Chapter 27

NURSES IN OCCUPATIONAL PRACTICE IN AGRICULTURAL AND RURAL COMMUNITIES IN NEW YORK STATE: PROVIDING OCCUPATIONAL HEALTH AND SAFETY EDUCATION AND PREVENTION SERVICES

Bernadette D. Hodge, Diana E. Gaetano, Susan B. Ackerman, Connie A. Jastremski, and Terry Fulmer

THE BODY OF KNOWLEDGE RELATED to our understanding of rural nursing generally reports on the western and southern areas of the United States. The leading textbook in rural nursing (Winters & Lee, 2010) has been essential to our understanding of rural nursing, and with this edition, the textbook adds a chapter that describes rural nursing in the northeast part of the country and provides an expanded view of rural nursing practice. The purpose of this chapter is to describe the interdisciplinary New York Center for Agricultural Medicine and Health (NYCAMH) and report on the essential services provided by rural occupational health nurses (OHNs) in upstate New York. The population of New York State, as reported by the 2011 estimate of the U.S. Census Bureau, is 19,465,197; 8,175,133 reside in the metropolitan New York City area and over 11 million people live outside this metropolitan area (U.S. Census Bureau State, 2010). The state has a landmass of 47,126.40 square miles (approximately half the size of Colorado). The Adirondack Park comprises over 6 million acres (Adirondack Park 2011 Annual Report, 2011), which is larger than Yellowstone, Yosemite,

the Grand Canyon, Glacier National Park, and Great Smoky Mountains National Park combined (Wikipedia, 2012). Further, the southern tier of New York (the area that is geographically below the NY State Thruway) encompasses over 6.8 thousand acres (U.S. Census Bureau State, 2010). The Bassett Healthcare Network is an integrated health care system that provides care and services to people living in an eight-county region covering 5,600 square miles in upstate New York (Bassett Healthcare Network, 2012). Over 400 nurses and 78 nurse practitioners (NPs) are employed in the system. It is in this context that the NYCAMH conducts the important occupational health and safety education and prevention services described here.

RURAL NORTHEAST OCCUPATIONAL CHARACTERISTICS

Geographics and Rural Worksites

New York State averages 411 persons per square mile, but in some of the most rural counties it is as low as two persons. In the central New York region served by NYCAMH, the range is 33 to 124 persons per square mile. The rural nature of large areas of the state is reflected in transportation, communication, and health care challenges that are similar to those experienced in rural areas elsewhere in the United States. Broad swaths of Maine, New York, and Pennsylvania have been designated as health professional shortage areas (HPSAs) by the federal government (Rural Assistance Center [RAC], 2012). Because of the size of these states, the rural population at risk can be considerable. In 2010, over 1.5 million people lived in rural areas in New York State (U.S. Department of Agriculture Economic Research Service [USDA ERS], 2010).

The geography of upstate New York is characterized by rolling hills, river valleys, vast forest-covered mountains, and lakes, making jobs in agriculture, forestry, and fishing prevalent. Typically, the small towns and villages upstate do not have a large manufacturing or business base to provide significant employment or support for the local economies. Schools, health care facilities, county government, and small manufacturers are places of employment for rural residents. County taxes are the main means of providing basic government services such as emergency services and road maintenance. Fire protection is typically provided by community volunteers who essentially are always on call without wage reimbursement. Schools tend to be consolidated districts, centrally located, requiring bus services for large geographic areas, all of which are paid through district taxes. These characteristics taken together tend to support and promote a sense of community among the rural populations, who can manifest a certain pride in the small-town identity and sense of ownership and voice in the decisions about local matters.

THE NEW YORK CENTER FOR AGRICULTURAL MEDICINE AND HEALTH

In the early 1980s, two pulmonologists, Drs. David Pratt and John May, and a nurse researcher, Laura H. Marvel, BSN, RN, at the Mary Imogene Bassett Hospital in Cooperstown, NY, shared an interest in exploring occupational health and safety issues among New York's farming population. In part, they were motivated by the remarkably high rates of occupational fatality, injury, and illness in a large population legislatively exempted from the Occupational Safety and Health Administration's (OSHA) oversight. In 1988, the NY State Legislature established the NYCAMH as a member clinic in the NY State Department of Health's (NYSDOH) eight-member Occupational Health Clinic Network. The addition of this center subsequently granted the NYSDOH support to better understand the causes of agricultural injuries in New York. As a designee in a national project known as Occupational Health Nurses in Agricultural Community (OHNAC), the NYSDOH joined an OHN from NYCAMH with two other agricultural nurses distributed regionally across the state. This collaborative project utilized agricultural health nurses and agricultural engineers to conduct onsite incident investigations and to provide support to farm families following agricultural fatalities.

In 1992, NYCAMH became one of seven agricultural centers designated by the National Institute for Occupational Safety and Health (NIOSH) to be known as the Northeast Center for Agricultural Medicine (NEC). These centers, located in geographically designated regions, act by cooperative agreement to address pertinent and emerging problems related to occupational safety and health in agriculture, forestry, and fishing. Also, in the early 1990s, NYCAMH's "Farm Partners" program was created to identify and address the causes of stress for farm families and their hired workers. Counseling services were provided by a social worker who was often accompanied by a nurse.

