

FPIN's Clinical Inquiries

Sunscreen Use for Skin Cancer Prevention

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Clinical Inquiries provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (<http://www.cebm.net/?o=1025>).

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Clinical Question

Does sunscreen use prevent skin cancer?

Evidence-Based Answer

Daily sunscreen use reduces the incidence of squamous cell carcinoma but not the incidence of basal cell carcinoma. (Strength of Recommendation [SOR]: B, based on a single randomized controlled trial with less than 13 years of follow-up). It is unclear whether there are longer-term effects. There is no consistent, conclusive evidence that sunscreen use prevents melanoma. (SOR: C, meta-analysis of case-control studies).

Evidence Summary

SQUAMOUS CELL CARCINOMA

In a randomized controlled trial, 1,621 participants in Nambour, Australia, were randomized to one of four treatment groups. Of the two groups assigned to daily sunscreen use, one group (n = 404) applied sun protection factor (SPF) 15 sunscreen to the head, neck, arms, and hands, and received daily oral beta carotene supplementation. The second group (n = 408) was assigned to sunscreen application plus an oral placebo. Of the two groups not assigned to daily sunscreen use, one group (n = 416) received daily oral beta carotene supplementation, and the other group (n = 393) received daily oral placebo. Participants who were not in the daily sunscreen groups were allowed discretionary use of sunscreen.¹

Over 4.5 years, persons in the daily sunscreen groups had a decreased incidence of squamous cell tumors at the sites of sunscreen application compared with those in the no daily sunscreen groups (28 tumors in 22 persons versus 46 tumors in 25 persons; rate ratio [RR] = 0.61; 95%

confidence interval [CI], 0.46 to 0.81; number needed to treat = 140).¹ Each group included persons of all skin types, with more than 50 percent of persons in each group having fair skin and 20 percent reporting that they "always burn." An intention-to-treat analysis of 1,383 participants eight years after completion of the initial randomized controlled trial demonstrated a prolonged protective effect, with a 35 percent lower incidence of squamous cell carcinoma in the daily sunscreen groups (RR = 0.65; 95% CI, 0.43 to 0.98; number needed to treat = 2.8).²

BASAL CELL CARCINOMA

In the Nambour study, the incidence of basal cell carcinoma in the daily sunscreen groups compared with the no daily sunscreen groups was not statistically significant after 4.5 years (153 tumors in 65 persons versus 146 tumors in 63 persons; RR = 1.05; 95% CI, 0.82 to 1.34).¹ In the eight-year follow-up study, there was no statistically significant decrease in the incidence of basal cell carcinoma (RR = 0.75; 95% CI, 0.49 to 1.14).² In an additional multifailure survival analysis, none of the three analysis models found a significant difference in the risk of subsequent basal cell carcinoma.³

MELANOMA

A meta-analysis of 11 case-control studies involving 9,067 patients evaluated the effect of sunscreen use on the incidence of melanoma.⁴ Results were heterogeneous and included study data from population-based and hospital-based sources. The analysis did not find an altered rate of melanoma with sunscreen use (combined RR = 1.11; 95% CI, 0.37 to 3.32). A review of 18 case-control

studies examining sunscreen use in patients with melanoma found no significant association between melanoma and sunscreen use after controlling for skin sensitivity.⁵

Recommendations from Others

The American Academy of Dermatology recommends year-round application of broad-spectrum sunscreen with SPF 30 or higher to all areas of the body exposed to the sun.⁶

†—Deceased.

EDITOR'S NOTE: Dr. Bowling graduated from the University of South Carolina School of Medicine in Columbia, and completed his residency at the Spartanburg (S.C.) Family Medicine Residency Program. Dr. Bowling passed away in February 2010. He was in private practice in the Spartanburg community at the time of his death.



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REFERENCES

1. Green A, Williams G, Neale R, et al. Daily sunscreen application and betacarotene supplementation in prevention of basal-cell and squamous-cell carcinomas of the skin: a randomised controlled trial [published correction appears in *Lancet*. 1999;354(9183):1038]. *Lancet*. 1999;354(9180):723-729.
2. van der Pols JC, Williams GM, Pandeya N, Logan V, Green AC. Prolonged prevention of squamous cell carcinoma of the skin by regular sunscreen use. *Cancer Epidemiol Biomarker Prev*. 2006;15(12):2546-2548.
3. Pandeya N, Purdie DM, Green A, Williams G. Repeated occurrence of basal cell carcinoma of the skin and multifailure survival analysis: follow-up data from the Nambour Skin Cancer Prevention Trial. *Am J Epidemiol*. 2005;161(8):748-754.
4. Huncharek M, Kupelnick B. Use of topical sunscreens and the risk of malignant melanoma: a meta-analysis of 9067 patients from 11 case-control studies. *Am J Public Health*. 2002;92(7):1173-1177.
5. Dennis LK, Beane Freeman LE, VanBeek MJ. Sunscreen use and the risk for melanoma: a quantitative review. *Ann Intern Med*. 2003;139(12):966-978.
6. American Academy of Dermatology. Facts about sunscreens. Schaumburg, Ill.: American Academy of Dermatology. http://www.aad.org/media/background/factsheets/fact_sunscreen.htm. Accessed September 9, 2010. ■



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