

The ABCs of Sun Protection for Children

Maryellen Maguire-Eisen
Karen Rothman
Marie France Demierre

Excessive sun exposure in childhood is a critical variable influencing skin cancer risk. Nurses must teach parents how to properly protect their children from excessive sun exposures by demystifying UV radiation and teaching proper sun-protection measures. Protecting children from excessive sun exposure, while not curtailing recreation, should be the goal of all nurses caring for children.

Maryellen Maguire-Eisen, MSN, RN, OCN, is an Oncology Certified Nurse, and Executive Director, Sun Protection Foundation, Hingham, MA.

Karen Rothman, MD, is an Assistant Professor of Medicine and Pediatrics, Division of Dermatology, University of Massachusetts Medical School, Worcester, MA.

Marie France Demierre, MD, FRCP, is an Assistant Professor, and Director, Skin Oncology Program, Boston University School of Medicine, Boston, MA.

Acknowledgment: The authors thank Jane Shanney and Rachel Butler for their editorial review.

Objectives

This educational activity is designed for nurses and other health care providers who care for and educate patients regarding sun protection for children. For those wishing to obtain CE credit, an evaluation follows. After studying the information presented in this article, the nurse will be able to:

1. Describe the risk of skin cancer in children.
2. Discuss sun-protection policies recommended for children.
3. List characteristics of sun-protective clothing.
4. Describe the characteristics of sunblocks for protecting children from the sun.

Skin cancer is the most prevalent cancer in our society with over 1 million new cases annually. Skin cancer is becoming more common in children and accounts for approximately 4% of pediatric malignancies. It is estimated that 90% of all skin cancers are preventable (Schmid-Wendtner et al., 2002). This is a staggering statistic when you consider that one American dies every hour from skin cancer. Nurses can play a pivotal role in prevention and early detection of this serious cancer by teaching proper sun protection to children and their parents.

Background

Skin cancers are malignancies that develop in the epidermis, dermis, or the adnexal structures of the skin most often due to overexposure to both natural and artificial sources of ultraviolet light. There are three major types of skin cancer: basal cell carcinoma, squamous cell carcinoma, and melanoma. Anyone

can get skin cancer but inherent risk factors are very important (Maguire-Eisen, 2003). Skin color, eye color, freckling tendency, nevi count, and family history increase one's risk of developing skin cancer. However, the individual's childhood sun-exposure history appears to significantly influence the risk of skin cancer (Kennedy, Bajdik, Willemze, & Gruijl, 2003; Rhodes, 1995; Silverberg, 2001; Tsao, Atkins, & Sober, 2004). Skin cancers are associated with both intense, sporadic sun exposure (sunburn) and with chronic sun exposure (tanning) (Koh, Geller, Miller, Grossbart, & Lew, 1996).

Overexposure to ultraviolet radiation is a growing health concern for children in our society due to environmental changes and cultural trends. The ozone layer acts as a planetary "sunscreen" reflecting and absorbing ultraviolet radiation. Ozone depletion has resulted in increasing levels of ultraviolet (UV)



radiation reaching the Earth's surface. Between 1983 and 1993, there was a 6% drop in total ozone. It is estimated that for every 1% drop in ozone there is a 1% to 5% increase in skin cancer (Grant-Kels, 1993).

Sunburn incidence among American children is extremely high, ranging from 29% to 83% for the previous summer season and between 7% and 13% for the previous summer weekend (Geller et al., 2002; Robinson, Rigel, & Amonette, 2000). Repeated and severe sunburns affect 12% of adolescents with reports of five or more sunburns during one summer season (Davis, Cokkinides, Weinstock, O'Connell, & Wingo, 2002). Sunburn incidence is associated with increasing age, fair skin, time spent outdoors, sporadic sunscreen use, and inadequate protective clothing (Geller et al., 2002). These factors are important because one sunburn may double a child's risk for developing melanoma. Parental attitudes that a child looks "healthier with a tan" may be a contributing factor influencing sun damage and skin cancer risk (Robinson, Rigel, & Amonette, 1997).