In the mid-1990s, NYCAMH began performing annual physical exams and classifications for firefighter and emergency medical service (EMS) personnel. In response to increased requests, the Healthworks occupational health services program was initiated in 1995 to address the health and safety needs of the rural business community.

Organizational Structure, Staff, and Population Served

Federal, state, and private funding are the means by which NYCAMH/NEC provides services to rural and agricultural populations. A combined research team of anthropologists, epidemiologists, statisticians, and public health faculty collaborate with other northeast researchers in agricultural injury and illness surveillance, intervention, and prevention activities. Clinical services are provided by physicians, nurse practitioners

(NPs), social workers, and occupational health nurses (OHNs) within the organizational structure managed by a nurse administrator. A health science librarian with nursing background provides library services and maintains the rural occupational resource collection.

Safety educators provide onsite farm safety and health training to farmers, family members, and farmworkers in English and Spanish languages in New York State and throughout the northeast. Safety training is also made available to the Anabaptist community through collaboration with a nurse educator in Pennsylvania. The population served through the Healthworks service line might be some of those same farmers who are also volunteer firefighters as well as rural business employees throughout much of New York State.

OCCUPATIONAL AND ENVIRONMENTAL HEALTH NURSE PROFESSION

The OHN is utilized in occupational settings to provide health and safety programs and services. These services focus on promotion and restoration of health, prevention of illness and injury, and protection from work-related and environmental hazards. The approach to this type of health care delivery is population focused with the client as an inclusive term, including individual workers, workers' families, worker populations, communities, environments, and employers (American Association of Occupational Health Nurses [AAOHN], 2012).

Because poor employee health costs business about $1 trillion annually (AAOHN, 2012), business executives look to OHNs to maximize employee productivity and reduce costs through lowered disability claims, fewer on-the-job injuries, and improved absentee rates. OHNs possess a combined knowledge of health and business, balancing the requirement for a safe and healthy work environment with a healthy bottom line (Rogers, 2003).

Occupational and environmental health nursing practice maintains a public health model of prevention and an environmental health focus. Typically, OHNs possess a baccalaureate degree in nursing and experience in community health, ambulatory care, critical care, or emergency nursing. Many OHNs have obtained advanced degrees as well as certification in occupational and environmental health nursing. Seven major roles exist in occupational and environmental health nursing: clinician/practitioner, case manager, health promotion specialist, manager, consultant, educator, and researcher (Rogers, 2003).

NYCAMH OHN SERVICES TO RURAL BUSINESSES

The OHNs play a key role in responding to the needs of small rural businesses. Here, the range of services is broad: preplacement and annual

employee evaluations; assessments to assure OSHA compliance; and assistance in implementing workplace safety and health programs. For example, in a local pharmaceutical manufacturing worksite, the role of the OHN in support of a blood-borne pathogens program is to ensure that safe working procedures and training are implemented to prevent employee illness. In a nearby science laboratory, the OHN participates in a chemical safety program by ensuring proper management of chemicals present in the facility and by providing employees with necessary safety and health information regarding chemical hazards associated with their jobs. Hearing conservation is another frequently requested service, which ensures that hazardous noise levels are minimized and employees exposed to these noises are properly protected. In varied settings such as a county highway department or a dairy food processor, the OHN provides audiometric testing to document workers' hearing acuity and to monitor the hearing of employees frequently exposed to hazardous noise levels. In addition, the OHN makes referrals to an industrial hygienist for identification and control of workplace exposures to chemical and physical hazards important to worker health. OSHA-mandated respiratory protection programs are another facet of the work with small rural businesses. Recent Healthworks services with a yogurt manufacturer and a construction company ensure that exposures to hazardous air contaminants are minimized and exposed employees are properly protected.

Worksite Wellness Programs

The OHN as a health promotion specialist has a key role in occupational and environmental health nursing. The goal of a worksite health promotion program is improving the overall health status and productivity of the workforce and reducing health care costs (Rogers, 2003). The workplace is where many people spend a third of their life and it can be a unique venue for health promotion activities. The Healthworks OHN administers the worksite wellness program that was initiated in 2011. This fee-for service line is being marketed within an eight-county service area in central New York; it includes assessments of a worksite's readiness to provide support for healthier lifestyles, biometric screenings, and health risk assessments for employees. These wellness programs also assist with the design and delivery of educational, motivational, and self-care programs, and provide support with program evaluation, including return-on-investment data. While the first year was spent in large part on program infrastructure development (educational session development, database building, etc.) and marketing, several important milestones were reached: program staff achieved WELCOA (Wellness Council of America) certification in several areas of worksite wellness programming; educational programming was pilot tested at a training for 100 staff members at a local not-for-profit organization; marketing initiatives

enabled relationship building with over 20 separate employers; and initial volunteer biometric screenings to identify risk factors for chronic disease were conducted at one large (500+ employees) public service organization and one large manufacturing plant, with plans to continue the program for each site in 2012 and 2013. A total of 147 employees participated in this first round of screenings.

