

Skin Cancer Prevention Guidelines for School Aged Children

Michael Wiblishauser,¹ PhD, CHES, Jagdish Khubchandani,² MBBS, PhD
Lata Rijhwani,³ MBBS, DCH, DPD, Joyce Balls-Berry,⁴ PhD, MPE

¹Department of Health Science, Assistant Professor of Health Science, Lock Haven University, Lock Haven, PA, USA

²Department of Physiology and Health Science, Associate Professor of Community Health, Ball State University, Muncie, IN, USA, ³Department of Dermatology, Farwaniya Hospital, Ministry of Health, Kuwait, ⁴Division of Epidemiology, Assistant Professor, Mayo Clinic, Rochester, MN, USA

ABSTRACT

Severe sunburns in childhood are a major contributor to cases of skin cancer. Schools can serve as a critical venue for primary prevention of skin cancer by limiting exposures. In this paper, we review the guidelines for school based skin cancer prevention.

INTRODUCTION

Skin Cancer (carcinoma) is a deadly disease which occurs in individuals of all ages, races, sexes, and geographical regions throughout the world. Skin cancer makes up for one out of three diagnosed cancer cases.¹ Most skin cancer cases can be divided into two groups: melanoma skin cancers (i.e., those formed from melanocytic tumors) and non-melanoma skin cancers (i.e., basal cell and squamous cell cancers). Approximately, 2 to 3 million individuals are diagnosed with non-melanoma skin cancer and 132,000 individuals are diagnosed with melanoma skin cancers globally each year.¹ In 2008, it was estimated that approximately 46,000 individuals worldwide died from melanoma skin cancer.² Melanoma accounts for 75% of all deaths caused by skin cancer.³

Australia has the highest incidence rate for skin cancer in the world⁴ with 10,684 diagnosed cases of melanoma skin cancer per year.⁵ The incidence of melanoma skin cancer has been documented to be in higher in light skinned individuals living in

the United States and in European countries (e.g., Sweden, Denmark, France) than in darker skinned individuals who reside in Asian countries⁶ or other geographical regions.⁷ In Sweden and Norway, the incidence of melanoma skin cancer cases have tripled in the last 45 years, while in the United States the cases have doubled in the last 30 years.⁸

GUIDELINES

A major contributory cause to skin cancer, is a history of severe sunburns accrued during an individual's childhood (i.e., before the age of 18).⁹ Since most cases of skin cancer are derived from childhood occurrences, a substantial number of preventive measures have been instituted on the school level by school personnel. Schools are in key positions to implement school based skin cancer prevention programs using the seven guidelines recommended by the US Centers of Disease Control and Prevention (CDC). These seven guidelines are: policy, environmental change, education, family involvement, professional

Correspondence: Dr. Michael Wiblishauser, Assistant Professor of Health Science, Department of Health Science
Lock Haven University, Lock Haven, PA 17745, USA

development, health services, and evaluation.¹⁰ These school based prevention programs can be of great importance in instilling the skills, knowledge, and attitudes that are instrumental in developing and fostering preventive skin cancer behaviors in school children.

The first CDC guideline, policy, is important in establishing standards needed to ensure proper skin cancer preventive behaviors are performed at schools by trained school personnel (e.g., school nurses, teachers, school administrators).¹⁰ Some of these policies may include ensuring that children limit exertion during the mid-day which may lower the risk of acquiring sunburns.¹¹ An effective policy would require that students use sunscreen with protective factors of “15” or higher when engaging in outdoor activities during the mid-day (10:00 a.m. to 4:00 p.m.).¹² Also mandating that students reapply sunscreen lotion every 1.5 to 2 hours while engaging in activities, can be of beneficence in reducing harmful exposure to UV (ultraviolet) rays.¹³ Though many schools may have skin cancer policies, there are barriers which keep students from partaking in skin cancer preventive behaviors. One of these barriers is that many schools do not follow the protocol established in the policies.¹⁴ Many members of school personnel do not adequately adhere to the standards in implemented policies. Another barrier that may arise is that parents are not always aware nor supportive of the policies; therefore many students do not abide by policy standards (e.g., children to bring hats to school for outdoor activities).¹⁵ Successful skin cancer prevention programs are contingent on following the standards of policies as written and clearly communicating the standards of those policies to school personnel, students, and parents.

