

Farmers and Skin Cancer Screening: Implications for Rural Health Care Providers

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The increasing incidence of skin cancer is cited each year by the American Cancer Society^{1,2} and others conducting surveillance of disease and injury, such as state health departments. The most recent estimates are 600,000 new skin cancer cases in 1991, of which 32,000 are malignant cutaneous melanoma.¹ In Wisconsin alone, approximately 300 cases of malignant melanoma are diagnosed each year, the incidence rising steadily since 1985.³ By virtue of their outdoor work, farmers are at increased risk of developing skin cancer from cumulative sun exposure. In fact, skin cancer is repeatedly noted as one of the nine carcinomas more common among farmers than non-farmers.^{1,3}

Since 1982, the National Farm Medicine Center (NPMC) has provided skin cancer screening to more than 3,000 participants of the annual Wisconsin Farm Progress Days. In addition to these skin cancer screening services, a full array of educational materials have been disseminated to adults and youths in Wisconsin farming communities. Combined with health promotion literature that explains self-protective behaviors of individuals, these NPMC interventions directed towards farm family members have led us to conclusions that provide specific implications for rural health care practitioners. Our recommendations are consistent with those suggested for urban populations⁴, but they have unique features applicable to the rural setting.

This paper will describe the process by which large-scale skin cancer screening is conducted for farm populations, presumed findings from screenings, and the Health Belief Model's relevance to skin cancer care. Further, it will describe the steps adopted to improve the likelihood of follow-up action taken by screening participants who were informed of a probable malignancy, and it will present data from telephone interviews with individuals who participated in a screening. The barriers to follow-up care reported by these participants may be of particular relevance to rural and primary care clinicians.

Efficacy of skin cancer screening

Typically, the two objectives of skin cancer screening programs are *early detection* of skin cancer and *education* for skin cancer prevention. Little is known about the efficacy of large-scale skin cancer screening programs. Follow-up of participants is difficult to ascertain because of inconsistent health care patterns. Additionally, efficacy of screening is best measured by mortality. But in the case of skin cancer, subjects would need to be followed for an extended number of years.

Since 1985, the American Academy of Dermatology (AAD) has promoted skin cancer screening. The AAD reported that the number of individuals participating in large-scale screening efforts increased annually from 32,000 in 1985 to 102,485 in 1991. Findings from the first six years of screening revealed that 24% of participants had evidence of actinic keratosis (pre-cancer). Data from seven years of screenings (1985-1991) included rates of 7.3% for basal cell cancer, 0.9% for squamous cell cancer, and 0.8% for cutaneous melanoma.⁵

Issues warranting further study of large-scale skin cancer screening programs include accuracy of diagnoses, ability to obtain adequate history relevant to adverse exposures and availability of facilities for conducting a well-lighted and private (if needed) examination. Until the sensitivity and specificity of large-scale skin cancer screening are demonstrated, it is likely that only breast and cervical cancer screening will hold widespread support from the medical establishment.⁶

National Farm Medicine Center: skin cancer screening project

Each year, the Wisconsin Farm Progress Days attract over 150,000 visitors to a large farm site that includes three days of field demonstrations, product exhibits, entertainment, safety programs, health screening services, and socialization for a primarily rural population. The location of this event changes each year, moving to all regions of the state. The 1991 Farm Progress Days, held in Dodge County, about one hour north of Milwaukee in mid-July, was the tenth year in which skin cancer screening was provided for participants. A mobile home, 12 feet by 56 feet, was used to house five "exam rooms" and a waiting area. Fourteen dermatologists and several support persons facili-

lated skin cancer screening and education for 780 individuals over the three days.

The process for most screenings consists of:

- The client completes the front side of an informed consent form, including demographic data and personal skin health history.
- A dermatologist conducts a visual inspection (sometimes with magnifying glass, always with goose-neck lamp) of sun-exposed skin. The average time spent on a screening is five minutes. The dermatologist completes the reverse side of the screening form to note positive findings, degree of sun damage to skin, and recommendation (when appropriate) for referral to a dermatologist for a full office examination.
- Individuals with positive findings are provided relevant printed materials and are counseled by a registered nurse who assists in identifying the name and location of the client's nearest dermatologist.
- All participants are encouraged to view a skin cancer educational videotape and are provided sunscreen samples and a variety of educational materials.

Four weeks following the screening, all individuals advised to seek follow-up care are sent a reminder letter that repeats the encouragement to seek a comprehensive skin examination by a dermatologist. Four to five months after the screening, individuals who were informed of a possible malignancy are contacted by telephone to investigate the status of their skin condition and any barriers they experience in obtaining follow-up care.