This effort in worksite wellness builds upon a long-established worksite health promotion program specifically aimed at cardiovascular disease prevention. Administered by an OHN, this program has provided screenings for cholesterol (totals for cholesterol and high-density lipoproteins [HDL] and their ratio), blood pressure, body mass index (BMI), waist/hip ratio, and blood glucose for employees across our region. Recently, at eight area worksites, 208 employees were screened. Each individual received his or her 10-year risk of heart disease assessment (based on the Framingham risk equation), counseling regarding their screening results, and educational information on ways to maintain optimal health and prevent heart disease. One hundred and nineteen individuals were referred for follow-up. These individuals were also screened for blood glucose levels. Two hundred and five employees had normal glucose results; three individuals had impaired fasting glucose or impaired glucose tolerance. Since the inception of this health promotion program in 2001, a total of 15,293 individuals has been screened, of which 9,603 individuals have been referred for medical evaluation.

Volunteer Firefighters and Emergency Service Personnel

Each year, an average of 100 firefighters die while on duty in the United States (Centers for Disease Control and Prevention [CDC], 2012). A leading cause of these fatalities is myocardial infarction (MI) caused by stress and overexertion (Gaetano et al., 2007). As a result of incidents that occurred in 2011, the U.S. Fire Administration (USFA) reported 81 on-duty firefighter fatalities in the United States, and 87 fatalities were reported for 2010 (USFA, 2012). MIs were responsible for the deaths of 48 firefighters (59%) in 2011, nearly the same proportion of firefighter deaths from MI (60%) as in 2010 (USFA, 2012).

The physical demands placed on firefighters can be very high and they often have to go from a state of sleep to near 100% alertness and high physical exertion in a matter of minutes. Further, they must carry heavy equipment through intense heat while wearing heavy gear. Heart rates in this setting often approach 200 beats per minute (Smith, Petruzzello, Kramer, & Misner, 1996). Owing to the physical demands of firefighting, it is recommended that firefighters maintain a high level of physical fitness (Federal, 2002).

The Healthworks program provides health surveillance to rural volunteer firefighters and EMS personnel. According to NY State's 2007–2009

vital statistics data as of March 2011, the cardiovascular disease age-adjusted annual death rate per 100,000 residents is significantly higher in five of the eight counties served by the clinic as compared to the New York State rate (NYSDOH, 2012).

OHNs are uniquely qualified to deliver health and wellness programs to firefighters and EMS personnel at high risk for MI in the line of duty. At the Healthworks onsite screenings, the American College of Cardiology Framingham Coronary Heart Disease Risk Calculations was incorporated into a health evaluation that provides clearance to perform essential emergency job functions. OHNs may utilize cardiac risk profiling to provide an objective measure of coronary heart disease (CHD) risk. These screening clinics have demonstrated that an increase in knowledge of cardiac risk in asymptomatic individuals that are often in the early stages of CHD can result in early health care intervention. The primary focus of health surveillance for rural volunteer fire fighters and EMS personnel is proper job classification. However, surveillance could also encourage primary prevention among individuals who have modifiable risk factors for CHD as well as minimizing liability for a volunteer's cardiovascular disease event in the line of duty. In a 2007 study, 78% of the emergency personnel identified by cardiac risk screening and subsequently referred sought consultation with and initiated treatment of risk factors (Gaetano et al., 2007).

Each year, NYCAMH OHNs and other staff provide over a thousand rural volunteer firefighters and EMS personnel with at least one health surveillance examination and firefighter or EMS classification. The examination includes detailed health and occupational history, vital signs, vision testing, electrocardiogram, spirometry, respirator fit testing, including self-contained breathing apparatus and disposable particulate respirator, as well as physical examination. Volunteers 45 years or older desiring A classification (interior structure firefighter or EMS personnel) or B classification (exterior structure firefighter or EMS personnel) receive a lipid screening and a cardiac risk profile. The Framingham 10-year risk is estimated using established Framingham risk tables and the corresponding point system (Grundy, Pasternak, Greenland, Smith, & Fuster, 1999).

In 2011, a total of 1,617 volunteer firefighters and EMS personnel were evaluated, which included 1,290 men (80%) and 327 women (20%). The mean age of this predominately White, blue-collar population was 42.5 years. Eleven percent of this population were smokers. Cardiac risk profiles were calculated on 197 individuals, with 88% passing. Of the 1,617 volunteers, 264 (16%) had one or more abnormal findings. One hundred and fifty-two (58%) were noted to be hypertensive. Abnormal electrocardiograms were noted in 70 (27%). Abnormal spirometry (predominately obstructive) was noted in 44 (17%). Significant abnormalities in the physical exam were noted in 18 persons (7%). Lipid measurements were available on 55 of the 264 volunteers. Total cholesterol $\geq$200 mg/dL was noted on

30 (55%). Reduced HDL (less than 40 mg/dL) was present in 22 (40%). Unfortunately, a substantial proportion of this middle-aged volunteer population has problems with obesity, hypertension, and indicators of cardiovascular disease.