Overexposure to ultraviolet radiation via indoor tanning is another growing concern. Artificial tanning is a billion dollar industry frequented by an increasing number of teenage girls (Lazovich & Forster, 2005). Tanning rates for teenage girls double between ages 14 to 15 and 15 to 16 (Geller et al., 2002). Indoor tanning is driven by social pressures, appearance motivation, physiologic effects on mood, and having a parent who tans (Feldman et al., 2004; Lazovich, et al., 2004; Stryker et al., 2004). Health risks associated with indoor tanning include severe skin or corneal burns, cataract formation, skin infections, photoaging, exacerbation of photosensitive disorders, and skin cancer. Basal cell carcinomas, squamous cell carcinomas,

and cutaneous melanomas are the most serious health risks.

Sun-Protection Actions

Sun-protection policies recommend avoiding artificial and natural ultraviolet light sources, proper use of sunscreens, and the appropriate use of shade or sun-protection gear (see Table 1) (American Academy of Pediatrics, 1999; Centers for Disease Control [CDC], 2002). However, studies indicate that sun-protection measures are infrequently utilized to prevent sun damage. Sunscreens, hats, sunglasses, and avoiding midday sun are routinely used by less than one-third of children (Banks, Silverman, Schwartz, & Tunnessen, 1992; Hall, McDavid, Jorgenson, & Kraft, 2001; Geller et al., 2002; Olson et al., 1997). Most schools in the United States lack sun-protection policies. The CDC (2002) and the National Association of State Boards of Education (2005) have sample school policies on skin cancer prevention. Recently, states began introducing legislation that addresses skin cancer prevention for children at school. California has led the way in this effort with the ratification of the Billy Bill (CA-SB 310). This bill prevents schools from prohibiting children from wearing sunglasses or hats on campus (Sun Safety for Kids, 2005; William S. Graham Foundation for Melanoma Research, 2005).

Ultraviolet Protection

Ultraviolet radiation varies dramatically both daily and seasonally. Peak readings occur at midday during noon time and seasonally on the Summer solstice, June 21st. UV intensity is higher in May than in August, leading to a high incidence of sunburn in the Spring. Altitude is another important variable to consider, because UV intensity is greater at higher altitudes, increasing by 2% for every 1,000 feet above sea level. Water, sand, and

snow create reflective surfaces that increase scatter by 10%, 15%, and 80% respectively (Environmental Protection Agency [EPA], 2004)

Educating parents and teachers how to use the Global UV Index to gauge the potential for sun damage from natural sources is an important way to protect children from excessive exposures to the sun. The UV Index, developed by the National Weather Service and the EPA, is a prediction or estimate of UV intensity and the associated risk of overexposure to human skin. There are sun precautions or actions that correspond to UV intensity levels. These actions include sunglasses, sunscreens, physical protection, and sun avoidance (see Table 2).

Dermatology nurses should be pragmatic regarding limiting midday exposures and outdoor play. Instruct parents that when the UV intensity is high, early morning, late afternoon, or early evening outdoor activities should be planned whenever possible. If midday activities are unavoidable, recommend portable shade including parasols, beach umbrellas, and sun tents, as well as protective clothing and sunblock. They are all practical and easy to employ.

Advising parents about the real risks of indoor tanning is imperative. There is no such thing as a "safe tan" despite advertisements to the contrary. Indoor tanners are at increased risk of developing all forms of skin cancer (Lazovich & Forster, 2005). Legislation forbidding indoor tanning in young teens has been ratified in Wisconsin and Illinois. Many other states are working on bills to protect this population (Lim et al., 2005).

