In their recent paper on night work and the risk of cancer among men, Parent et al. (1) attributed the increased risk of several types of cancer to reduced melatonin production. While the melatonin hypothesis is reasonable, another mechanism that very likely explains the findings is a reduced amount of time spent outdoors during the day, which reduces exposure to solar ultraviolet B (UVB) irradiance and vitamin D production. People who work at night have to sleep during the day. A low serum 25-hydroxyvitamin D (25(OH)D) concentration has been suggested as a possible explanation for increased risk of cancer associated with night-shift work (2). Further evidence for low solar UVB irradiance among night-shift workers was provided by a study of skin cancer and melanoma risk among nurses in the United States: Those who had more than 10 years of rotating night-shift work had significantly reduced risks of basal cell carcinoma, squamous cell carcinoma, and melanoma (3).

Solar UVB radiation has been linked to increased risk of many types of cancer (4–7). The evidence is strong for those cancers associated with night work: cancers of the bladder, colon, lung, pancreas, and prostate and non-Hodgkin’s lymphoma. The evidence is also moderately strong for cancers of the esophagus, kidney, and stomach, for which the night-work risk evidence is equivocal or nonexistent. No mechanism other than vitamin D production has been proposed to explain the solar UVB-vitamin D-cancer hypothesis. However, it is possible that immune system factors, such as allergens, which have been found to reduce the risk of some types of cancer (8, 9), could have a geographical variation similar to that for solar UVB dose (10).

The evidence that vitamin D reduces risk of many types of cancer is less robust, but there is strong evidence that vitamin D reduces the risk of colorectal cancer (11). In addition, in a pooled analysis of 5 nested case-control studies, Wolpin et al. (12) found a significantly reduced risk of pancreatic cancer for persons with higher serum 25(OH)D concentrations.

Thus, a review of the journal literature on risk of cancer with respect to solar UVB dose finds reduced risk for the types of cancer for which night work was associated with increased risk and weaker evidence for the types of cancer for which the evidence was equivocal or nonexistent.

I agree with the suggestion that case-control studies would be useful in searching for the reasons for increased cancer risk associated with night-shift work (13). Such studies should include measurement of present serum 25(OH)D concentration and should obtain data on any past serum 25(OH)D measurements and on history of daytime sleeping and outdoor activities, as well as history of other diseases linked to low serum 25(OH)D concentration, such as autoimmune diseases, cardiovascular disease, diabetes mellitus, and respiratory infections (14).

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William B. Grant (e-mail: wbgrant@informline.net)
*Sunlight, Nutrition, and Health Research Center, P.O. Box 641603, San Francisco, CA 94164-1603*

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