NYCAMH OCCUPATIONAL SERVICES TO FARMERS AND FARM FARMILIES

Population Demographics

Agriculture is the largest industry in New York State, with a production value of $4.7 billion in 2010. According to the USDA 2007 Census, there are over 36,000 farms in New York State, averaging 200 acres per farm, with an employment total of 100,000 persons. Dairy, nursery, and fruit are the top commodities in NY agriculture (USDA, 2007). In 2007, the average age of the primary farm operator was 56.2 years (up from 52.9 in 1997). Male farm operators have declined from 88% in 1997 to 82% in the 2007 census. In addition, more operators are reporting that farming is not their principal occupation. An aging workforce and part-time farming may imply health- and safety-related challenges such as chronic illness and medication effects, and lower reaction time in elder farmers. Fatigue, inexperience, and child care issues can be relevant to part-time working hours, while gender-related conditions such as pregnancy can be of concern for farm women.

There are also certain characteristics unique to the farming occupation that have health and safety implications: it is the only occupation where families live, work, and play at the worksite; it is where children have a role in the farm operation; there is no retirement age; and in terms of safety and health, the industry is essentially self-regulated. Herein is the framework in which NYCAMH nurses provide clinical, educational, and prevention services to farmers and farm families.

OHN Clinical Services for Farmers

Within the Healthworks program, OHNs provide a major contribution to the NYCAMH mission, which is enhancing agricultural health by preventing and treating occupational injury and illness. The OHN provides clinical consultation to injured or ill farmers through the Farmers' Occupational Health Clinic, a diagnostic clinic that can include a worksite assessment if needed. Owing to the hazardous exposures in their work environments, farmers need to use safe work practices and may need guidance in the identification and selection of appropriate personal protective equipment. Though farmers seldom seek social services, many farm families are in need of referral to such services. The OHN will help to address each of these issues with the farmer.

NURSES IN AGRICULTURAL RESEARCH AND PREVENTION SERVICES

Occupational Health Nurses in Agricultural Communities, and Farm Partners

The OHNAC program allowed for community-based nurses with a farming background to gain the trust of the farming community. This trust was critical both to receiving reports of fatalities and/or serious injuries and to being allowed on the farm to conduct in-depth investigations with the agricultural engineer for serious incidents and fatalities. Reports of injuries and/or fatalities would come through the nurses' networking with local hospitals, veterinarians, extension agents, emergency personnel, sheriff and police departments, and through self-reports. After learning of a case, the nurse would contact the injured farmer and attempt to conduct a site visit along with a safety engineer. Phone contact was attempted following farm fatalities as well, but often an unscheduled visit would be made if phone contact had not occurred. For all case follow-ups, the nurses' goals were to provide support to the injured worker and/or family members, identify the cause of the incident, and develop recommendations for preventing similar incidents. Additionally, OHNAC nurses provided education and outreach, exhibiting at farm shows, educating students and medical providers on traumatic farm injuries and extrication, giving presentations to farm groups, and publishing articles. Papers highlighting some of the more frequent nurse-investigated injuries and fatalities deal with silo gas exposure (Pavelchak et al., 1999), hand injuries (Boyd et al., 1997), bull injuries (Casey et al., 1997a), cow injuries (Casey et al., 1997b), tractor-related fatalities (Roerig et al., 1996), and scalping incidents (Roerig, Melius, & Casey 1992).

In addition to its scientific productivity, this program allowed nurses with a farm background to administer nursing care services to other members of the farm community. Farmers identified with these nurses and were open to assistance that they would not have sought otherwise. Services ranged from removal of stitches to counseling families following the death of a child. For the nurses, this aspect of the OHNAC role was as personally satisfying as the surveillance accomplishments. This unique program allowed interactions for surveillance, intervention, education, and prevention to occur simultaneously, giving the nurses opportunities to concentrate on the essentials of safety and safe practices. An approach consistent with findings in Seiz (2001) was that "Farmers want to know what is important and why; they want essential information uncluttered by matters they perceive as marginal and peripheral to their health and safety" (p. 9).

The Farm Partners program, initiated through W. K. Kellogg Foundation funding, enlisted agribusiness personnel to help identify farmers/

families in social, economic, and emotional crisis and to link them with a social worker for follow-up counseling and referral to community and governmental agencies. If the stressor was perceived as the result of an injury or fatality, the agricultural nurse would assist in the farm visits and subsequent counseling sessions. Often, the Farm Partners cases would be referred by the OHNAC nurse after a farm fatality. Once a relationship had been established with the nurse, the counseling services were more readily accepted, particularly since many farmers are known to express a broad distrust of safety information emanating from professionals with little to no farming experience (Seiz, 2001).

