Skin Cancer Prevention
A Commentary

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The holy grail in health promotion is "sustainability." This is the dreamed-of state in which a health promotion program runs on in perpetual motion without fuel, or, if it needs fuel, someone other than the program originator provides it. But the real world is not a vacuum, and friction will always retard forward movement. As well, health-promoting behaviors are often performed in a contested field where external forces actively push toward health-compromising behaviors, such as tobacco use and poor diet—and excessive sun exposure.

At a population level, health promotion programs aim to press and hold down levels of health-compromising behavior. If the analogy were with a screw, which stays down once it is screwed down, sustainable programs would be readily achievable. However, as many disappointed health promoters have found, the spring is a closer analogy—a spring can be pressed down, but force has to be maintained to keep it down.

Policies that shape the social or physical environment are often seen as the key to embedding sustainable health promotion programs into a social system. In the review paper by Saraiya et al.[1] in this issue, a careful assessment is undertaken of the evidence for effectiveness of policy as well as educational interventions to reduce solar ultraviolet (UV) exposure in at-risk populations. While solar protection is a relatively new area of research, the body of literature that has accumulated in the past 20 years is not insubstantial. The question remains, does this literature provide substantive evidence of effect from organized attempts to reduce sun exposure through changing behavior, policy, and the environment? Overall, practitioners and researchers will be disappointed in the conclusions of this careful review, which only found "sufficient evidence" of effect for education and policy interventions to increase sun-protective behaviors in primary school and in tourism/recreational settings. Research in the many other reviewed settings provided insufficient evidence on which the authors are prepared to recommend action be taken. Due to lack of evidence to determine effectiveness, the review does not give the green light to adoption of programs in child care centers, secondary schools and colleges, occupational settings, healthcare settings, media campaigns, parent/caregiver campaigns, or community-wide multicomponent interventions. Unsurprisingly, they therefore call for and make recommendations about further research.

The review's treatment of results pertaining to sunscreen is one reason why so few intervention effects were identified. Some workers in this field have had misplaced faith in the sunscreen as a panacea that minimizes UV exposure, with otherwise minimal behavioral or policy change required. The authors of this review correctly discount as providing "evidence of effect" studies that measured only sunscreen use and those in which sunscreen use was the sole variable in which change was observed. The sunscreen, no matter how high its protection factor, is secondary to covering up and activity scheduling in reducing personal UV exposure. Sunscreen use has been shown not only to lead to increased time spent in the sun, but also to increased aggregate exposure of the skin to solar UV radiation.[2] Less-readily accepted than the reviewers' exclusion of sunscreen data is their systematic exclusion from consideration of studies reporting composite behavioral scores. At least theoretically, there is a strong argument that a well-developed composite score might be the best measure of effectiveness of a program. The field might be enhanced by the development and acceptance of standard composite behavior measures that give weight to the fact that there are alternatives available to people seeking to reduce their sun exposure.

That a meta-analysis of the reviewed papers was not attempted reflects the heterogeneity of their intervention and evaluation methods. This field seems a long way from contemplating such an analytic approach to distilling and quantifying the research evidence. Instead, Saraiya et al.[1] applied the methods that the Task Force on Community Preventive Services specify for systematic reviews. Seeing how many studies have been found by this method to contribute "insufficient evidence" of effect begs the question, "Was the bar set too high?" Taken individually, many of the reviewed studies were considered by organizations in the locales where they were conducted to be informative and to provide a reasonable basis for local policy and action. Such studies may indeed have been locally relevant and valid, even if the decision rules for this systematic review meant that their evidence was treated as "insufficient."

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As Hornik[3] has pointed out, "[a] reliable study is one that can usefully inform the policy community about whether an intervention approach is worthy of support, without promising that there is no risk of mistake. A study is valuable if future judgements about programs are better made taking this information into account than remaining ignorant of it." An unfortunate, if unintended, outcome of this review would be if interested prevention practitioners were to disregard evidence from studies that were found to be insufficient in aggregate to give confidence in a generalizable effect. For those who wish to further enrich their consideration of the available research evidence, Saraiya et al.[1] have provided an extensive reference list.

A recurring theme in this report is that the inconsistency of interventions undertaken (and outcomes measured) did not permit a determination of effectiveness of interventions. Clearly this frustrates the attempt to synthesize and build knowledge. While we should deplore shoddy methods, we should not be too quick to condemn lack of consistency among interventions. There is art as well as science in health promotion. Programs may need time to find their way and need to get to know their audience, discover effective channels, and create messages that resonate with their audience.[3] Thus, the crafting of effective sun-protection programs may be more serendipitous, less disciplined, and take longer to achieve than is convenient for evaluators. Saraiya et al.[1] emphasize that the conclusions do not amount to evidence of a null effect of programs, but rather that it is too soon to make the call.

Perhaps the fundamental difficulty exposed by this evidence review lies in the sheer complexity and cultural embeddedness of the factors that influence sun-protection behavior. We ask people to change what they wear and therefore how they appear to others. We ask them to change where they locate and when they locate themselves there. We ask them to do this day in and day out, over many months of the year. Given this complexity, it seems improbable that lasting (sustainable) change in sun protection will be achieved without multicomponent, population-based interventions that include policy change, environmental enhancement (e.g., shade provisions), and mass communications. But how could the effects of such a complex process of change be monitored and understood?

In tobacco control, fine work has been done comparing outcomes in states with comprehensive programs with states that do not have them.[4] This strategy has recently been extended in the International Tobacco Control Policy Evaluation Study to include international comparisons among the United States, Canada, United Kingdom, and Australia, among which countries there has been considerable heterogeneity of program and policy approaches.[5] An agreed standard instrument is being applied to population samples in each country to measure beliefs, attitudes, behavior, and experiences relevant to tobacco control. This is likely to be a very powerful method for understanding relationships among variables that elude detection by our conventional research designs, in which intervention power can be weakened to segregate effects on test and control arms (e.g., national media excluded), and internal validity is achieved at the expense of external validity. Such an approach could well be emulated for skin cancer prevention. An international collaboration of this type would add a valuable dimension to the search for appropriate comparators for interpreting research evidence that would guide policy, funding, and program content.

Notwithstanding the unsatisfying conclusions of the review, it is too early to give up on solar protection for at-risk populations. Melanoma is still a significant cause of death, and the financial cost of skin cancer overall is substantial. In Australia, the economic returns on public investment in the SunSmart campaign have been calculated to far exceed its costs.[6,7]

To return to our metaphor of the screw and the spring, and the quest for sustainability: Perhaps the key to sustainability lies in convincing those insurers and governments who pay the costs of diagnosing and treating sun-induced skin lesions (malignant or not) that they should make a business decision to maintain the downward pressure on excessive sun exposure by funding appropriate health promotion programs.

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