

Sentinel event notification system for occupational risks

by Edward L Baker, MD, MPH¹

Control of occupational illness and injury in the United States (US) differs from that in Finland in several respects. One important difference derives from the political structures of the two countries. In the United States, state governments retain much power over matters of industry and commerce. As a result, state health and labor departments have certain unique capacities to protect the health of workers, and the National Institute for Occupational Safety and Health (NIOSH) has worked regularly with states to provide financial support and technical assistance. In surveillance activities, NIOSH has maintained a pattern of federal-state relationships established by the US Centers for Disease Control (CDC) in the surveillance of communicable diseases. CDC has, in the past, recommended to states a list of notifiable diseases and has published reports of surveillance activities in various CDC publications. This report describes a current NIOSH program, the "sentinel event notification system for occupational risks" (SENSOR), which has elements of potential relevance to the control of occupational disorders in Finland and other countries. The applicability of this approach is not necessarily limited by differences in political structure. Many states have laws which require health providers to report cases of occupational illness and injury; most do not maintain a comprehensive system which actively *identifies* and *targets* potential sources of case reports, and then *responds* to such reports. In this brief statement, SENSOR is proposed. It will utilize *targeted* sources of *sentinel providers* to recognize and report *selected occupational disorders* to a state *surveillance center* which, in most locations, will be a *state health department*. The center will be responsible for: (i) maintenance of the targeted reporting activity (including case finding), (ii) management of the reported case (including case confirmation), (iii) screening for possible disease in co-workers of the case, (iv) evaluation of worksite factors potentially responsible for the case, (v) issuance of workplace-specific recommendations for hazard abatement, and (vi) development and maintenance of other related occupational illness and injury activities as appropriate and possible (eg, trend analysis, education, technical consultation, information dissemination).

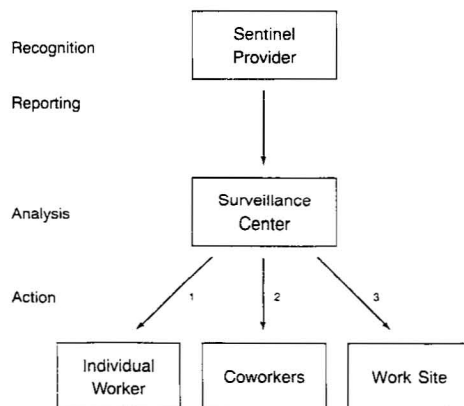
SENSOR is being created as a cooperative state-federal effort designed to develop local capability for the prevention of selected occupational disorders. To demonstrate the feasibility of this approach, NIOSH funded a small number of SENSOR projects in 1987.

Background

As discussed by Langmuir (2), as well as by Foege et al (1), the purpose of surveillance is not only to collect and analyze data, but also to direct active prevention programs designed to control and, in some cases, eliminate the occurrence of preventable disorders. In the past, a number of states have enacted specific laws and regulations requiring physicians, laboratories, and other health care providers to report selected occupational diseases (3). In a few states the development of a targeted reporting system has been linked from the start with case follow-up and workplace intervention

S
E
N
S
O
R

entinel
vent
otification
ystem for
ccupational
isks



¹ National Institute for Occupational Safety and Health, Atlanta, Georgia, USA.

Figure 1. The sentinel event notification system for occupational risks (SENSOR).

(Honchar & Martin, unpublished results). Unfortunately, in most instances, state provider reporting programs for occupational conditions have not been linked to response and intervention efforts. Other shortcomings have been identified in provider reporting systems which have limited their usefulness. These include uncertainty among providers of the nature of specific occupational disorders (ie, lack of diagnostic criteria and epidemiologic case definitions). In the case of communicable disease reporting, the development of reporting criteria has greatly facilitated the epidemiologic investigation of selected conditions (4). Another limitation of existing occupational disease reporting systems, similar to that observed in many communicable disease reporting activities (3), is the lack of a formal, defined network of sentinel providers who have specific responsibility for reporting selected conditions to a state health agency. In many states, regulations specify that any occupational disease should be reported; yet no guidance or list of such conditions is provided to practitioners. This problem has been addressed in some states through the development of a list of notifiable occupational conditions. Finally, in most states, the resources needed to receive, analyze, and direct a response to a case report are minimal or lacking.

Overview

To address these limitations, a targeted provider reporting system is proposed for development by states to perform active surveillance of selected occupational conditions. This system, SENSOR, will build upon previous experience in state health and labor departments. To some extent, prior support from NIOSH has contributed to the development of this capacity.

SENSOR will consist of two organizational components (figure 1). First, a network of appropriate sentinel providers (eg, individual practitioners, laboratories, or clinic groups) will be developed. The function of the sentinel provider network will be to recognize and report cases of selected occupational disorders. The second component, a surveillance center, will interact with and receive reports from the providers, analyze the data, and direct action toward the individual cases, co-workers of the cases, and the workplace. Issues relating to the proper handling of confidential medical data, and appropriate and effective intervention, will be the responsibility of the center. In addition to fulfilling a central role in the coordination of response to provider reports of occupational disorders, the center will provide technical consultation on a wide variety of occupational health issues (eg, surveillance using vital records and other existing data sources to monitor trends of occupational disorders, information dissemination, etc). Since both state health departments and state labor departments have variable, shared responsibilities with respect to occu-

pational health and safety, the creation of a surveillance center should unite complementary programs which currently exist in relative isolation and draw in other existing occupational health and safety expertise from, eg, academic institutions and occupational clinics.