Children and Farm Safety

According to the Childhood Agricultural Injury Survey in the United States between the years 2001 and 2006, an average of 26,655 injury incidences occurred annually to youth under the age of 20 who were working or living on farms. Among youth workers, agriculture has the second highest fatality rate, 21.3 per 100,000 full-time equivalents [FTE] as compared to 3.6 per 100,000 across all industries (National Children's Center, 2011). OHNAC investigations that involved the death of a child were particularly difficult. One sees that these events occur in an instant, where all but one detail goes as planned, and entire families' lives were changed forever. In these situations, the data gathered by the engineer was critically important, but often for the family, the nurse had more impact as she was a farmer and a nurse, listening and comforting.

Farms are a unique industry in that the workplace is the home and so health and safety education often needs to include children as well as adults. What other industry combines the child's home and playground with the parent's workplace and routinely relies upon the labor of preteens and young teenagers? Nurses participate in outreach programs such as Safety Day Camps as a means to provide age-appropriate information for children on important topics such as first aid, animal safety, mechanical hazards, and chemical safety. In 1990, a NYCAMH nurse educator was asked to conduct a 3-hour program on farm safety for a group of rural children ages 7 to 12 years. This was the impetus for the creation of the game named "Play it Safe: The Farm Safety Challenge Game" that could be fun as well as an effective tool for teaching the safety and health concepts relevant to the farm and to rural environments. In 1995, the game was published with NIOSH funding, and 520 games were sold. An evaluation was conducted with adult consumers who used the game with 4H groups, friends, families, and agricultural classes. Since this time, the game has been sold nationally (two nursing programs) and continues to be popular for casual group, family, and classroom farm safety and health learning activities (Marvel, May, & Townsend, 1998).

Another key intervention aimed at child injury prevention is the North American Guidelines for Children's Agricultural Tasks, which was created with guidance from nurses, educators, and farm families to assist parents in deciding if their child was developmentally ready for certain farm chores. NYCAMH nurses participated in the coordination and dissemination of these guidelines as well as a follow-up study to assess the efficacy of the guidelines. Data on childhood injuries, tasks, and hours worked were obtained quarterly for 21 months, on a sampling of NY farms. Injury rates were compared with those of control farms, and the results showed that dissemination of the guidelines reduced rates of work-related childhood agricultural injuries by 50% (Gadomski, Ackerman, Burdick, & Jenkins, 2006).

A Bassett Healthcare Network school-based NP tested the efficacy of another educational intervention, "Keep on Tract," on knowledge levels of farm safety among fifth graders in rural public schools in New York. Her findings revealed that the difference in pre- and posttest mean scores were increased significantly immediately posttest, as well as at 1-month follow-up (Sullivan, 2011).

Skin Cancer Screening

The farming workforce is at risk for the development of skin cancer, particularly because of the long hours of exposure to ultraviolet light, and also because in an aging population, the risk of developing malignancy is increased (Donham & Thelin, 2006). In the past 10 years, NYCAMH nurses have been providing the opportunity for free skin cancer screenings at large northeast farm shows, with participation averaging 188 persons per year. Participants with presumptive diagnoses are followed by the nurses, who give guidance and counsel regarding their medical referral. Over time, the data have demonstrated that approximately one-third of the participants are in need of medical follow-up. The most frequent diagnosis is actinic keratosis, a precancer that warrants early treatment. Few melanomas have been identified and treated over the course of these screenings. Qualitative data consistently show that participants voice positive and appreciative feedback for this service (Gaetano et al., 2009).

Pregnancy and Farm Exposure

An emergency department (ED) report regarding a pregnant farm woman having accidentally injected herself with a hormone she was administering to a cow prompted NYCAMH researchers to compare exposures and risks to pregnant women living and working on farms with the exposures of rural nonfarm pregnant women. Exposures and risks studied included chemicals, heavy lifting, bending, large animals, machinery, veterinarian medications, and long work hours. Comparisons of questionnaire

responses from farm and nonfarm pregnant women found that while most exposures for both groups were comparable, for farm women, their exposure and possible skin contamination with such veterinarian medications as oxytocin and antibiotics, as well as exposure to diesel fumes, did represent a possible threat to their pregnancy (Evans et al., 1998).

Migrant Farmworkers

Estimating the migrant farmworker population nationally is an ongoing challenge, primarily due to the seasonal and variable nature of agricultural work. In fact, there is no local, state, or national agency responsible for collecting these data (National Center for Farmworker Health [NCFH], 2012). In New York State, the migrant farm population has changed from working on seasonal crop harvests only to a year-round presence on dairy farms. A NYCAMH nurse coordinated a survey of dairy farms in NY, Pennsylvania, and Vermont to assess the proportion of Spanish-speaking workers employed by these farms. The percentage of Spanish-speaking workers ranged from 20% on large farms to 5% on smaller farms (Stack, Jenkins, Earle-Richardson, Ackerman, & May, 2006). These findings led to the addition of a bilingual safety educator, who conducts farm safety training programs and develops educational materials for Spanish-speaking migrant farmworkers. In the United States, there are 159 federally funded migrant health centers, most of which are not-for-profit corporations operated by community-based organizations or state health departments (NCFH, 2012). NYCAMH has worked with migrant clinics in Maine, Connecticut, and New York on community collaboration-based research projects to address musculoskeletal and ergonomic issues that impact farmworker health and safety.

