The Occupational Health Nurses in Agricultural Communities Program

IDENTIFYING AND PREVENTING AGRICULTURALLY RELATED ILLNESSES AND INJURIES

by Catherine L. Connon, MN, RN; Eugene Freund, MD, MSPH; and Janet K. Ehlers, MSN, RN

The Occupational Health Nurses in Agricultural Communities (OHNAC) program is one component of the National Institute for Occupational Safety and Health (NIOSH) Agricultural Initiative. Goals of the OHNAC program are to conduct active surveillance of illnesses and injuries affecting farmers, farm workers, and farm family members, and to use this information to prevent agriculturally related illnesses and injuries. Through the OHNAC program, 31 nurses are now in rural hospitals, county health departments, and clinics in 10 states (CA, GA, IA, KY, ME, MN, NY, NC, ND, and OH [See Box]).

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Funding for the OHNAC program began in 1989 with a Congressional initiative to prevent illness and injury on United States' farms. Congress funded NIOSH, one of the Centers for Disease Control, to support surveillance, research, and intervention activities in agriculture. The NIOSH Agricultural Initiative comprises five agricultural programs: the Farm Family Health and Hazard Survey, Agricultural Health Promotion Systems, Cancer Screening in Farmers, Agricultural Research Centers, and OHNAC.

CONCEPT OF OHNAC

The intent of Congress, with the OHNAC project, was to place public health nurses locally in agricultural areas. Historically, this concept is not new. In 1914, Wickliffe Rose, Director General of the Rockefeller Sanitary Commission, presented a plan for a national public health education system. His proposed system involved nurses who would provide public health information to the community through churches and schools, similar to the extension service model (Fee, 1983).

The OHNAC nurses conduct surveillance using an approach designed to collect and act on cases with immediate public health implications. The reliance on work related injuries and diseases

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as sentinel health events, described more thoroughly below, has been used successfully in other NIOSH projects (Baker, 1989; Rutstein, 1983).

Surveillance is the ongoing systematic collection, analysis, interpretation, and dissemination of relevant health data to all who need to know (CDC, 1988; Langmuir, 1976). Disease surveillance systems can be used to identify preventable health events, or sentinel health events, and to target interventions aimed at reducing or eliminating those events in the larger community.

The two approaches to surveillance are rate based and case based. Rate based surveillance refers to populations under study; trends in disease are monitored using population based rates. Case based surveillance refers to studying individual cases to identify risk factors that may be applicable to larger communities (Seligman, 1992). The OHNAC program relies heavily on case based surveillance efforts.

