

Skin Cancer Prevention and Screening: Summary of the American College of Preventive Medicine's Practice Policy Statements

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Background

As part of an overall evaluation of preventive measures, the American College of Preventive Medicine assessed the efficacy of skin cancer prevention and screening strategies. Their findings were published in *American Journal of Preventive Medicine* in 1998.^{1,2} The practice policy statements generated by the College are intended to provide guidelines for physicians and public health practitioners in optimizing preventive health strategies for individuals and populations.

In policy statement development, the published medical literature is searched comprehensively. The authors critically review the available literature with an attempt to evaluate the quality of the research. When available, prospective, randomized clinical trials with a study population that can be generalized and a large sample size are given the most weight. Evaluation criteria

are similar to those used by the US Preventive Services Task Force, which also issues recommendations.³

The author's analysis is reviewed by experts in the field and by the Board of the American College of Preventive Medicine. The College's impartial, evidence-based reviews attempt to balance benefits—to both individuals and populations—with risks of interventions to assist clinicians and others in making the best possible decisions about preventive measures and screening tests. In the area of skin cancer, the prevention strategies analyzed included sun protection and sunscreen use; screening recommendations focused on total cutaneous examination. The findings are summarized in this article.

Prevalence and Risk Factors

Nonmelanoma skin cancer is the most common cancer in men and women in the United States. In 1996, the American Cancer Society estimated that 800,000 new cases of basal and squamous cell carcinoma (nonmelanoma skin cancer [NMSC]) would be diagnosed and 2,100 deaths would occur as a result of this disease.⁴ Although less prevalent, malignant melanoma is a more common cause of cancer death, with an estimated 41,600 new cases in 1998 and 7,300 deaths.⁵ With a prevalence of 80 per 100,000 and a lifetime risk of 1 in 90, malignant melanoma is the eighth most common cancer in the

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United States, and its incidence has doubled in the last decade.^{5,6}

Mortality is reduced when lesions are found early and promptly removed. Risk factors for NMSC include fair skin, sun exposure, male gender, and advancing age. Risk factors for malignant melanoma are less well defined but include fair skin, family history, NMSC, multiple pigmented nevi (as few as 20 nevi increase the risk), and severe childhood sunburn.⁷

Sun exposure causes skin cancer through the effects of ultraviolet (UV) radiation, which penetrates into the dermis and damages DNA. UVB causes redness of the skin, some DNA damage, and aging; UVA, however, penetrates deeper and causes more DNA damage than does UVB.⁸ Approximately 1,000 times more UVA reaches the earth's surface. Sunscreen classifications are based on an index of protection against skin erythema called "sun protection factor" (SPF), which quantifies protection against UVB.⁹ UVA radiation has not been quantified.

Exposure to solar radiation is increasing worldwide because the protective ozone layer is thinning. Most exposure to sun occurs in childhood, and children receive three times the annual sun exposure of adults. Data suggest that NMSCs are associated with cumulative sun exposure, whereas malignant melanoma is associated with short, intense episodes, especially those involving skin burns.¹⁰⁻¹² Individuals with fair skin are at higher risk of adverse effects from UV radiation.

Preventive Measures

Preventive measures to reduce skin cancers include sun avoidance, especially between 10 AM and 3 PM; physical barriers such as hats and clothing; and use of sunscreens. Nonspecific clothes, such as hats and summer wear, offer an SPF of 2 to 6.5, although "sun-protective" clothing

offers an SPF of up to 30.¹³⁻¹⁵ Sun avoidance and use of protective clothing have been shown to reduce the incidence of both NMSC and malignant melanoma in many human and animal studies, although some studies have not shown a beneficial effect.^{8,16-18}

Sunscreen effectiveness has been more difficult to ascertain for many reasons. High-risk individuals are more likely to use sunscreen, studies generally have focused on older preparations, and sunscreen use may be associated with greater sun exposure.¹¹ Studies suggest that sunscreens may be problematic because they may offer a false sense of security and increase time spent in the sun.

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Most sunscreens offer greater protection from UVB than from UVA radiation, reducing the risk of sunburn but not that of dangerous UVA exposure. Some ingredients commonly found in sunscreens may be carcinogenic.^{19,20}

Animal studies have been unable to show that sunscreen protects against malignant melanoma, and case-control and clinical trials have shown no reduction or an increase in malignant melanoma incidence with broad-spectrum sunscreen use.²¹⁻²⁵ Only one randomized double-blind placebo-controlled trial of broad-spectrum sunscreen showed a benefit in decreasing the incidence of skin cancers, and that was a reduction of actinic keratosis.^{26,27}

Screening Techniques

Skin cancer screening includes a total

cutaneous examination and a 2- to 3-minute visual inspection of the entire integument. In theory, early detection of skin cancers, especially malignant melanoma, would significantly improve mortality because early detection is associated with a high 5-year survival rate.

The sensitivity and specificity of a physician-conducted total cutaneous examination approach 93.3% and 97.8%, respectively.^{28,29} Screening can be conducted in a physician's office as part of a regular visit or take place during mass community screening. The prevalence of pathologic lesions found on mass screen-

ing was estimated in one study to be 21%.¹¹ No randomized controlled trials have evaluated the effectiveness of total cutaneous examination in reducing mortality from malignant melanoma; most studies have reported only the number of malignancies discovered in mass screening campaigns.

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Recommendations


Avoidance of UV radiation is beneficial in reducing the incidence of skin cancer. Avoidance measures include limiting time spent outdoors between 10 AM and 3

PM and wearing protective clothing. However, evidence is insufficient to support the use of sunscreens, especially when sunscreen use would lead to increased sun exposure. If sun exposure cannot be limited because of occupational, cultural, or other factors, a sunscreen that is either opaque or that blocks UVA and UVB should be used.

The College does not believe that the evidence supports physician counseling for every patient. For children and teenagers, however, in whom avoidance of sunburn is crucial, and for high-risk patients, the College recommends discussion of sun avoidance and sun protection measures.

High-risk individuals should be screened periodically either individually or through mass screening. Risk factors include family history, fair skin, multiple nevi, and a history of other skin cancers. Mass screening for low-risk individuals cannot be recommended until further studies have been conducted. Physicians conducting total cutaneous examinations should receive adequate training to ensure high-quality examinations, with high sensitivity and specificity.

Considerations for the Future

Further research, especially prospective studies, is needed to define the role of screening variable risk populations to define better optimal periodicity for screening. The College believes that more research is needed on the effects of modern sunscreen formulations in preventing malignant melanomas. Lastly, the College supports research on effective community education campaigns and physician counseling strategies to educate the public about UV radiation. 

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