Skin cancer screening results

Results from the 1991 skin cancer screening at Wisconsin Farm RProgress Days were consistent with findings from previous years of NFMCC screening programs and slightly higher than findings reported from the American Academy of Dermatology skin cancer screenings. In our 1991 event 780 individuals were screened, of whom 51.9% were between the ages of 50 and 69 years, 56.5% were males, 5.4% were farmers (or spouses of farmers), and 85% reported a high school education or greater. Three-quarters of the participants reported sun exposure of more than four hours daily during the summer months. A hat with brim was worn by 44% and sunscreen was regularly used by 23% of the participants. Only 8% reported they had other opportunities for a free skin examination.

TABLE 1

Skin Cancer Screening Results of 780 Participants in 1991 Farm Progress Days Event

Presumed Diagnosis	Number	Percent
Actinic keratosis	187	24.0
Basal cell cancer	65	8.3
Squamous cell	12	1.5
Dysplastic Nevus	16	2.1
Melanoma	2	1.5

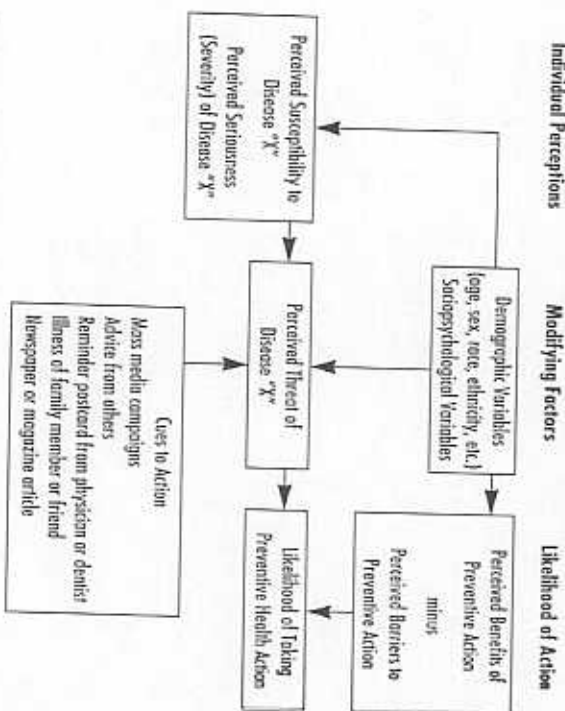
Of the 780 individuals screened, 24% were noted to have actinic keratosis. Presumed malignant findings included 8.3% with basal cell cancer, 1.5% with squamous cell cancer, and 0.3% (2 persons) with a possible malignant melanoma. Over half (51.9%) of the participants were informed of some type of a skin condition, such as acne, freckles, or dysplastic nevi. Evidence of sun-damaged skin was noted to be severe for 4.4% of the cases, moderate for 41%, and mild for 43.7% of the cases. More than one-third of the participants were encouraged to seek a comprehensive skin examination as a follow-up to this screening. It is important to note that the "field" conditions for making accurate diagnoses were less than optimal; therefore, clinicians tended to suggest a possible malignancy rather than no significant findings.

The health belief model^{9,10,11}

The Health Belief Model served as the theoretical framework for investigating follow-up behaviors of skin cancer screening participants. The model is based on the assumptions that health is a valued goal and that cues to action are widely available.⁹ The Model predicts that people are not likely to take health-protecting actions unless (a) they believe they are susceptible to a disease, (b) they believe the disease could have serious effects on their lives, (c) they believe that taking health-protecting action would reduce the likelihood of getting the disease, and (d) they see few difficulties in undertaking the recommended action.^{9,10,11} According to the Health Belief Model, perceived susceptibility and perceived seriousness combine to provide a force which leads to a health-protecting action. The perceived benefits of taking health-protecting action minus the perceived barriers to protective action predict the likelihood of taking the preferred action.¹⁰

FIGURE 1

Elements of the Health Belief Model



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The Health Belief Model suggests that demographic, sociopsychological, and structural variables may influence an individual's perceptions and indirectly alter health-related behaviors. An additional variable labeled as "cues to action" is thought to precipitate the decision-making process.¹⁰ These cues include media articles and campaigns, advice from others, family illness, and written

reminders. What then, are the cues for action to which farmers may respond? Researchers in Eau Claire, Wisconsin,¹² studied methods for marketing skin cancer prevention to farmers. Their study of 103 farmers revealed that major health promoters included farm magazines, television, and health professionals. Newspapers, radio, friends, pamphlets, posters, and general-purpose magazines were less utilized sources of information regarding health care.

