

Pesticide-Related Cancers in Farmers

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About the author:

A native of Omaha, Nebraska this transplanted Husker will graduate from the KU School of Nursing with Honors. She is the recipient of the Hagen Student Leaders Opportunity Award for 2008, an award given to one School of Nursing candidate in recognition of the positive impact she has had on her students and classmates at KUMC. She is a member of Sigma Theta Tau International. Upon graduation she plans to begin her career as an RN at Cardinal Glennan Children's Medical Center in St. Louis, Missouri. Her future goals include becoming a neonatal nurse practitioner. She dedicates this paper to her grandfather who was a farmer and battled cancer for 18 years before his death. A cancer attributed by many to his life long work with pesticides.

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Introduction

Currently the agricultural community has an estimated two million farmers, 2.7 million farm laborers, and almost six million family members (National Center for Farmworker Health [NCFH], 2002). All the while, the National Safety Council (2007) consistently ranks agriculture as one of the three most hazardous occupations in the United States. Agriculture is an important component of the national economy, which houses a population with some unique characteristics and exposures. American farmers have many occupational safety risks involved in farm labor including, but not limited to, machinery accidents, skin disorders, infection diseases, lung problems, hearing and vision disorders, as well as muscular-skeletal problems. However, a more insidious danger that exists in this vulnerable population is pesticide-related illness.

Studies done by the National Cancer Institute (2006) and others have shown that there is a greater risk of cancers in farmers using pesticides than those who do not use pesticides. Although farmers are said to have lower overall death rates than the general population, farming communities also often have higher rates of leukemia, non-Hodgkin's lymphoma, multiple myeloma, soft tissue sarcomas, and cancers of the skin, lip, stomach, brain, lung, kidney and prostate (National Cancer Institute, 2006; Blair, Zheng, Linos, Stewart, & Ahang, 2000). Because of this population's general lack of access to quality medical care, risks are consistently greater. This report will focus on how pesticides negatively affect the health of farmers, specifically regarding the incidence of cancer among this important segment of the population.

Background of the Problem

It is difficult, if not impossible, to accurately determine the incidence and prevalence of pesticide-related illness (National Agriculture Safety Database [NASD], 2004). This is mostly

due to the lack of reporting regarding the long-term effects of pesticides (Baker, 1992). No one fully knows why cancer develops. It is known that cancer is caused by a mix of heredity, lifestyle factors and cancer-causing substances in the environment called carcinogens. Sometimes it can take 20 years or more for cancer to develop after exposure to a risk factor, and farmers may be exposed to multiple risk factors in the course of their daily lives, such as pesticides. Pesticides can enter the body through many routes, but the most common ways are through the skin and through inhalation (NASD, 2004). More common than not, acute pesticide poisoning or chronic illness that develops many years after exposures to pesticides are not related back to a specified exposure and are poorly documented and identified (Baker, 1992). Symptoms of these pesticide exposures include a broad range of nonspecific symptoms including headache, dizziness, fatigue, nausea, weakness, difficulty breathing, confusion, and insomnia (McCauley et al., 2006). According to the NASD (2004), over one-half of farmers with a high pesticide exposure event have had symptoms, and of these, only one-half sought medical treatment from a health care provider.

Psychologically, farmers have many stressors relating to their occupation. They work long days in the fields and come home to a family that is dependent upon their work to earn a living. Some years are better than others, related to many variables of farming, and statistics show that farmers often face obstacles in providing for their family (NASD, 2004). This stressor is increased ten fold when the primary provider in the family finds out that he/she has cancer and that it is possibly related to the occupation from which their family is built around.

The physical environment is an important health determinant regarding this population as it is the supplier of the problem. It is where the targeted population is involved in their occupation. Even though no one set of risk factors explains the higher cancer rates, the range of

environmental exposures in the farming community are of concern. Farmers reside within the farming community and are more likely than not surrounded by other farmers who grow the same crops and use the same products and pesticides. The average farmer mixes or applies pesticides to their crops for approximately 16 years of farming (Alavanja et al., 1996). This also shows that farm populations will come into contact with a variety of potentially hazardous substances including pesticides, fertilizers, paints, solvents and dusts (Blair & Zahm, 1995). These are all environmental risk factors that increase the likelihood of cancers in the farmer.

In consideration of behavior, farmers are faced with choices in using pesticides for their crops. Pesticides kill or control destructive insects, weeds, and fungicides and are necessary to increase the production of food and fiber (Baker, 1992). According to Marlene Barnes, a retired Iowa farmer who lost her husband to pesticide-related cancer in 2003;

As a farmer you must decide which is more important- using possibly harmful pesticides that will benefit and protect your crops, or to not use the pesticides, which are considered a necessity to facilitate the modern agricultural production methods...When you do not see immediate negative effects of the pesticides it is hard to choose not to use them(personal communication, September 10, 2007).

Farmers also must decide if and when to use protective clothing or equipment which may involve extra work, time and expenses. Overall, educated and uneducated farmers alike make choices regarding the use and handling of pesticides that can be detrimental to their health.

Farmers are self-employed and work without the advantages of group health insurance or worker's compensation. They make their own schedules, as well as financial and political decisions. The societal norms and attitudes of a farmer are designed by the unit, or family, that comprises the particular farming community. Legal actions and economics directly affect

whether or not farmers can buy and use pesticides, the requirements for using pesticides, as well as whether or not they can financially allow for extra protective measures relating to the use of pesticides.

Health system considerations for controlling pesticide-related cancers in farmers include accessibility to health care (they occupy mostly rural areas), education regarding safety and protective measures when using pesticides, and early detection programs that fit into the schedule of this particular occupation (Baker, 1992). Economic conditions make farmers reluctant to miss work in order to seek health care services. Missing a day of work can be detrimental to their income as farmers are not protected by “sick leave” (NCFH, 2002). This can cause the postponing of health care and treatment in acute situations. Also, the job title “farmer” brings with it the population’s general lack of access to health care related to their socio-economic status (Blair & Zahm, 1995).

Role of the Nurse

Primary interventions to address the pesticide-related cancers in farmers include education regarding safety and health practices when using pesticides. In addition, it would be helpful to include a demonstration of how and when to use protective clothing. Assessing the farmer’s perceived risk is also very important in determining the intervention approach. Secondary interventions would include early detection and prompt treatment of the cancer. Also, equipping the tractors with bottles of water for decontamination of skin or eye exposure occurring in the field would save time in an emergency situation. An essential tertiary intervention for the farmer would be to provide emotional support and encouragement upon realization of the cancer. A goal would be to help the farmer find a way to continue farming if possible. A disabled farmer and peer support program would also be beneficial.

The nurse that practices in rural areas should be alert to the possibility of cancer being caused by the pesticides used throughout the community and in the environment. The nurse's role would be to address the lack of education regarding the use of pesticides within the farming community. Education about safety, prevention of poisoning, risk factors for cancer, and illness trends and symptoms are all topics that farmers need to be aware of in order to achieve more healthy benefits from farming and decrease the incidence of cancer. In the acute care settings the nurse would assess for signs and symptoms of pesticide poisonings and question farmers about particular chemicals with which they have been in contact. Also, the nurse should keep on-going records regarding pesticide-related illness and cancers observed. Promoting pesticide illness prevention strategies and education programs within the community would encourage the safest practices.

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