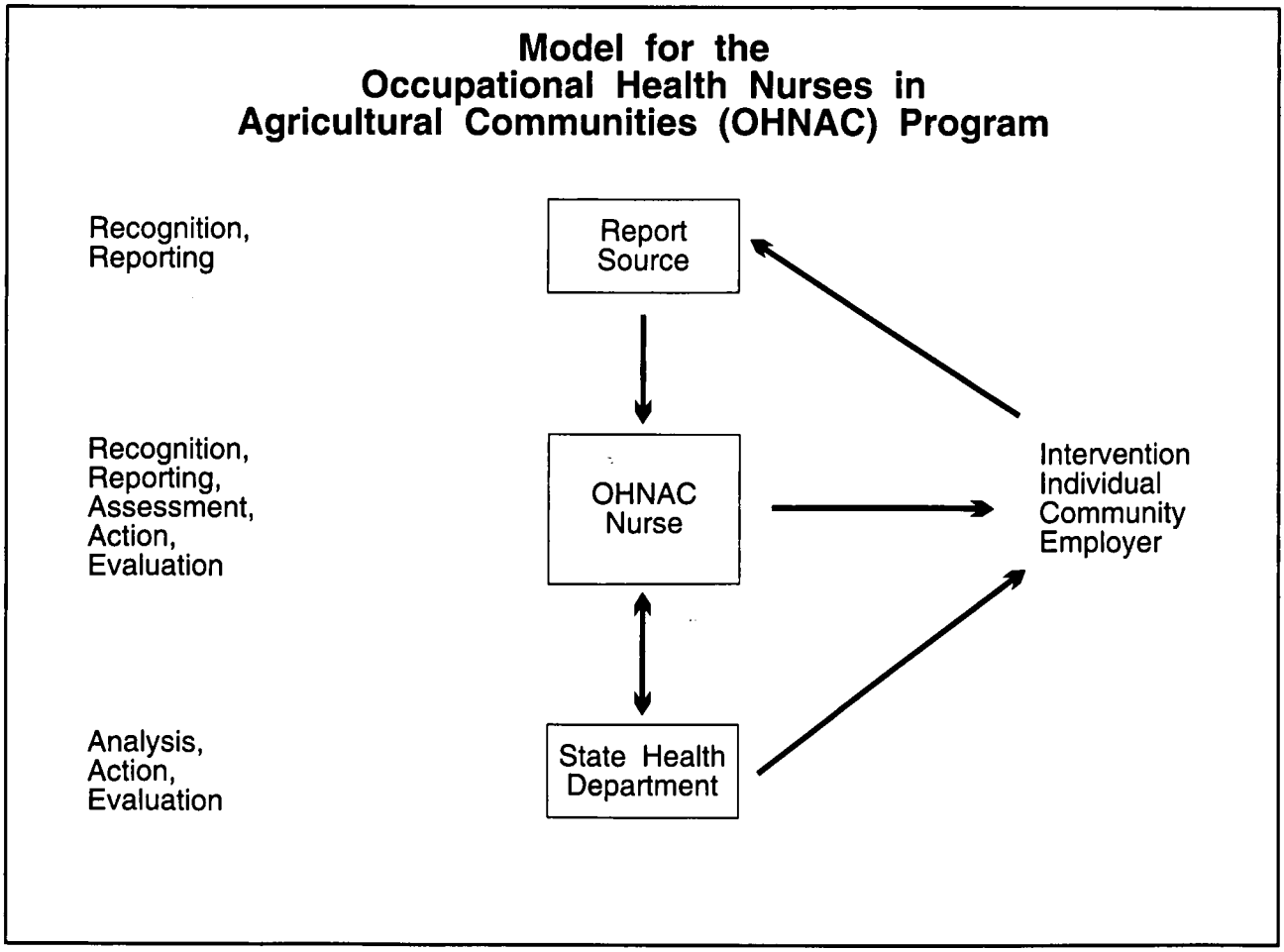

Figure: Organizational components of OHNAC.

In concept, surveillance within the OHNAC program is based on three organizational components (Figure). The first component includes a reporting source. Reports come from a variety of sources, which include farmers themselves, cooperative extension agents, and/or a network of "sentinel" providers (such as physicians or hospitals) who recognize and report selected occupational conditions. Each condition is known as a sentinel health event: ". . .a preventable disease, disability, or untimely death whose occurrence serves as a warning signal that the quality of preventive and/or therapeutic [health] care may need to be improved" (Rutstein, 1983).

The second, and perhaps most critical organizational component includes the OHNAC nurses. The field nurses are located within the communities they serve. By having nurses at the local level, the OHNAC program is able to respond rapidly to case reports and expedite interventions to the individual farmer, the farming community, and/or the public health and health care communities. Furthermore, since many of the OHNAC nurses live in or near the agricultural communities they serve, they provide valuable insight into which interventions are likely to be effective in their communities.

The third organizational component includes the state health department, which acts as a surveillance center. The state health department receives and analyzes case reports, interacts with the OHNAC nurses, and directs interventions back to individuals/communities. Target communities include the farming, health care, and public health communities.

DESCRIPTION OF OHNAC

Each of the 10 states participating in the OHNAC program designed their project to address the unique needs of their farming communities. This is particularly important, as the nature of agriculture varies regionally, as well as within the individual states. In addition, the nature of health and safety problems differs with variations in principal crop, farm size, and farm structure, i.e., family owned and operated farms versus

larger corporate farms. Although methodologies differ among states, each state conducts case based surveillance of selected sentinel health events in agriculture. In addition, each state has the same overall goal of preventing agricultural morbidity and mortality.

In the OHNAC surveillance system, nurses actively seek out sources for case reports. Each state uses selected case definitions and/or reporting guidelines for the conditions under surveillance. For example, many of the states collect information on targeted conditions such as agricultural related respiratory conditions, hearing loss, fatalities, and machinery related injuries.

Case definitions or reporting guidelines for the selected conditions under surveillance are given to participating providers for the purpose of identifying and reporting cases. These "sentinel" providers are defined broadly and may include physicians, hospital and clinic records, hospital staff, emergency medical services (EMS), and chiropractors. Additional report sources include farmers, coroners, sheriffs, veterinarians, county cooperative extension agents, and media sources. For example, the OHNAC programs in North Dakota and California rely heavily on hospitals and physicians' offices as sources for case reports. In contrast, because of the state's constraints on collecting medical record data, the programs in Maine and Minnesota are experimenting with gathering reports directly from farmers.

When cases are reported, the OHNAC nurse follows up to gather additional information about the reported case. This is accomplished by telephone calls to the affected individual or the individual's family members, or by hospital visits, farm site visits, and/or walk throughs of farm facilities.