The Health Belief Model also suggests that an individual's perception of the barriers to recommended health have a significant impact on the course of action (or inaction) taken. In order to gather information on such barriers, structured telephone interviews were conducted four to six months after the skin cancer screening service.

Follow-up telephone interview results

The purpose of the telephone interview was multifaceted. The first objective was to determine the overall value of skin cancer screening with respect to the follow-through of recommended diagnostic and treatment procedures. Next, we wanted to validate the consistency of diagnosis on follow-up examination with the diagnosis on the initial screening. The third purpose was to assess the knowledge base of participants regarding the cause and prevention of skin cancer. Finally, we wanted to identify barriers to skin cancer treatment reported by participants initially diagnosed with skin cancer.

All skin cancer screening participants noted to have a possible malignancy were contacted by telephone. Phone numbers were obtained from the initial screening information sheet. Participants were informed about the purpose of the telephone interview, advised that their answers would be kept confidential, and assured that they were free to decide to not be involved in telephone interview or to refuse to answer certain questions.

The interview tool was designed to elicit information regarding follow-up action and health outcome. Once consent to interview was obtained, participants were asked if they obtained a follow-up examination. Those who obtained follow-up examinations were asked about the findings and any problems encountered in obtaining follow-up. Participants who did not obtain a follow-up examination were asked what prevented them from obtaining such. Promoters were listed on the interview tool and used if the participant was unable to articulate a reason for lack of follow-up. The promoters were time, distance, cost, and availability, all of which are frequently cited barriers to health-protecting behaviors.¹³

For purposes of this report, 1990 and 1991 telephone interviews are combined. Follow-up calls were made to 120 participants (46 in 1990 and 74 in 1991), all of whom agreed to participate in the telephone interview. Three other people could not be contacted because of disconnected phone service. Nearly 70% of these individuals obtained a follow-up examination and 30% of those who obtained follow-up reported they had a skin cancer confirmed and treated.

All participants were asked about their understanding of the cause and prevention of skin cancer. The majority of respondents were well-informed about the etiology of skin cancer and recommended methods for prevention. However, fewer than one-fourth of these individuals reported using any sun-protective measures and only a few acknowledged they actually practice sun-safe behaviors on a regular basis.

Of particular interest in this study were the identified barriers to obtaining follow-up examinations for skin cancer. Clearly, one-third of the participants who received an initial probable skin cancer diagnosis did not obtain a follow-up examination. A significant majority reported that they were not concerned about the skin cancer diagnosis at this time. Greater than one-half of the people who did not seek a follow-up examination stated they were too busy to go to the doctor. The cost of an examination and lack of knowledge about skin cancer were also cited as reasons for not obtaining definitive care.

CASE 1

E is a full-time farmer who is in the age range of 30 to 39 years. He spends approximately 10 hours a day outdoors between May and October. He does not regularly wear a hat with a brim and does not use sunscreen preparations. He received a presumptive diagnosis of basal cell cancer located on his nose and does not intend to obtain a follow-up examination. "I am not worried about it at this time. I will watch the spot on my nose closely for any change." Further questioning revealed that he had no health insurance coverage, but "I would obtain a further examination if I thought the problem was serious."

CASE 2

S is a spouse of a farmer who is in the age range of 40 to 49 years. She spends approximately one hour a day in the sun. She does not wear a hat, but does use sunscreen preparations. She received an initial diagnosis of basal cell cancer on her nose. She obtained follow-up care within one week with a dermatologist and the lesion was found to be non-cancerous. Participant denied any barriers to follow-up despite having listed a lack of health insurance coverage on the screening questionnaire.

CASE 3

K is a full-time farmer who is more than 70 years old. He spends approximately 8 to 9 hours a day outdoors. He does not regularly wear a hat with a brim, nor does he use sunscreen preparations. He obtained a follow-up examination within two weeks, and his local physician then referred him to a dermatologist. His initial diagnosis was basal cell cancer of the chin and follow-up revealed a melanoma. He identified no barriers to obtaining a follow-up examination. "I don't like to go to doctors, so the screening at Farm Progress Days really worked good for me." He suggested that screenings of all kinds should be done at agricultural extension meetings in each county.

Implications for providers of health care to rural populations

What is the responsibility of the primary care physician or rural health care practitioner with respect to skin cancer prevention and early detection? Early detection of skin cancer directed toward older clients and skin cancer prevention directed toward younger clients are equally important responsibilities that warrant consideration in one's practice.