Recognition

To facilitate the recognition of selected occupational conditions by the sentinel provider network, NIOSH is developing and will maintain a list of conditions which lend themselves to provider reporting. To the greatest extent feasible, such conditions are (i) attributable to work in a high percentage of cases, (ii) reasonably frequent, (iii) easily diagnosable by practitioners having no access to sophisticated diagnostic tests, (iv) of reasonably short latency, and (v) potentially reversible following case identification.

A preliminary list of such conditions has been developed by NIOSH staff. It includes carpal tunnel syndrome, lead poisoning/elevated blood lead levels in adults, noise-induced hearing loss, occupational asthma, pesticide poisoning, and silicosis. While most of the conditions recommended for reporting deviate from one or more of the noted criteria, the list represents conditions which meet the criteria to the greatest extent feasible. Depending upon the evaluation of occupational risks, which may vary from state to state, other conditions may be proposed by the surveillance centers for reporting.

In addition to developing a list of conditions, NIOSH is also developing reporting criteria for the conditions, to be used by practitioners to facilitate recognition, and epidemiologic case definitions for use in counting and summarizing reported cases. Such criteria and definitions are to be used for the purposes of improving provider recognition of selected occupational conditions and enhancing the uniformity of reporting among states. Ultimately, analyses of case reports will provide useful information regarding the characteristics of selected occupational conditions, their sequelae, and other important clinical and epidemiologic features.

Reporting

Reporting by providers to state health departments has usually relied on a system in which the provider is encouraged to telephone or mail reports of cases using forms developed by the requesting agency. In view of the recent advances in computer technology and telecommunications techniques, other alternatives (3) exist for transferring information from providers to a central surveillance center. To facilitate a more active transmission of data from providers to surveillance centers, NIOSH will support the development of computer technology, which will allow for electronic trans-

mission of data on cases from providers to the centers for analysis and response.

The development of targeted reporting systems should not, however, be delayed or deterred by the absence of immediate capabilities for the electronic transmission of case reports. In all situations, the surveillance centers will maintain an interactive mode with sentinel providers in order to encourage recognition and reporting of occupational cases.

Analysis

Utilizing staff epidemiologists, statisticians, and other occupational health professionals, the surveillance center will analyze cases reported from the provider network and determine whether additional case follow-up and action are appropriate. In addition, summaries of reported cases and responses will be prepared for distribution, especially to the sentinel providers who report the cases. In many states, opportunities exist to disseminate the results of such analyses through publications directed at public health professionals, physicians, and other professionals. The results of such analyses may also be appropriate for inclusion in the *Morbidity and Mortality Weekly Report* published by CDC.

Although primarily useful for case identification and follow-up (4), data from a SENSOR project will also be useful as a supplement to other existing data sources to monitor trends in the occurrence of selected occupational disorders within a state.

Action

Three types of action could result from the receipt of a confirmed case report. First, individual case management recommendations will be developed by NIOSH for the conditions to be placed under active surveillance. Such guidelines will be made available to practitioners reporting these cases as a form of consultative assistance. The second type of action will be directed at co-workers of the case. Since co-workers with similar workplace exposures may be at risk for the development of occupational illness similar to that experienced by the case, medical evaluations of such

workers to detect early, potentially reversible health disorders is appropriate. Finally, action directed at specific workplace causes will be coordinated or carried out by the surveillance center in response to the report of an individual case. In view of the current variability in state programs relating to the control of occupational safety and health hazards, local resources will be examined and utilized to determine the most appropriate mechanisms for directing such worksite action.

Summary

Mandates for provider reporting systems have existed in a number of states for many years, but due to various shortcomings the potential for targeted surveillance of occupational illness and injury has not been realized. To achieve a more uniform, active approach to provider reporting, SENSOR will be created as a cooperative state-federal effort designed to develop local capability for the recognition, reporting, follow-up, and prevention of selected occupational disorders. To demonstrate the feasibility of this approach, NIOSH funded a small number of SENSOR projects in 1987. Ultimately, joint state-federal support will be essential to maintain SENSOR activity within a state.

SENSOR should not be viewed as the sole approach to the surveillance of occupational illness and injury. Other approaches to the identification of cases of occupational illness or injury and to monitoring the trends of occurrence of these disorders have been developed by NIOSH and various states, and they will continue to function (4).

References

1. Foege WH, Hogan RD, Newton LH. Surveillance projects for selected diseases. *Int J Epidemiol* 5 (1976) 29—37.
2. Langmuir AD. William Farr: Founder of modern concepts of surveillance. *Int J Epidemiol* 5 (1976) 13—18.
3. Thacker SB, Choi K, Brachman PS. The surveillance of infectious diseases. *J Am Med Assoc* 249 (1983) 1181—1185.
4. Thacker SB, Redmond S, Rothenberg RB, et al. A controlled trial of disease surveillance strategies. *Am J Prev Med* 2 (1986) 345—350.