Sun-Protective Clothing

Sun-protective clothing is an excellent way to shield children from ultraviolet radiation exposure. Sun-protective clothing can range

Table 1.
Sun Protection Glossary

Sun Term	Definition	Application
UV Intensity	Ultraviolet light intensity is influenced by rotation and revolution of the planet (daily and seasonal variations), proximity to the equator, ozone concentration, altitude, and weather (cloud cover and wind velocity).	Meters are available to measure UVB intensity and the scales may range from 0-15.
Ultraviolet Index	A measure of the risk for sunburn on a given day. Collected via satellite and adjusted for environmental conditions including humidity, wind, and clouds.	Global UV Index ranges from 1-11+ with color coding for risk estimates.
Sun Protection Factor (SPF)	The ratio of time to develop a sunburn wearing a specific sunscreen as compared to the time to develop a sunburn without a sunscreen. For example, a SPF 15 will provide a person who burns in 10 minutes, 150 minutes of sun protection.	SPF \geq 15 is recommended as the minimal strength of sunscreen. One ounce per application is the required dose to achieve the SPF.
Physical Blockers (non-chemical)	Inorganic compounds that may include titanium dioxide or zinc oxide. New techniques that micronize the inorganic compounds have resulted in improved consumer acceptability.	Work on application and are great for children with sensitive skin.
Chemical Blockers	Chemical ingredients that may include PABA, PABA derivatives, cinnamates, salicylates, and anthralins. These agents vary in their ability to protect against longer ultraviolet wavelengths.	Higher SPFs may include multiple ingredients to achieve the higher SPF rating.
Broad Spectrum	Denotes protection against both UVA and UVB radiation.	Degree of protection into UVA spectrum can vary by ingredients.
Substantivity	The ability for a sunscreen to maintain its SPF rating given exposure to water and adverse conditions. It is classified as either <i>water resistant</i> or <i>very water resistant</i> .	Immediate reapplication of sunscreen after any water exposure or heavy perspiration may further safeguard sun-sensitive individuals against sunburn.
Water Resistant	Claims that a sunscreen maintains its SPF after two 20-minute water immersions or moderate physical activity.	
Waterproof	Claims that a sunscreen maintains its SPF after 80 minutes of water immersion or extreme physical activity.	
Ultraviolet Protection Factor (UPF)	An industry standard for sun-protective garments. It provides a guideline for consumers to evaluate the degree of protection available in a product.	Good = 15-24 Very good = 25-39 Excellent = 40-50+

from hats, t-shirts, and sunglasses to specialized garments. Hats can provide shade to the face and neck. Hats with wide brims provide the most protection. Summer clothing usually provides limited protection because of the looseness of weave, ranging from 2 to 6.5 SPF (sun-protection factor). Synthetic materials used in sun-protective garments provide better protection because of the tightness of the weave (Adams, 1999). These specialized garments demonstrate high solar

protection in studies despite color or moisture content. Sun-protective clothing is now widely available and can be found at local stores or via the Internet. Coolibar, Sun Precautions, Nozone, and Solartex are some of the retailers that offer these garments for children and adults. The styles are practical and stylish and have become popular with children and adults worldwide. Laundry additives can enhance the sun protection afforded by garments by boosting the

SPF in garments. Rit® Sun Guard™ is one commercially available additive available at local drugstore retailers or via the Internet.

Sunglasses are recommended for children of all ages. Appropriate sunglasses should provide broad-spectrum protection with 99% of the ultraviolet rays blocked. Broad spectrum denotes protection against both UVB (shorter wavelengths ranging from 280 to 320 nm) and UVA (longer wavelengths ranging from 320 to 400 nm). Look for sun-

Table 2.
The UV Index and Corresponding Sun Precautions















Global UV Index	Rating	Recommended Precautions
1-2	Low	
3-5	Moderate	 
6-7	High	  
8-10	Very High	   
11+	Extreme	   