Nurses who provide occupational health services to the migrant populations in the clinic setting are often required to travel to satellite service sites as well as conduct onsite clinics at farmsteads and field localities. When asked what was unique about her role as a migrant clinic nurse, one nurse responded that being of the same Hispanic cultural origin as her patients helps to develop a trusting relationship and be more effective in her care" (M. Zapata, personal communication, March 22, 2012).

Anabaptist Communities

A nurse educator in Pennsylvania has worked extensively with the Amish community, providing training in cardiopulmonary respiration (CPR), farm emergency response, and first aid for school grades 1 to 8, and for vocational school students 14 years old, adults, and home scholars. She created a training booklet that included information on dental hygiene, hand washing, treatment of colds and flu, hearing loss from noise, burn prevention and treatment, and appropriate responses to animal, insect, and snake bites. This NYCAMH collaborator also provides a program for

parents pertaining to safe, healthy children, as well as a farm/home safety and CPR/emergency rescue. Safety and health training includes calculating appropriate dosages for medications; home treatment for diarrhea, vomiting, and thrush; as well as when to see a doctor. Information is shared on where to get low-cost or free immunizations. At health screenings, an NP or college nursing instructor, along with nursing students, conducts physical assessments for each child, including height, weight, vision testing, a dental exam (how many cavities), blood pressure, hearing, and scoliosis check, and advice on various health concerns. Children are referred to a doctor if medically necessary. Since most Amish/Mennonite children are not seen for routine well-baby checkups, they miss all the preventive care and information. In this program, mothers are educated on what to try at home, and when to get medical help. Home-schooled families have as many as 14 children and are very appreciative of this program. When participants have been asked why these programs are so well attended, frequent comments center on the fact that nurses are providing the training and exams.

A rural central NY doctoral dissertation by an NP in rural central New York included examination of the barriers to health care access for the Amish population in a geographic locality in upstate New York and implementation of a collaborative effort to develop a strategic plan of action to address their needs. This Amish group identified cost and transportation to be their largest barriers to accessing health care. Prenatal care, home birthing assistance, and childhood immunizations were identified as priority health needs. The most desired health care provider qualities specified by this group are honesty and trustworthiness. Working collaboratively with the study population, the NP developed an action plan that included reestablishing immunization services and an exploration of independent family practice for this Amish community (McCrea, 2011).

EDUCATIONAL OUTREACH FOR NURSES

Occupational and environmental health topics are a part of the public health curriculum in baccalaureate nursing programs, but they typically receive minimal emphasis. A collaborative effort between faculty in an upper division university nursing program and the occupational nurse staff at NYCAMH resulted in an educational program to assist nurses to gain an understanding of the occupationally related health and safety issues in rural and farming communities. An evaluation by the nurses indicated that they considered the gaining of an awareness of the effects occupational hazards may have on their clients to be a worthwhile use of their program (Hodge, Ackerman, Evans, Erb, & Cook, 2002). This occupational health and safety program has been presented as a lecture every semester

for public health nursing students at the university and other area colleges since 1997. In addition to the classroom time, nurses are offered the opportunity to complete clinical hours under the supervision of an OHN.

SUMMARY

Nursing practice in occupational health in agricultural and rural communities encompasses all the traditional nurse functions of patient care, teaching, and research, and may at times be conducted in very nontraditional settings such as farm buildings and fields, village firehouses, highway workshops, community meetings, and even major trade shows. In such settings, nurses can be performing health assessments by checking blood pressure or cholesterol readings, conducting teaching sessions and disseminating health information to a group of rural residents, providing counsel and referral for an injured farm worker, or reviewing medical records for injury surveillance research data. The focus for nurses who practice in public and occupational health is not as much on the individual and a disease state as it is on the group or population and the preservation of health through prevention. This requires the nurse to have a comprehensive understanding of the occupational, environmental, economic, and cultural dimensions of that population, including the risks and hazardous exposures that impact their health and safety. As the nurse utilizes this knowledge in rural and occupational practices, a valuable contribution is being made to advance evidence-based research in the promotion of a healthy and safe working population.

ACKNOWLEDGMENT

The authors gratefully acknowledge the editorial assistance of Dr. Patricia Cabrera and Dr. John May.

REFERENCES

American Association of Occupational Health Nurses (AAOHN). (2012). *The occupational and environmental health nursing profession*. Retrieved March 12, 2010, from https://www.aaohn.org/component/option,com_docman/Itemid,376/task,doc_view/gid,881/

Bassett Healthcare Network. (2012). *Bassett Healthcare Network*. Retrieved April 5, 2012, from http://www.bassett.org/

Boyd, J., Hil, M., Pollock, J., Casey, G., Gelberg, K., Roerig, S. et al. (1997). Epidemiological characteristics of reported hand injuries—New York State 1991–1995. *Journal of Agricultural Safety and Health*, 3, 101–107.

