Community Preventive Services Task Force

Preventing Skin Cancer: Child Care Center-Based Interventions

Task Force Finding and Rationale Statement

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Task Force Finding and Rationale Statement

Intervention Definition

Child care center-based interventions to promote sun-protective behaviors include educational interventions, supportive behavioral interventions, and environmental and policy changes in daycare or preschool settings. Educational and behavioral interventions generally provide information about sun safety and the effects of ultraviolet (UV) radiation, and may be directed to children, their caregivers (e.g., staff, parents), or both. Messages delivered in lectures or through small media can be reinforced by modeling or role-playing. 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).

Task Force Finding (May 2013)

The Community Preventive Services Task Force recommends child care center-based skin cancer prevention interventions that include implementation of sun protection policies along with education of staff and parents. This recommendation is based on sufficient evidence that these interventions increase children's protection from excessive UV exposure.

Rationale

Basis of Finding

This Task Force finding is based on evidence from a Community Guide systematic review published in 2004 (Saraiya et al., 1 study on behavioral outcomes; search period January 1966 – June 2000) combined with more recent evidence (6 studies, search period June 2000 – May 2011). Results presented in this statement are based on evidence from the updated search period. Based on this updated review, the Task Force recommendation was changed from insufficient to sufficient evidence of effectiveness.

The included studies assessed intervention effects on various measures of sun protection and physiological outcomes of UV radiation exposure. Three studies assessed the effects of implementing policy changes with staff, caregiver, and child education, and found consistently favorable results for all measured outcomes, including sunscreen use (2 studies), hat use (2 studies), shade use (1 study), avoidance of sun exposure at peak hours (1 study), and composite measures of sun protection (2 studies). Two studies assessed the association between the presence or comprehensiveness of sun protection policies and sun protection behaviors and found favorable results also. One of these two studies found that child care centers with sun protection policies reported greater sunscreen use (17.2 percentage points [pct pt]; 95%CI: 6.3, 28.1) and hat use (1.6 pct pt; 95%CI: -5.6, 8.8), and were more likely to restrict time outside during peak hours (10 AM to 2 PM) to one hour or less (14.6 pct pts; 95%CI: 4.2,24.9). The other study found that ratings on the comprehensiveness of policies were correlated with hat use ($r=.40$, $p<.05$). The final study from the updated search period assessed the effects of a parent/caregiver education and sunscreen distribution program, and found inconsistent and generally small effects on all of the sun protection and physiological outcomes.

Applicability and Generalizability Issues

Although four of the studies reviewed in this update come from European countries, their results are considered applicable to the U.S. context. It is expected that child care center-based interventions would have similar effects across high-income countries, and results from the studies in Europe were comparable with those from the other two included

studies conducted in the U.S. Children of all eligible ages were included in the evaluated programs, and favorable results were found in both preschool and daycare settings. Reported information was inadequate to assess the potential impact of other setting characteristics, such as size of facility or government versus private operation.

There also wasn't enough information in the included studies to assess differential effects by demographic factors such as race/ethnicity or socioeconomic status. One of the studies from Massachusetts, however, found that sun protection policies and practices were more commonly adopted by child care centers serving predominantly non-Hispanic white children (chi square = 17.77, $p<0.01$) in higher-SES areas ($r = 0.14$, $p=0.02$).

Five of the six studies involved the establishment or assessment of sun protection policies. In studies that provided detailed intervention information, these policies were accompanied with caregiver and child education. Thus, it is difficult to draw conclusions on the effectiveness of educational or environmental programs implemented in the absence of policy changes, or on the relative contributions of caregiver and child education to intervention effectiveness. As expected for interventions with several elements solely focused on changing behaviors within child care settings (e.g., policies), the largest and most consistent effects were found within those settings.

Data Quality Issues

Included studies varied in their degree of protection against threats to internal validity, ranging from fully randomized trials to cross-sectional assessments of self-reported exposure and outcome data. Across all study designs, results were consistently positive and of substantial magnitude, thereby supporting the conclusion that these interventions are effective in improving sun protective practices in child care centers. The lack of consistency in outcome measures and metrics for reporting them, however, make it difficult to derive summary effect estimates for this body of literature.

Other Benefits and Harms

These interventions may have beneficial consequences beyond those related to their direct effects on children's sun-protective behaviors in child care settings. For example, these programs may lead to improved knowledge, attitudes, and behaviors among children's caregivers and center staff. When parental education is part of the intervention, these programs may also increase children's protection from excessive UV exposure outside child care settings. Furthermore, the broader community may benefit from increased availability of shade structures for protection during recreational activities or severe weather. No harms specific to this intervention have been identified from the evidence. Reduced levels of vitamin D and physical activity, however, have been postulated as potential harms in the broader literature.

Concerns about reduced physical activity are mitigated by evidence that children are more physically active in child care centers that provide more naturally shaded areas (Boldemann et al., 2006). Furthermore, some research indicates that parental perception of skin cancer risk does not correlate with their children's hours of outdoor activity (Tran et al., 2012).

Sun exposure is the main natural source of vitamin D synthesis in most people. This raises concerns that sun-protective behaviors may lead to vitamin D deficiency, especially in risk groups, e.g., individuals with dark skin, individuals living in northern latitudes (Springbett et al., 2010). Although there is some evidence these concerns apply to adults (Linos et al., 2011), no data for pediatric age groups are available. Furthermore, there is no scientifically validated safe threshold level of UV exposure for maximal vitamin D synthesis without increasing skin cancer risk. For these reasons, a balance is required between avoiding an increase in the risk of skin cancer by excessive sun exposure and achieving enough sun exposure to maintain adequate vitamin D levels, particularly for individuals with darker skin (Ministry of Health and Cancer Society of New Zealand, 2012).

Considerations for Implementation

Sun protection policies and practices vary greatly among child care centers. Due to limited resources and competing priorities, policies and practices are most likely to be implemented if they are easily adopted and enforced, and require little staff time. For example, centers are more likely to adopt policies that are easy to enforce (e.g., hat wearing, sunscreen use) compared with those that are harder to enforce (e.g., wearing protective clothing).

To maximize sun protection for children, child care centers should assess their sun protection practices, and enhance and formalize them to the extent possible. In light of staff turnover, regular booster training sessions may be necessary to sustain staff awareness and support of sun protection measures. Because sun protection policies and practices are often less developed in preschools than in daycare centers, such efforts may be particularly useful in preschool settings (Ettridge, 2010).

Educating parents and caregivers about sun protection is one of the most common elements included in child care center-based interventions (Kenfield et al., 2005). Included studies did not provide enough evidence to assess the independent benefits of this component, but parental involvement is important in supporting effective implementation of sun protection practices in child care centers (Ettridge et al., 2010). Parental involvement also increases the likelihood that parents will support similar sun protection practices in other settings (e.g., outdoor recreational facilities).

Evidence Gaps

Several questions remain about the most effective and efficient ways to facilitate implementation of child care center-based sun protection programs and policies, and to maximize their effectiveness. Additional research about ways to encourage the adoption of these interventions would help foster program implementation in general, and in specific contexts (e.g., centers of different sizes, centers in low-SES communities). It would also be helpful to have additional research into the effectiveness of specific components and combinations of components.

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

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