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Skin Cancer Screening Program and Analysis

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HONORS THESIS ABSTRACT
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HONORS THESIS ABSTRACT

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Thesis Title: Approaches to the prevention and control of skin cancer

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Skin cancer is the most common and the most preventable form of cancer. Non-melanoma skin cancers are associated with cumulative exposure to ultraviolet radiation, while melanoma is associated with intense episodes of ultraviolet exposure resulting in sunburns. Numerous risk factors are associated with the development of skin cancer. These include exposure to ultraviolet radiation; phenotypic factors such as skin type, eye and hair color, tendency to burn and tan and having freckles and moles; a personal or family history of skin cancer; and occupational sun exposure. Primary prevention behaviors include applying SPF 15+ sunscreen 30 minutes before exposure, reapplying SPF 15+ sunscreen every 1 ½-2 hours or after swimming or sweating, dressing in protective clothing, using shade limiting exposure during peak sun hours, and avoiding artificial sources of ultraviolet radiation. Secondary prevention behaviors include screening and early detection in combination with education on the primary prevention behaviors. Interventions designed to increase sun protective behaviors have resulted in increased knowledge and attitudes. Skin cancer screenings focus on developing effective strategies for making sun protective behaviors routine and effective. To inform approaches to the prevention and control of skin cancer, this paper will summarize key primary and secondary preventive behavior, highlight primary and secondary prevention programs, and identify key unanswered questions in the area of skin cancer prevention and control.

Introduction

Skin cancer is a disease in which cancer (malignant) cells are found in the outer layers of your skin. Your skin protects your body against heat, light, infection, and injury. It also stores water, fat, and vitamin D.

The skin has two main layers and several kinds of cells. The top layer of skin is called the epidermis. It contains three kinds of cells: flat, scaly cells on the surface called squamous cells; round cells called basal cells; and cells called melanocytes, which give your skin its color.

Melanoma is a very serious form of skin cancer. It begins in melanocytes. The good news is that melanoma is often curable if it is detected and treated in its early stages.

When melanoma starts in the skin, it is called cutaneous melanoma. Melanoma may also occur in the eye (ocular melanoma or intraocular melanoma) and, rarely, in other areas where melanocytes are found, such as the digestive tract, meninges, or lymph nodes. When melanoma spreads, cancer cells are also found in the lymph nodes and possibly also other parts of the body, such as the liver, lungs, or brain.

In men, melanoma is found most often on the area between the shoulders and hips or on the head and neck. In women, melanoma often develops on the lower legs. It may also appear under the fingernails or toenails or on the palms or soles. The chance of developing melanoma increases with age, but it affects all age groups and is one of the most common cancers in young adults.

The number of new melanomas diagnosed in the United States is increasing. Since 1973, the rate of new melanomas diagnosed per year has more than doubled from 6 per 100,000 to 14 per 100,000. The American Cancer Society estimates that about 51,400 new melanomas will be diagnosed in the United States during 2002. About 7,800 Cancer Statistics deaths will be attributed to malignant melanoma in 2002.

Skin cancer can look many different ways. The most common sign of skin cancer is a change on the skin, such as a growth or sore that won't heal. Sometime there may be a small lump. This lump can be smooth, shiny and waxy looking, or it can be red or reddish brown. Skin cancer may also appear as a flat red spot that is rough or scaly.

What causes skin cancer?

Very simply, sunburn and UV light can damage your skin, and this damage can lead to skin cancer. There are other determining factors, including your heredity and the environment you live. However, both the total amount of sun received over the years and overexposure resulting in sunburn can cause skin cancer. Most people receive 80% of their lifetime exposure to the sun by 18 years of age.

Tanning is your skin's response to UV light. It is protective reaction to prevent further injury to your skin from the sun. However, it does not prevent skin cancer. Skin cancer is very slow to develop. The sunburn you receive this week may take 20 years or more to become skin cancer.

Heredity.

If there is a history of skin cancer in your family, you are probably at a higher risk. People with fair skin, with a northern European heritage appear to be most susceptible.

Environment.

The level of UV light today is higher than it was 50 or 100 years ago. This is due to a reduction of ozone in the earth's atmosphere (the Ozone Hole). Ozone serves as a filter to screen out and reduce the amount of UV light that we are exposed to. With less atmospheric ozone, a higher level of UV light reaches the earth's surface. Other influencing factors include elevation, latitude, and cloud cover. Ultra Violet light is stronger as elevation increases. The thinner atmosphere at higher altitudes cannot filter UV as effectively as it can at sea level. The rays of the sun are also strongest near the equator.

Determining your personal risk.

It is estimated that 1 out of 7 people in the U.S. will develop some form of skin cancer during their lifetime. One serious sunburn can increase the risk by as much as 50%. The effect UV light has on your skin is dependent both upon the intensity and the duration of your exposure. How your skin reacts to the amount of exposure received is related to your genetic background. Even if you rarely sunburn, sensitive areas such as your lips, nose, and palms of the hands should be protected.