Environmental change is another guideline that is important in preventing skin cancer among school children.¹⁰ Modifying or changing the social or physical environments in schools, may help reduce exposure to UV rays. Therefore, schools should mandate or provide hats, protective clothing, or sunglasses, which have been found to be preventive in reducing UV exposure, for students when engaging in strenuous outdoor activities.¹³ Also planning strenuous activities indoors (e.g., school gymnasium) or during times of lower UV exposure may help in preventing sunburns. Some schools provide areas of “shade” during outside school functions, to ensure protection for participants or spectators from UV rays.¹⁴ Schools can create social environments which will foster proper skin cancer preventive behaviors. Peer educators can be instrumental in teaching their fellow students to follow proper skin cancer preventive behaviors.¹⁰

The third CDC guideline, education, is of paramount importance in preventing skin cancer.¹⁰ Education should comprise the knowledge, attitudes, and behavioral skills needed to prevent sun damage. A school’s skin cancer prevention curriculum should cover the contributory factors to the development of skin cancer: overuse of tanning booths/sunlamps,² detecting pre-cancerous lesions of the skin, family histories of skin cancer,¹⁶ light skinned or fair-haired individuals are at higher risks,¹ individuals with a higher than normal number of moles on body (40+),⁸ and individuals with weakened immune systems.¹⁷ Ideally, programs would also educate students: on how to properly apply sunscreen lotion,¹² the importance of wearing sunglasses and hats when outdoors during mid-day,¹² and to limit physical exertion

during the mid-day.¹¹ Educational presentations on skin cancer prevention have shown to increase skin cancer knowledge in students who attended the presentations when compared to students who did not attend the presentations.¹⁸

Family involvement, the fourth CDC guideline, is crucial in sustaining skin cancer preventive behaviors among family members.¹⁰ Parents, who engage in sun protection behaviors, also have children who are more likely to engage in similar behaviors.¹⁸ Parents are more likely to have their children follow skin cancer preventive behaviors than they would for themselves.¹⁹ The involvement of parents in skin prevention behaviors has shown to be beneficial in increasing skin cancer knowledge and preventive behaviors in their children.²⁰ Therefore, any school prevention policy should encourage involvement by students' parents.

The fifth CDC guideline is professional development which is instrumental in providing current skin cancer prevention knowledge and skills to school personnel.¹⁰ Professional development is a key factor in helping school personnel not only recognize the importance of skin cancer prevention, but how they may effectively implement policies regarding skin cancer prevention in schools. This professional development could be ideally integrated into pre-service and in-service education for school personnel.¹⁰ Some successful interventions have employed policy toolkits filled with various resources (e.g., evaluation tools) and brief counseling sessions to school personnel which were provided by school nurses.²¹

The sixth CDC guideline is providing and coordinating health services which help reinforce skin cancer preventive behaviors in schools.¹⁰

These work best when offered in conjunction with program policy and skin cancer education. The health services may constitute school nurses informing parents of the dangers of both overexposure to UV rays and severe sunburns on potential future occurrences of skin cancer.¹⁰ Also, requiring students to wear hats or protective clothing when on field trips can reinforce preventive behaviors.

The evaluation process is the the last CDC guideline in implementing and sustaining viable skin cancer prevention programs in schools.¹⁰ Evaluations should be utilized to reinforce aspects of programs that work, and to either strengthen or change those aspects that are not effective. Here are some of the issues that evaluations should assess in order to maximize effectiveness in school programs:

- Evaluations need to compare/contrast behaviors/knowledge of students before pre-program implementation to reported behaviors after completion of the program.
- Evaluations should assess which students effectively respond to skin cancer messages and which messages are best to promote the adoption of preferred preventive behaviors.^{22,23}
- Evaluations should assess attitudes that have changed during the duration of the program, and if these changes are effective in increasing school children's compliance to optimal skin cancer protective behaviors.²⁴
- Evaluations need to assess that schools have comprehensive policies on skin cancer prevention and if they are implemented and are enforced as they are written.¹⁰
- Evaluations need to assess the education and training that school personnel receive related to skin cancer knowledge and preventive behaviors.¹⁰

CONCLUSION

Since most skin cancer cases arise from childhood sun exposure, schools are in important positions to provide skin cancer prevention programs for their students. Schools need to ensure that they are providing the skills and knowledge needed to educate students about proper skin cancer preventive behaviors. Each CDC guideline or similar type guidelines must be optimized to maximal potential in order to have successful prevention programs. Schools need to be utilized as venues for primary prevention of skin cancer.