Casey, G., Grant, A. M., Roerig, S., Boyd, J., Hill, M., London, M. et al. (1997a). Farm worker injuries associated with bulls: New York State 1991–1996. *AAOHN Journal, 45*, 393–396.

Casey, G., Grant, A. M., Roerig, S., Boyd, J., London, M., Gelberg, K. et al. (1997b). Farm worker injuries associated with cows. *AAOHN Journal, 45*, 446–450.

Centers for Disease Control and Prevention (CDC). (2012). *Firefighter fatality investigation and prevention program*. Retrieved March 14, 2012, from http://www.cdc.gov/niosh/fire/

Donham, K. J., & Thelin, A. (2006). Agricultural skin diseases and cancer in agricultural populations. In *Agricultural medicine: Occupational and environmental health for the health professions* (pp. 145–172). Ames, IA: Blackwell.

Evans, C., Marvel, L., May, J. J., Erb, T., Jenkins, P., & Townsend, C. (1998, October). *Study of reproductive risks of pregnant farm women*. Presented at the Fourth International Symposium, "Rural Health and Safety in a Changing World". The Center for Agricultural Medicine, Saskatoon, Canada.

Federal Emergency Management Agency, United States Fire Administration, National Data Center. (2002). *Fire fighter fatality retrospective study*. Retrieved March 14, 2012 from http://www.usfa.fema.gov/downloads/pdf/publications/fa-220.pdf

Gadomski, A., Ackerman, S., Burdick, P., & Jenkins, P. (2006). Efficacy of the North American guidelines for children's agricultural injuries. *American Journal of Public Health, 96*, 722–727.

Gaetano, D. E., Ackerman, S., Clark, A., Hodge, B., Hohensee, T., May, J. J. et al. (2007). Health surveillance for rural volunteer firefighters and emergency medical services personnel. *AAOHN Journal, 55*(2), 57–63.

Gaetano, D. E., Hodge, B., Clark, A., Ackerman, S., Burdick, P., & Cook, M. L. (2009). Preventing skin cancer among a farming population: Implementing evidence-based interventions. *AAOHN Journal, 57*(1), 24–33.

Grundy, S. M., Pasternak, R., Greenland, P., Smith, S., Jr., & Fuster, V. (1999). Assessment of cardiovascular risk by use of multiple-risk-factor assessment equations: A statement for healthcare professionals from the American Heart Association and the American College of Cardiology. *Circulation, 100*(13), 1481–1492.

Hodge, B. D., Ackerman, S., Evans, C., Erb, T., & Cook, M. L. W. (2002). An occupational health nursing education program: Relevance to nurses in nonoccupational practice settings. *AAOHN Journal, 50*(6), 257–261.

Marvel, L. H., May, J. J., & Townsend, C. (1998, March). *An evaluation of "Play it Safe: The Farm Safety Challenge Game"*. Poster presented at Health Promotion Across the Lifespan, 9th Annual Art & Science of Health Promotion Conference, Monterey, California.

McCrea, K. L. (2011). *A comprehensive health needs assessment and strategic plan of action for two Amish districts.* Unpublished doctoral dissertation, Frontier School of Midwifery and Family Nursing, Hyden, Kentucky.

National Center for Farmworker Health (NCFH). (2012). *Enumeration and population estimates.* Retrieved March 16, 2012 from http://www.ncfh.org/?pid=23

National Children's Center for Agricultural Health and Safety. (2011). *2011 Fact sheet childhood agricultural injuries.* Retrieved March 26, 2012, from http://www.ncfh.org/?plugin=ecomm&content=item&sku=9267

New York State Adirondack Park Agency. (2011). *Annual report 2011.* Retrieved April 5, 2012, from http://www.apa.ny.gov/Documents/Reports/ADAnnualReport-20120315-KPM-F-AR2011c.pdf

New York State Department of Health (NYSDOH). (2012). *Cardiovascular disease deaths and death rates.* Retrieved March 14, 2012 from http://www.health.ny.gov/statistics/chac/mortality/cardio.htm

Pavelchak, N., Church, L., Roerig, S., London, M., Welles, W., & Casey, G. (1999). Silo gas exposure in New York state following the dry growing season of 1995. *Applied Occupational and Environmental Hygiene, 14,* 34–38.

Roerig, S., Casey, G., London, M., Boyd, J., Hill, M., Anderson, M. et al. (1996). Fatalities associated with improper hitching to farm tractors—New York, 1991–1995. *MMWR, 45,* 307–311.

Roerig, S., Melius, J., & Casey, G. (1992). Scalping incidents involving hay balers—New York. *MMWR, 41,* 489–491.

Rogers, B. (2003). *Occupational and environmental health nursing: Concepts and practice.* (2nd ed.). Philadelphia, PA: Saunders.

