillance is "the ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know."² Surveillance provides the information upon which public health decisions should be made. The final link of the surveillance chain is the application of these data to prevention and control. Van Beeck and colleagues have conducted a retrospective study by piecing together essentially administrative data collected by others, for other reasons. Out of this feedstock of data they are able to report temporal trends in injury mortality, injury incidence, case fatality rates, and exposure to hazards—not a bad use of data that might otherwise have lain fallow.

In general, we can evaluate the effectiveness of surveillance systems in two ways.³ First, we can look at the process of collecting and analyzing data: Is the method of collection acceptable to the respondents? Are the data collected in a timely fashion? Is the cost of the system appropriate? While these are pragmatic issues that could spell success or failure for a surveillance system, a more compelling way to think about the success of such systems is to ask whether they meet the goals of surveil-

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lance and thereby contribute to the public's health. The overarching goal of public health surveillance is to provide information upon which effective public health programs can be based. This includes estimates of the magnitude and distribution of a problem—necessary information to characterize its size and allow comparison to other problems.

Van Beeck et al. provide estimates of injury mortality in the Netherlands by type of injury and describe trends in injuries. Tracking trends is the most fundamental method of evaluating the effectiveness of interventions and thus measuring progress toward public health goals. Van Beeck et al. illustrate some real progress, for example, a steady diminution in drowning deaths. Since the 1950s mortality rates for other types of injuries—in particular traffic fatalities—have gotten much worse than much better, and still other types—such as fatal falls—have seen progress and then later lost momentum toward prevention. Surveillance also provides data which help to target public health interventions (such as helmet use among moped riders), to identify new problems, and to recognize the resurgence of other problems.

The Netherlands analysis is appealing in other ways. The authors were not satisfied with assessing mortality trends, but used available data to understand the determinants of these trends. Mortality trends are a product of injury incidence and of case fatality rates. The Netherlands data provide a spectrum of examples in which substantial changes in mortality rates were due to changes in incidence and changes in case fatality rates, but not always in the same direction.

The authors have shown considerable initiative and creativity in pulling together several existing datasets to characterize 45 years of fatal unintentional injuries. We learn indirectly from their report that an effective surveillance system for this important public health problem was not in operation during that time. Had there

been a functioning, timely surveillance system, then (a) there might have been considerably less motivation for them to do this study and report their findings or (b) some of their results might have been considerably different. Our conjecture about what might have been is not intended to detract from the authors' efforts and results; rather, it is simply a reflection on the need for a better system of surveillance for injuries—a situation that exists in the United States as well.

Based in part on the results of the van Beeck et al. study, this need has been recognized in the Netherlands and important progress has been made. In 1997, an ongoing system of surveillance for both fatal and nonfatal injuries—the Dutch Injury Surveillance System—was initiated in a sample of hospital emergency departments (Personal communication, Saakje Mulder, Surveillance Unit Manager, Consumer Safety Institute, Amsterdam).

Similarly, in the United States, the need for injury surveillance was voiced in a 1985 report from the National Academy of Sciences, *Injury in America: A Continuing Public Health Problem*: “Development of effective intervention strategies requires an adequate national surveillance system for monitoring injuries, their causes, and their short-term and long-term consequences.”⁴ Although the importance of such a system is clear, its development is no simple task. Injury mortality data, such as those presented in the article by van Beeck et al., give us an important but incomplete picture of the public health burden of injury. Mortality records may demonstrate the burden of injuries from motor vehicle crashes, whereas hospital discharge data may highlight the importance of injuries from falls and emergency department records may serve to illustrate the significance of bicycle-related injuries. A full picture of the incidence and severity of injuries requires data from each of these different sources. And, for data on cause of injury to be usable for surveillance nationally,

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they must be recorded in a standardized format, specifically, according to the International Classification of Diseases external cause of injury codes (E codes).⁵

In addition, a comprehensive system of injury surveillance should include more than enumeration of events and iteration of causes. Basic data on circumstances of injury are essential for targeting prevention efforts and evaluating their effectiveness, and information on the costs associated with injuries is necessary to assess the economic burden of this public health problem. Data must be sought from diverse sources, with creative approaches, and often in collaboration with nontraditional public health partners.

Over the last decade in the United States, important progress has been made in several of these areas. For example, a functional system has been established for the surveillance of occupational fatalities, based on death certificates from all 50 states and the District of Columbia.⁶ Surveillance systems for traumatic brain injuries and firearm-related injuries have been piloted, evaluated, and are being further developed. Routine E-coding of hospital discharge records is increasingly being promoted through state statutes. A set of uniform specifications for basic data elements to be collected in

emergency department records has been developed by a working group of representatives of clinical and governmental agencies and organizations involved in emergency care.⁷ And the Council of State and Territorial Epidemiologists (CSTE) and the State and Territorial Injury Prevention Directors Association (STIPDA) have asked the CDC's National Center for Injury Prevention and Control to collaborate in generating a blueprint for injury surveillance. The proposed system would promote efficient and coordinated use of injury surveillance resources at the Federal, state and local levels, articulate the special needs of injury surveillance systems, and enhance the availability of injury surveillance data.

Globally, a WHO working group has recently developed draft guidelines for counting and classifying injuries, the International Classification for External Causes of Injuries (ICECI), compatible with the International Classification of Diseases.⁸ Such efforts to develop user-friendly international standards can provide important support for injury surveillance in developing countries, where limited resources may be able to sustain only the most rudimentary surveillance for only the most pressing public health problems.

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