Table 3.
Appropriate Sunblock Application

- 4 **Know when to protect yourself:** Apply sunblock when the UV Intensity is ≥ 2 .
- 4 **Use an adequate SPF:** Use a SPF ≥ 15 for limited exposures and SPF ≥ 30 for prolonged or intense exposures.
- 4 **Wear the right sunblock:** Wear broad-spectrum sunblocks that protect against UVA and UVB exposures. Ingredients that include titanium dioxide, zinc oxide, or Parsol 1689 provide excellent broad spectrum protection.
- 4 **Wear the proper dose of sunblock:** Sunblock is to be applied thickly; adults require one ounce (a handful) per application and children require half ounce.
- 4 **Don't forget difficult sites:** Write **BEENS** on your sunblock bottle to remind you to apply to **B**ack of knees, **E**ars, **E**ye area, **N**eck, **S**calp. Apply sunblock before going outside to insure protection and to cover border areas (under straps/waistbands).
- 4 **Don't forget to reapply:** Reapplication is recommended every 2 hours during prolonged exposures or after swimming or heavy perspiration.
- 4 **SUNBLOCK SHOULD NOT BE USED TO INCREASE UV EXPOSURE TIMES.**

glasses that indicate the glass absorbs ultraviolet light up to 400 nm. Sunglasses are an essential component of sun-protection attire and should not be overlooked. They may protect the eyes from ultraviolet damage and help pre-

vent against cataracts, macular degeneration, and ocular melanoma (American Academy of Ophthalmology, 2005).

Sunblock

The SPF, spectrum of protec-

tion, vehicle, and substantivity (water resistance) should be considered when recommending a sunblock. Sun-protection factor is a concept that parents must understand because it is a measure of protection afforded by sunblocks against ultraviolet B (burning rays) only. The SPF rating is calculated based on the time it takes for the skin to develop minimal erythema (sunburn) with the application of 2 cc/cm² of sunscreen. Minimal erythema or sunburn is the result of overexposure to UVB rays. SPF is not a measure of the potential damage from UVA rays and does not denote protection from the tanning rays. There is no official rating system for UVA protection at this time. A label that specifies broad-spectrum protection is the best indication of UVA protection.

Proper sunscreen application is the only way to achieve the SPF rating indicated by the manufacturer. A consumer must apply one ounce of sunblock per total body application (a handful) for an adult and half ounce for the average child. A SPF 15 sunscreen rating indicates that the protected skin is shielded from UVB radiation for 15 times longer than unprotected skin. On a day with high UV intensity (>6) a person with pale skin would burn in an average of 10 minutes. Therefore, a SPF 15 sunscreen applied in the appropriate dose would protect the individual for approximately 150 minutes, provided there isn't any heavy perspiration or prolonged water submersion. However, because most consumers apply a sub-therapeutic dose of sunblock there is a resulting relative lowering of the sun-protection factor. For example, when a parent applies 25% of the recommended dose of a SPF 15 sunblock instead of the correct dose, the sunblock protection approximates a SPF 4.

continued on page 431

Table 4.
Sun-Protection Curriculums

Curriculum	Organization	Grade level	Web Address	Content	Evaluations
Block the Sun not the Fun	American Academy of Dermatology	K – grade 3, 3-8	www.aad.org/btsntf/btfnstl.html www.aad.org/kids/index.html	Downloadable material for kindergarten through adolescence.	Crane, Schneider, Yohn et al. (1999)
Learn Not 2 Burn™	Sun Protection Foundation	Pre-school to grade 12	www.sunprotectionfoundation.org	Lesson plan includes learning objectives, strategies, and resources for providing an interactive class-room lessons.	In process
National Science Olympiad	Centers for Disease Control	Middle and high school	www.cdc.gov/excute/skincancer/index.htm	Skin cancer module designed to prepare students for Olympiad. Other applications for health education included.	
Project Safety	M.D. Anderson Cancer Center	Middle through high school	www.mdanderson.org/departments/projectsafety	CD-Rom with three science based lessons accompanied by an 80 page teacher guide.	Kamin, O'Neill, & Ahearn (1993)
Skin Check	Melanoma Education Foundation	High school	www.skincheck.com/mef_page_4.htm	Sunspots, a 16 minute videotape, training session on site for health educators. Quiz questions, supplementary info for teachers	
Sun Safe Project	The Norris Cotton Cancer Center at Dartmouth-Hitchcock Medical Center	NA	www.dartmouth.edu/dms/sunSAFE	Downloadable educational materials for teachers, nurses, and parents.	Grant-Petersson, Dietrich, Sox et al. (1999)
Sunny Days Health Ways	AMC Cancer Research Center	Kindergarten through grade 5	www.sdhw.info	CD-Rom provides a comprehensive curriculum with lesson plans, student activities, and assessments.	Buller, Hall, Powers et al. (1999)

