Preventing Skin Cancer: Primary and Middle School Interventions

Task Force Finding and Rationale Statement

Table of Contents

Task Force Finding and Rationale Statement

Intervention Definition

Primary and middle school (kindergarten through 8th grade) interventions to promote sun-protective behaviors include educational interventions, supportive behavioral interventions, and environmental and policy changes. Student-focused educational and behavioral interventions include teaching children about sun safety and the effects of ultra-violet (UV) radiation, which is often reinforced by modeling, demonstration, or role-playing. Interventions may be delivered in a single session or as a comprehensive multi-session curriculum.

Student-focused sun-protective environmental and policy changes include increasing the availability of sun-protective items (e.g., sunscreen or protective clothing); adding sun-protective features to the physical environment (e.g. shade structures); and implementing sun-protection policies (e.g., clothing guidelines, restrictions on outdoor activities during peak sunlight hours). Interventions also may include efforts to change the knowledge, attitudes, and behaviors of caregivers at school or at home.

Task Force Finding (August 2012)

The Community Preventive Services Task Force recommends primary and middle school interventions to prevent skin cancer, based on strong evidence of their effectiveness in increasing sun-protective behaviors and decreasing ultraviolet exposure, sunburn incidence, and formation of new moles.

Rationale

Basis of Finding

This Task Force finding is based on evidence from a Community Guide systematic review published in 2004 (Saraiya et al., 20 studies, search period January 1966–June 2000) combined with more recent evidence (13 studies, search period June 2000–May 2011). Based on this updated review, the Task Force recommendation was changed from sufficient evidence to strong evidence of effectiveness.

The studies included from the updated search period consistently demonstrated beneficial effects on varied outcomes, including:

- Sunscreen use—median increase of 3.1 percentage points (interquartile interval [IQI]: 1.28 to 8.88, 9 studies with 10 study arms)
- Hat use—median increase of 3.0 percentage points (IQI: 0.30 to 10.18, 9 studies with 10 study arms)
- Use of protective clothing—median increase of 8.7 percentage points (IQI: 3.2 to 13.5, 6 studies with 7 study arms)
- Use of shade—median increase of 9.2 percentage points (IQI: 5.6 to 11.2, 4 studies with 5 study arms)
- Use of sunglasses—median increase of 6.6 percentage points (range: 2.7 to 17.6, 3 studies)
- Sunburn incidence—median decrease of 3.6 percentage points (IQI: -8.45 to 1.45, 5 studies)
- New mole formation—median relative decrease of 18.63% (range: -24.3 to -9.6, 3 studies)

Studies also found favorable results on composite measures of sun-protective behaviors (4 studies), avoidance of excessive sun exposure (3 studies), reduced use of sunlamps (1 study), and direct measures of UV exposure or changes in skin pigmentation (4 studies). Most outcome measures were based on self-report. These results are consistent with

those from the original Community Guide review, and substantially expand the evidence on the effectiveness of primary and middle school interventions.

Applicability and Generalizability Issues

Evidence indicates that these interventions are applicable within the U.S. and in other countries. Almost all of the evaluated interventions from the updated search period involved education only (10 studies), while two interventions also included environmental or policy components, and one solely involved distribution of sunscreen. More than half of the interventions also targeted caregivers by sending home information materials, resources for interactive activities, or sun-protection items (e.g., sunscreen, hats) with instructions for their appropriate use.

Although changes to policies and the physical environment can be powerful strategies for improving health (Frieden, 2010), the updated search found limited published evidence on the use of such strategies for improving sun-protection for primary and middle school students. Among studies that included such strategies, common applications included provision of sunscreen to students, building shade structures, providing or requiring use of protective clothing, and requiring students to stay indoors during high UV index periods. When schools restrict outdoor activities, they should ensure students have the opportunity for supervised indoor physical activity.

Although favorable results were reported for students from kindergarten through eighth grade, only two studies included seventh or eighth grade students. There was also limited available information to allow assessment of potential differences in effects across personal characteristics such as skin type or race/ethnicity, or contextual factors such as the locale's mean UV index, urbanicity, and adoption of other skin cancer prevention interventions.

Data Quality Issues

Studies from the updated search period were generally well-controlled, with five individual or group-randomized trials, and seven non-randomized trials. The majority of outcomes were assessed using self-reported or parent-reported behavior. In addition, published papers often did not adequately describe the implemented interventions, their participants, and the specific measures used to assess reported outcomes.

Other Benefits and Harms

These interventions may have beneficial consequences beyond those related to their direct effects on children's sun-protective behaviors. For example, these programs may lead to improved knowledge, attitudes, and behaviors among parents and school staff. Intervention effects on students' sun-protection awareness and attitudes may also increase their receptivity to sun-protection messages later in life. Furthermore, the broader community may benefit from increased availability of shade structures for increased protection during recreational activities or severe weather. No harms specific to this intervention have been identified.

Considerations for Implementation

Given the many competing priorities schools need to address with limited time and resources, and the need to consider interests of multiple stakeholders, primary and middle school interventions to promote sun-protective behaviors may be challenging to implement. Nonetheless, several initiatives to promote adoption of school-based sun-protection programs and policies have demonstrated success at increasing the number of schools that implement these interventions (Buller et al., 2011; Emmons et al., 2008; Jones, Beckmann, & Rayner, 2008). Such initiatives usually provide general guidance on implementation along with specific resources to facilitate implementation, such as curricular materials and activities. Cancer Control P.L.A.N.E.T. provides information and implementation materials for research-tested programs appropriate for the range of grade levels covered by this review.

Although it is possible for individual schools to implement sun-protection programs, efforts to promote their adoption at a higher organizational level (e.g., school districts) may result in increased reach and face fewer organizational barriers. To help overcome difficulties finding time to implement curricular components of school-based sun protection programs, the components are often integrated into the regular school curricula.

Evidence Gaps

Several questions remain about the best ways to implement and optimize school-based sun protection programs. For example, which stakeholders are most critical to engage in efforts to implement sun protection policies (e.g., principals, school boards)? How can tradeoffs with competing school priorities be minimized? What infrastructure is required to foster widespread use of these interventions while sustaining their effectiveness (e.g., technical assistance, support to school districts)? Addressing these questions could play an important role in expanding the reach and use of these interventions.

The data presented here are preliminary and are subject to change as the systematic review goes through the scientific peer review process.

References

Buller DB, Reynolds KD, Ashley JL, Buller MK, Kane IL, Stabell CL, et al. Motivating public school districts to adopt sun protection policies: a randomized controlled trial. *Am J Prev Med* 2011;41(3):30-316.

Emmons KM, Geller AC, Viswanath V, Rutsch L, Zwirn J, Gorham S, et al. The SunWise Policy intervention for school-based sun protection: a pilot study. *J Sch Nurs* 2008;24(4): 215-21.

Frieden TR. A framework for public health action: the health impact pyramid. *Am J Public Health* 2010;100(4):590-5.

Jones SB, Beckmann K, Rayner J. Australian primary schools' sun protection policy and practice: evaluating the impact of the National SunSmart Schools Program. *Health Promot J Austr* 2008;19(2):86-90.

Saraiya M, Glanz K, Briss PA, Nichols P, White C, Das D, et al. Interventions to prevent skin cancer by reducing exposure to ultraviolet radiation: a systematic review. *Am J Prev Med* 2004;27(5):422-66.

Disclaimer

Document last updated January 2, 2014