Recommendations for reduced risk.

The following six steps have been recommended by the American Academy of Dermatology

and the Skin Cancer Foundation to help reduce the risk of sunburn and skin cancer.

***Minimize your exposure to the sun at midday and between the hours of 10:00am and 3:00pm.**

***Apply sunscreen with at least a SPF-15 or higher, to all areas of the body which are exposed to the sun.**

***Reapply sunscreen every two hours, even on cloudy days. Reapply after swimming or perspiring.**

***Wear clothing that covers your body and shades your face.**

***Avoid exposure to UV radiation from sunlamps or tanning beds.**

***Protect your children. Keep them from excessive sun exposure when the sun is strongest, and apply sunscreen liberally and frequently to children 6 months of age and older.**

Risk Factor Quiz

Exposure to the ultraviolet radiation of the sun is the most important fact in determining a person's risk of skin cancer. The following quiz can help determine your risk for developing skin cancer. After you add up your total points, match your score with those noted below to find your risk level:

_____ Hair Color

Blond/red = 4, brown = 3, black = 1

_____ Eye Color

Blue/Green = 4, hazel = 3, brown = 2

_____ When exposed to one hour of summer sun, you.....

Burn, and sometimes blister = 4, burn, then tan = 3, tan = 1

_____ Where is your job?

Outdoors = 4, mixed = 3, indoors = 2

_____ Do you have freckles?

Many = 5, some = 3, none = 1

_____ Has anyone in your family had skin cancer?

Yes = 5, no = 1

_____ Where in the U.S. did you live most before the age of 18?

South = 4, Midwest = 3, North = 2

Risk Levels

10 -15 Below average risk

16 -22 Average risk

23 -25 High risk

26 -30 Very high risk

Procedure

The following guidelines provide the basis for setting up a screening program.

Screening Sites.

A skin cancer screening can be set up and conducted in any neutral site that can accommodate a large number of people and provide adequate privacy for full body examinations. Park district buildings, schools, shopping centers and other public places are appropriate.

Scheduling Screenings.

Because May is Skin Cancer Awareness Month, this is when many screenings are scheduled. Having screenings take place across the country during this month helps draw attention to the problem of skin cancer and dermatologists' commitment to prevention and early detection. However, don't be limited to May if later months are more convenient. Skin cancer screenings can be organized and conducted any time.

Role of Program Director.

Generally, a screening program is organized and conducted by a program director, with other dermatologists participating in the screenings and support staff assisting. It is important that the Academy and the state, local or regional society are aware of who program directors are in an area to help minimize duplication of efforts. Some of the responsibilities of the program director are to recruit volunteers to staff the screening.

Staffing.

Only dermatologists should perform skin cancer screenings. Other physicians, nurses and other volunteers can assist in the organization and execution of the program and provide important services, such as setting up appointments, educating people about sun protection and self-examination and making follow-up contact with people with suspicious lesions.

Equipment

Very little equipment is needed other than an examining table, a writing surface (clipboard, table or desk) for filling out the Academy form, adequate lighting and privacy. The waiting area can be equipped with chairs, a table or rack for educational materials, a full-length mirror and hand-held mirrors to assist support staff in teaching self-examination. There should be wall space, easels or other

vertical surfaces to display posters and other educational materials. A VCR and monitor should be available to show a video on skin cancer and self-examination.

Full-Body Examinations

Full-body examinations (except removal of undergarments) should be performed if at all possible. For the comfort of the screenee, appropriate staff should be available. For example, when examining girls and women, a female dermatologist, nurse or other female staff person should be available on request.

If full-body examinations are not possible because of lack of privacy, or if a screenee declines a full-body examination cannot be reliable in finding melanomas.

However, a limited examination can serve as an opportunity to discuss sun protection, self-examination and the importance of making an appointment for a full-body examination by a dermatologist if there is any concern about melanoma.

Appointments

If possible, schedule screenings by appointment so you will know how many people to expect and can keep traffic flowing smoothly. If you cannot schedule appointments, or if appointments become backed up, use the overflow as an opportunity to provide free educational materials or have your staff demonstrate self-examination for those who cannot be seen or who are kept waiting.

Publicizing the Screening

Get the word out about your screening through the news media, local hospital

newsletters, bulletin boards in public places, such as libraries and park districts. A planning calendar is a good tool when organizing your publicity efforts.

Co-Sponsoring a Screening

Many skin cancer screening programs are cosponsored by volunteer organizations or hospitals. For example, the American Cancer Society (ACS) has, through its local chapters, offered support for Academy-sponsored screenings throughout the country. In some states, the ACS has helped organize statewide screenings.

Record Keeping and Follow-Up

The most important thing you can do at a skin cancer screening is to detect a suspected melanoma and see that the individual with a suspicious lesion receives the necessary follow-up care to ensure successful treatment.

All screeners are strongly encouraged to conduct exit interviews with each screenee with a suspected cancer, especially those with suspected melanomas. Tell the individual how important a follow-up examination is and explains the diagnostic procedures that may be required.