Value of skin cancer screening programs

Our experience has convinced us that there are positive benefits accorded to both practitioners and participants in skin cancer screening projects. These benefits include educational enhancement for the general public regarding prevention of skin cancer, early detection of skin cancers in a population that has many concerns regarding access and availability of health services, interaction with clients regarding real and perceived barriers to health care, and personal enjoyment of providing screening services in atypical settings.

The opportunity to provide one-on-one education to skin cancer screening participants is excellent. Clients with positive findings are given a fact sheet with information specific to their condition. Each participant has an opportunity to discuss individualized questions with a dermatologist or nurse. As expected, these questions often address issues other than skin conditions. In fact, participants were typically encouraged to take advantage of other services such as prostate cancer screening or tetanus immunizations, also being offered at the event.

As described previously, up to 10% of participants were informed of possible malignancies. In 1990 two individuals were informed of possible melanoma, which diagnoses were later confirmed. In 1991 two individuals with possible melanoma reported that this diagnosis was not confirmed. Although diagnoses are not always confirmed with follow-up biopsy, the clients are informed of the potential risk their skin lesion signifies and are encouraged to conduct periodic skin checks to watch for changes in size or shape of the lesion. The frequency of basal cell and squamous cell cancers detected at screenings and resulting in subsequent treatment are also indications of the value of such programs in the rural population.

Another benefit of large-scale screening programs, not usually reported, is the personal satisfaction experienced by dermatologists and support staff who dedicate a day of clinical practice to the general public at an event such as Farm Progress Days. Conducting skin examinations just yards away from a heifer show or a demonstration of hay baling can help one get in touch with the "real world" of many of the clients we serve. The eagerness of many dermatologists to donate their services year after year is testimony to the personal and professional value of the experience.

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Minimizing barriers to follow-up care

The literature provides empirical support for our concern about the barriers to follow-up care following skin cancer screening. It has been reported that the average delay in patient and physician diagnosis of an observed melanoma is one year.¹⁴ Patients tend to minimize their concern over skin conditions and are reluctant to comply with recommended health screening recommendations. Physicians also may delay making a diagnosis of a skin lesion. General barriers to routine health care for rural people may include limited access, lack of insurance (or Medicaid coverage), low priority, distance and/or transportation limitations, and lack of knowledge regarding services or their significance.¹⁵ Another issue to contend with is the reluctance of the rural elderly to take advantage of health screening services. A study of the use of free health screening services among 360 rural elderly in Iowa found that non-users were more likely to be older, living on farms, long-time residents, and less educated. Many did not use services because they "felt healthy."¹⁶

From our telephone interviews, we found consistent descriptions of real and perceived barriers that participants experience after a screening event. Comments such as "the doctor is too busy to bother with my skin" or "I've got much bigger problems to deal with than this spot on my skin right now" have directed our efforts to minimize such barriers within the confines of the screening trailer. The added step in 1991 of providing nursing consultation to all clients with positive findings may have

accounted for the fairly rapid follow-up of many of the participants. An additional service provided was the sending of a copy of the referral form to the client's home physician with client permission. As a result, several participants later reported the "doctor called me and set up an appointment."

Primary recommendations for prevention and treatment of skin cancers among farmers can be summarized as:

- Continue to provide (or support) skin cancer screening services at widely attended farm events
- Assure that rural individuals are aware of the availability of skin cancer screening at major events through public service announcements, local newspapers, and information notices in church bulletins, clinics, and other key local sites
- Be sensitive to the personal and health care priorities of rural individuals when conveying recommended follow-up
- Use screening programs as an opportunity to provide one-on-one education to individuals who tend not to access the health care system
- Anticipate the barriers to follow-up care that participants may experience and provide on-site interventions if possible (e.g., telephone number of nearest dermatologist)
- Offer subsequent follow-up support to high-risk individuals through interaction with their primary care physician, mailed reminders, or telephone interaction

Conclusion

It is widely accepted that non-melanotic skin cancers can be prevented by minimizing sun exposure.¹⁰ Thus, sun safe practices can be promoted by all health care providers akin to their encouragement to clients to eat healthy, exercise daily, and quit smoking. Health promotion theories and program designs are now promoted within the domain of several health-related disciplines. Skin cancer prevention programs can be easily planned, implemented, and evaluated within a theoretical framework, using existing programs of the American Cancer Society, the Skin Cancer Foundation, and the American Academy of Dermatology.^{11,12,13} Given the 10 years of experience of the NFGC in providing skin cancer screening at Farm Progress Days, we intend to continue providing this important service because of its significant, positive impact on the farm population.

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