The nurse collects information on a report form, assesses the event(s), and determines a course of action. For example, an OHNAC nurse in New York received a report of a scalping injury from a hay baler machine. While investigating this case, she discovered three other scalping cases over a 17 year period involving the same model machine (CDC, 1992; also see page 437 in this issue). Her investigation included collecting information from the victims, medical records, safety specialists, implement dealers, and machine manufacturers. Because of similarities among the four events, this cluster of cases lead to dissemination of a Hazard Alert to farmers. The alert was published in several trade journals, and the Cooperative Extension Service Network at Cornell University electronically distributed the alert to every county agent in the United States.

Other interventions include providing on site recommendations. Many of the OHNAC nurses conduct farm site visits where they observe work processes or work practices that may contribute to an over-exposure. The nurses make suggestions to reduce exposure and use the site visit as an opportunity for a "teachable moment" (May, 1992).

Furthermore, OHNAC nurses often work collaboratively as part of an agricultural occupational health team, consulting with safety specialists, extension service agents, agricultural engineers, and occupational physicians. By incorporating principles from multiple disciplines, OHNAC nurses apply the information from an investigation to the development of interventions. Interventions may include individual and community education, recommendations and referrals, studies to evaluate health hazards, and intervention programs on agricultural safety and health targeted to a specific group.

After collecting information on reported cases, the OHNAC nurse forwards case reports to the state health department for analysis. The state health departments provide assistance in targeting interventions, such as the development of prevention programs based on analyses of the data. In addition, the state health departments, in conjunction with NIOSH, evaluate the effectiveness of the surveillance system to assure the best use of public health resources. The evaluation process describes: the public health importance of the health events; the system and its attributes; the level of usefulness (i.e., actions taken as a result of the data); the resources used; and conclusions and recommendations for areas needing modification (CDC, 1988).

Disseminating findings and preventive measures to the farming and professional communities is critical to the success of OHNAC. The nurses write prevention oriented articles, often based on actual case reports. The articles are published in various media sources including newsletters, news bulletins, newspapers, and magazines. The nurses also make presentations to farm groups and organizations, schools, educational seminars, and members of the health care community.

Immediate feedback to the farming community creates a link between farmers and the OHNAC nurse, provides visibility for the project, and promotes the OHNAC nurse as a resource in the community. Because many articles are based on case reports, the OHNAC nurses have the opportunity to provide educational information through literature about an event, the circumstances that contributed to it, and recommendations to reduce exposure or prevent the condition from happening again.

Likewise, immediate feedback to health care providers creates a link between the clinical and

public health communities and stimulates case reporting by reinforcing the value of public health interventions. The scalping incident is an example of effective dissemination. In addition to alerting farmers across the nation, the information was also disseminated nationally to the public health community through the *Morbidity and Mortality Weekly Report* (CDC, 1992).

RESULTS AND DISCUSSION

The OHNAC program is a relatively new public health practice program. Because of its newness, the success of OHNAC surveillance efforts has varied. For example, relying on physician reports has not been uniformly effective. Many of the OHNAC states have described confidentiality concerns and potential litigation as barriers to case ascertainment from physicians and health care providers.

Although nearly all of the OHNAC states have some occupational disease reporting requirements, the actual reporting of occupational disease by health care providers depends on recognition of a condition as an occupational disease and overcoming barriers to reporting (Freund, 1989). The OHNAC nurses have focused their efforts on assisting health care providers and farmers to recognize agriculture as an industry with both unique hazards and hazards that are common to other industries.

For example, to help local physicians with recognition and diagnosis, the nurses provide literature on agricultural illnesses such as pesticide poisonings and respiratory conditions. The nurses also conduct educational presentations to health care professionals on agricultural hazards, exposures, symptoms, and treatments. In Georgia, the OHNAC nurses conduct farm walk throughs for physicians who are training in occupational medicine. The walk throughs provide the opportunity for health care professionals to observe farm processes and learn about farm machinery and farm hazards.

An alternative approach to case ascertainment has been the attempt to encourage reports directly from farmers. The nurses actively seek out farmers through farm meetings, farm organizations, implement dealers, and media sources. Self reports from the farmers have been successful in some, but not all, communities.

In Minnesota, self report forms are available in waiting rooms, grocery stores, and other public areas for farmers to fill out and send in. Twenty-nine farmers returned self report cards over a 3 month period. Factors that may influence the success of self reports include the nurse's visibility in the community, working relationships established between the nurse and the farming community, and population density of the target community.

Another approach to case finding has involved health screening activities. Several of the OHNAC states have experimented with blood pressure, hearing, and spirometry screenings at farm shows and fairs. These screening efforts have identified cases and provided visibility for the project.