It is also important to determine if the individual has access to a dermatologist or needs assistance with insurance coverage. You may provide a list of dermatologists in the area, including those who are screeners, and encourage the individual to make an appointment. Provide whatever assistance necessary to ensure that a follow-up appointment is made.

It is recommended, though not mandatory, that each individual with a suspected melanoma or other cancer is contacted by letter or telephone with a reminder to have a follow-up examination. The contact may be made by the program director screeners, support staff or co-sponsoring organization, such as the American Cancer Society.

Carefully document all attempts to contact individuals with suspected cancers.

The screening program registration and report forms should be used at all Academy-sponsored screenings. They serve as a release form to be signed by individuals being screened, as documentation for the screener and to provide data for the Academy.

A member of the screening support staff should ensure that each individual being screened reads the form, fills in the information requested at the top of the form and signs it.

The data gathered with these forms is entered into a computerized database and is an extremely valuable part of the screening program.

Screening Programs

Skin cancer screening programs can be organized and conducted in a variety of settings and in cooperation with organizations such as the American Cancer Society, local hospitals and even state fairs.

Citywide screening programs often depend on the cooperation of many different parties such as the local dermatological community, area hospitals and their public relations staff, the health department, a large volunteer group such as the local chapter of the American Cancer Society, local radio and television stations and the

American Academy of Dermatology.

- Establish dermatological support for screenings.
- Enlist the support of the local American Cancer Society.
- Establish the support of area hospitals as screening sites. Choosing major hospitals that will cover the entire city and include all dermatologists.
- Arrange publicity. Once the program is established as citywide, local television, radio and newspapers may agree to cover the publicity.
- Clearly outline the equipment and personnel to be provided by each hospital.
- Provide educational materials.
- Follow up the screening by reporting the number of cancerous and precancerous lesions found citywide in a thank you letter to each dermatologist, hospital and volunteer organization involved. Encourage a media follow-up story.

Organization

The first step toward a successful screening program and campaign is planning.

Timeline and Checklist: A detailed timeline and checklist for planning your screening program.

DATE

ACTIVITY

6 weeks prior

Appoint program directors

Appoint committee chairperson to assist in coordinating program activities. Outline duties and responsibilities of each committee. Contact local

organizations, such as the American Cancer Society, hospitals and volunteer groups, to co-sponsor the screening.

5 weeks prior

Meet with co-sponsor to review screening activities and discuss and coordinate all publicity efforts.
Recruit dermatologist volunteers to assist with screenings. Select and secure sites and dates for screening. Walk through screening sites to determine physical set-up, equipment needs and traffic flow.
Order audio/visual equipment and materials.

4 weeks prior

Display posters in office and appropriate public places.
Distribute posters to community groups.

3 weeks prior

Call all dermatologist volunteers and confirm scheduled times for screenings. Confirm all volunteers and supplies.

2 weeks prior

Confirm all arrangements with site.

1-2 weeks after

Send thank you notes to all participants.

Results and Discussion

The Skin Cancer Screening Program is a public education service designed to promote the prevention and early detection of melanoma and other skin cancers. The program has the following components: free screenings, (by volunteer dermatologists) for early skin cancers is the primary function of the program; public education, in publicizing a screening in advance, we are telling the public about dermatology, the importance of skin examinations and the commitment to promote public health; and statistical analysis through data gathering, the physicians will collect the data from the skin cancer screening participants and distribute a list of all dermatologists in the area for referrals and follow-up purposes.

From the gathered data the anatomic distribution of malignant melanoma differs for men and women. Men are more likely to have melanoma on the head, neck, and trunk and women are more likely to have melanoma on the lower limbs. Among white populations, the risk for malignant melanoma is highest for fair-skinned people, especially those who lack the ability to tan when exposed to sun. Risk is also higher for individuals with the highest concentration of moles on the body. The process by which sunlight is associated with the development of the disease is not well understood.

However, the increasing incidence of the disease seems related to increases in voluntary sun exposure and the use of tanning devices. There is also some indication that severe burning or strong intermittent exposure, especially in childhood, may be especially

high risk patterns for the disease. The incidence rates among whites increase with age in both men and women. The size of this increase is over three-fold in men and only 62% in women. In the 30-54 year age group the difference in the rates between men and women is small. Incidence rates are nearly twice as high in men aged 55-69 years, however,

and 2.3 times higher in men 70 years of age or older. Mortality rates are about 20% of the incidence rates and show a similar pattern by race (where rates can be calculated), sex, and age.

There are very few cases of malignant melanoma among nonwhites, so incidence rates are very low and for many races the rates could not be calculated. Among whites, age-adjusted incidence rates are over five times higher in non-Hispanic men compared to Hispanic men and over three times higher in non-Hispanic women compared to Hispanics. The screening also showed strong evidence that more women than men get melanomas overall. With this information we, as a community, must continue to educate and protect all individuals from the sun's potentially deadly rays.

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