REFERENCES

1. World Health Organization. Skin Cancers. Available at <http://www.who.int/uv/faq/skincancer/en/print.html>. Accessed on January 9, 2015.
2. Cancer Research UK. Skin cancer risks and causes. Available at <http://www.cancerhelp.org.uk/type/skin-cancer/about/skin-cancer-risks-and-causes> Accessed on January 13, 2015.
3. Webmd. Cosmetic procedures: sun exposure and skin. Available at <http://www.webmd.com/skin-beauty/guide/sun-exposure-skin-cancer> Accessed January 9, 2015.
4. Australian Institute of Health and Welfare and Australasian Association of Cancer Registries. Cancer in Australia: an overview, 2008. Available at: <http://www.aihw.gov.au/publications/can/ca08/ca08.pdf>. Accessed January 11, 2015.
5. Australian Institute of Health and Welfare and Australasian Association of Cancer Registries. (2008). Cancer in Australia: an overview, 2008. Available at <http://www.aihw.gov.au/publications/can/ca08/ca08.pdf>. Accessed on January 11, 2015.
6. Qiu D, Tanaka S. International comparisons of cumulative risk of skin cancer, from cancer incidence in five continents Vol. VIII. *J Clin Oncol*, 2006; 36 (8), 533-34.
7. Parkin DM, Bray F, Ferlay J, Pisani P. Global cancer statistics, 2002. *CA-Cancer J Clin*. 2005; 55 (2):74-108.
8. World Health Organization. The World Health Organization recommends that no person under 18 should use a sunbed. Available at <http://www.who.int/mediacentre/news/notes/2005/np07/en/index.html>. Accessed on January 9, 2015.
9. Mayo Clinic Staff. Skin Cancer: Risk Factors. Available at <http://www.mayoclinic.com/health/skin-cancer/DS00190/DSECTION=risk-factors>. Updated August 18, 2010. Accessed on January 12, 2015.
10. Glanz K, Saraiya M, Wechsler H. Guidelines for school programs to prevent skin cancer. Available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5104a1.htm>. Accessed on January 10, 2015.
11. Saraiya M, Glanz K, Briss PA, 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.
12. Centers for Disease Control and Prevention (2010). Skin Cancer: Prevention. Available at http://www.cdc.gov/cancer/skin/basic_info/prevention.htm. Updated August 5, 2010. Accessed on January 11, 2015.
13. Cummings SR, Tripp MK, Hermann NB. Approaches to the prevention and control of skin cancer. *Cancer Metast Rev*. 1997; 16 (3/4):309-27.
14. Kirsner RS, Parker DF, Brathwaite N, Thomas A, Tejada F, Trapido EJ. Sun protection policies in Miami-Dade County public schools: Opportunities for skin cancer prevention. *Pediatr Dermatol*, 2005; 22 (6):513-19.
15. Giles-Corti B, English DR, Kenausis K., et al. Creating SunSmart schools. *Health Educ Res*. 2004; 19 (1): 98-109.
16. Mayo Clinic Staff. Skin Cancer: Risk Factors. Available at <http://www.mayoclinic.com/health/skin-cancer/DS00190/DSECTION=risk-factors>. Updated August 18, 2010. Accessed on January 13, 2015.
17. Centers for Disease Control and Prevention. Skin Cancer: School Health Guidelines: Questions and Answers on Skin Cancer Prevention. Available at <http://www.cdc.gov/healthyyouth/skincancer/guidelines/questions.htm>. Updated October 28, 2008. Accessed on January 13, 2015.
18. Katz RC, Jernigan S. Brief report: An empirically derived educational program for detecting and preventing skin cancer. *J Behav Med*. 1991; 14 (4):421-28.
19. Buller DB, Callister MA, Reichert T. Skin cancer prevention by parents of young children: health information sources, skin cancer knowledge, and sun-protection practices. *Oncol Nurs Forum*. 1995; 22 (10):1559-66.

20. Glanz K, Chang L, Song V, Silverio R, Muneoka L. Skin cancer prevention for children, parents, and caregivers: A field test of Hawaii's SunSmart program. *J Am Acad Dermatol.* 1998; 38 (3):413-17.
21. Emmon KM, Geller AC, Viswanath V, et al. The Sun-Wise policy intervention for school-based sun protection: A pilot study. *J Sch Nurs.* 2008; 24:215-21.
22. Hughes BR, Altman DG, Newton JA. Melanoma and skin cancer: evaluation of a health education programme for secondary schools. *Brit J Dermatol.* 2006; 128 (4):412-17.
23. Bastuji-Garin S, Grob JJ, Grogard C, Grosjean F, Guillaume JC. Melanoma prevention: Evaluation of a health education campaign for primary schools. *Arch Dermatol.* 1999; 135:935-40.
24. Buller DB, Buller MK, Beach B, Ertl G. Sunny Days, Healthy Ways: Evaluation of a skin cancer prevention curriculum for elementary school-aged children. *J Am Acad Dermatol.* 1996; 35 (6):911-22.