Rural Assistance Center, *Health professional shortage areas (HPSAs) & medically underserved areas/populations (MUAs/MUPs).* Retrieved March 22, 2012 from http://www.raconline.org/racmaps/#hpsa

Seiz, R. C. (2001). What farm families tell us that can be useful in educating for health and safety. *Journal of Extension, 39*(6), 1–11.

Smith, D. L., Petruzzello, S. J., Kramer, J. M., & Misner, J. E. (1996). Physiological, psychophysical, and psychological responses of firefighters to firefighting training drills. *Aviation, Space, and Environmental Medicine, 67*(11), 1063–1068.

Stack, S., Jenkins, P., Earle-Richardson, G., Ackerman, S., & May, J. J. (2006). Spanish-speaking dairy workers in New York, Pennsylvania and Vermont: Results from a survey of farm owners. *Journal of Agromedicine, 11,* 37–44.

Sullivan, T. (2011, October). *The efficacy of the 'Keep on Track' educational intervention and its impact on farm safety knowledge levels among rural school age*

children. Poster presented at the Biannual International Rural Nursing and Rural Health Conference, Binghamton, New York.

U.S. Census Bureau. (2010). *State and county quick facts 2010*. Retrieved March 22, 2012 from http://quickfacts.census.gov/qfd/states/36000.html

U.S. Census Bureau. (2012). *Census regions and divisions of the United States*. Retrieved March 12, 2012, from http://www.census.gov/geo/www/us_regdiv.pdf

USDA Census of Agriculture. (2007). *State summary highlights 2007*. Retrieved March 26, 2012 from http://www.agcensus.usda.gov/Publications/2007/Full_Report/Volume_1,_Chapter_2_US_State_Level/st99_2_001_001.pdf

USDA Economic Research Service (ERS). (2010). *State fact sheets 2010*. Retrieved March 22, 2012, from http://www.ers.usda.gov/StateFacts/

United States Fire Administration (USFA). (2012). *U.S. Fire Administration announces 2011 on-duty firefighter fatalities*. Retrieved March 14, 2012, from http://www.usfa.fema.gov/media/press/2012releases/010312.shtm

Wikipedia. (2012). Adirondack Park. Retrieved April 5, 2012, from en.wikipedia.org/wiki/Adirondack_Park

Winters, C. A., & Lee, H. J. (2010). *Rural nursing: Concepts, theory and practice*. (3rd ed.). New York, NY: Springer Publishing.

Interlibrary Loans and Journal Article Requests

Notice Warning Concerning Copyright Restrictions:

The copyright law of the United States (Title 17, United States Code) governs the making of photocopies or other reproductions of copyrighted materials.

Under certain conditions specified in the law, libraries and archives are authorized to furnish a photocopy or other reproduction. One specified condition is that the photocopy or reproduction is not to be *"used for any purpose other than private study, scholarship, or research."* If a user makes a request for, or later uses, a photocopy or reproduction for purposes in excess of "fair use," that user may be liable for copyright infringement.

Upon receipt of this reproduction of the publication you have requested, you understand that the publication may be protected by copyright law. You also understand that you are expected to comply with copyright law and to limit your use to one for private study, scholarship, or research and not to systematically reproduce or in any way make available multiple copies of the publication.

The Stephen B. Thacker CDC Library reserves the right to refuse to accept a copying order if, in its judgment, fulfillment of the order would involve violation of copyright law.

Terms and Conditions for items sent by e-mail:

The contents of the attached document may be protected by copyright law. The CDC copyright policy outlines the responsibilities and guidance related to the reproduction of copyrighted materials at CDC. If the document is protected by copyright law, the following restrictions apply:

- You may print only one paper copy, from which you may not make further copies, except as maybe allowed by law.
- You may not make further electronic copies or convert the file into any other format.
- You may not cut and paste or otherwise alter the text.

RURAL NURSING
Concepts, Theory, and Practice

Fourth Edition

Charlene A. Winters, PhD, APRN, ACNS-BC
Editor

SPRINGER PUBLISHING COMPANY
NEW YORK

Springer Publishing Company, LLC
11 West 42nd Street
New York, NY 10036
www.springerpub.com

Acquisitions Editor: Allan Graubard
Production Editor: Michael O'Connor
Composition: Techset

ISBN: 978-0-8261-7085-9
e-book ISBN: 978-0-8261-7086-6

13 14 15 16 / 5 4 3 2

Library of Congress Cataloging-in-Publication Data

Rural nursing : concepts, theory, and practice / Charlene A. Winters, editor. — 4th ed.
p. ; cm.
Includes bibliographical references and index.
ISBN 978-0-8261-7085-9 (alk. paper) — ISBN 978-0-8261-7086-6 (alk. paper)
I. Winters, Charlene A.
[DNLM: 1. Community Health Nursing. 2. Rural Health Services. 3. Rural Health. 4. Rural Population. WY 106]
610.73'43–dc23

2012046369

Printed in the United States of America by Courier.