Several interesting observations about farming, farmers, and the hazards they face have emerged. For example, most farmers are aware of safety hazards on their farms and readily identify them. However, farmers seem to lack the time to implement solutions to the health and safety problems they discover.

Farmers have shown that they are concerned about health hazards, particularly pesticides, on their farms but lack knowledge in preventing the exposure (NCASH, 1989). Many OHNAC states have observed difficulties in locating information about appropriate means of protection, as well as finding personal protective equipment for sale by local businesses in rural areas.

The OHNAC nurses work with county cooperative extension agents to provide this information. Many of the OHNAC nurses staff agricultural safety and health booths at fairs and farm shows. During these fairs, the nurses offer educational literature and discuss agricultural safety and health issues with farmers and farm wives.

Several of the OHNAC states have identified problems in accessing EMS in rural communities. Many OHNAC states have identified communities that do not have 911 emergency systems. In rural locations where 911 systems are available, there have been difficulties in accessing local 911 from cellular telephones. Other problems include difficulties encountered by emergency response personnel in locating farms or locating the injured victim on the farm, and the time lapse involved in covering great distances to reach the nearest hospital.

Several states have found a lack of knowledge and/or training of individuals "first on the scene." Often the first person on the scene is a family member. Several OHNAC states have included first responder information in farm safety presentations for farm families. In addition, OHNAC nurses have coordinated special courses for emergency medical service personnel and volunteer firefighters, which include training in victim extrication from agricultural machinery and farm structures such as grain bins.

Results from this program to date affirm the wisdom of choosing nurses to staff this public health program. The OHNAC nurses have been accepted and trusted as credible resources in their

communities. Because the nurses are trained in multiple disciplines they provide a unique balance, or "holistic" approach, to public health services.

Many of the OHNAC nurses are farmers themselves, or have farming experience. They are also a part of the communities they serve. This local presence may be necessary for the success of prevention efforts in agriculture.

The OHNAC nurses bridge gaps between state programs and farm community needs. They respond to farmers in a timely manner and use valuable assessment skills to identify the many problems farmers face.

The nurses use local surveillance information when speaking to farming audiences on agricultural safety and health. By using information from actual cases in their presentations or educational activities, the nurses provide a unique perspective—one that brings the event "close to home" and emphasizes prevention. This may influence health beliefs and behavior change by instilling a sense of vulnerability and perceived susceptibility (Rosenstock, 1974). Components of the Health Belief Model can be useful when exploring the personality and environment of the target (whether it is the individual, group, or community) and in further program planning (Dignan, 1987).

CONCLUSION

Although surveillance is not new to occupational health nursing, the role of the agricultural occupational health nurse is new (Migliozzi, 1993). One of the major differences in the agricultural work force, compared to work forces in general industry, is that, in the agricultural community, the workplace is often also the farmer's home. Because of this, the focus on local level interventions is one of the major strengths of the OHNAC program.

To effectively monitor the work force, the occupational health nurse must assess the workplace, identify exposures or health risks, evaluate hazards, know the work processes that create exposures/health risks, and know how to prevent them. In addition, the occupational health nurse must also know the community of people being served. Knowing the community aids in selecting approaches that will be most effective for successful interventions. From the OHNAC program, recognizing and using what works in a community has been crucial to successful interventions.

Case based surveillance has broad applicability. Occupational health nurses in industry are in a prime position to implement case based surveillance systems in their workplaces. Information collected from this type of ongoing, systematic process potentially could be used to identify new risk factors or new groups at risk. Because the focus of case based surveillance is on intervention, the data can be used to target programs to reduce or control exposures.

Because agriculture is one of the most hazardous industries, and also one that is underserved, the OHNAC program plays a key role in collecting data on agriculturally related illnesses and injuries in a ongoing and systematic way. This is an important first step in identifying problems from which successful interventions can be developed.

IN SUMMARY

The Occupational Health Nurses in Agricultural Communities Program
Identifying and Preventing Agriculturally Related Illnesses and Injuries.

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1. The Occupational Health Nurses in Agricultural Communities (OHNAC) program is a national surveillance program to identify and prevent agriculturally related illnesses and injuries. Locally based nurses work closely with health departments, hospitals, physicians, and other providers to identify and report sentinel health events.

2. Through OHNAC, sentinel health events are assessed and evaluated to identify occupational risk factors that may be applicable to the larger community of agricultural workers. This information is then disseminated nationally, locally, and to the individual workers.

3. The surveillance and investigation information is used to develop programs to prevent agricultural illnesses and injuries. The use of case based surveillance and subsequent data driven interventions has broad applicability for occupational health nurses in other industrial sectors.

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