ABCs

continued from page 422

Nurses should recommend sunblocks with a broad spectrum of protection (UVB/UVA), in a cosmetically appealing vehicle, with a *waterproof* or *water-resistant* rating. Water resistant denotes a longer period of protection than water-

proof. Waterproof claims indicate that a sunscreen maintains its SPF after two 20-minute water immersions or moderate physical activity. Water resistant claims indicate that a sunscreen maintains its SPF after 80 minutes of water immersion or extreme physical activity.

Titanium dioxide, zinc oxide, or Avobenzone (Parsol 1789), a

PABA derivative, provide excellent broad-spectrum protection. Sunblocks should be applied 30 minutes before sun exposure and reapplied every 2 hours or after swimming or heavy perspiration. Although spray sunblocks are appealing due to the ease of application, their coverage is often inadequate due to difficulty in judging dosing and thickness of



Table 4. (continued)
Sun-Protection Curriculums

Curriculum	Organization	Grade level	Web Address	Content	Evaluations
SunWise Program	The U.S. Environmental Protection Agency	Kindergarten through grade 8	www.epa.gov/sunwise	A tool kit with lessons, a poster, homework activity sheets, a UV reflective Frisbee, as well as policy guidelines, sample letters, and resources.	Geller, Rutsch, Kenausis et al. (2003)
SunSmart America	The Richard David Kann Melanoma Foundation	Elementary through high school	www.melanomafoundation.com	CD-ROM available in several languages provides lessons adapted from the Australian curriculum	
Sun Safety Activity Guide	The National Safety Council's Environmental Health Center		www.nsc.org/ehc/sunsafer.htm		
SS Kidz	William F. Graham Melanoma Foundation	Pre-school – high school	www.bfmelanoma.com/sskidz.htm	Grassroots educational program that provides classroom teachers to discuss age appropriate sun safety lessons.	
Sunny States Program	Skin Cancer Foundation	Elementary grades	www.skincancer.org	Minimal charge for kit and instructions to create map of the United States depicting sun safety for each state.	
Sun Guard Program	Maryland Skin Cancer Prevention	Middle school	www.sunguardman.org/core/shtml	Educational materials and downloadable curriculum	

application and are not recommended. Because sunblocks work by reflecting or absorbing ultraviolet radiation, they are broken down or depleted more quickly on a high UV intensity day. A higher SPF or more frequent application is advisable on a very high or extreme UV day (see Table 3).

Sun-Safety Education

School nurses must take responsibility for protecting children from excessive amounts of ultraviolet radiation at school. There are many wonderful sun-safe-

ty educational curriculums that have been developed for pre-school through high school. They can be easily implemented to teach sun safety (see Table 4). Experts in the field of education and health care have collaborated to create fun and informative programs that teach sun protection to children and early detection of skin cancer to adolescents. Many of these programs are available free of cost, and can be adapted or modified for application in the community. Although the best curriculum is the one that results in both improved

knowledge and sun-protective practices, it is important to remember that repeated health messages are necessary to promote behavior change.

Conclusion

Sun protection is the responsibility of both parents and nurses. We can no longer think of sunburn or sun damage as a minor health problem for children but rather as permanent genetic damage. Many parents do not know how to adequately protect their children from excessive ultraviolet radiation. Well-

informed nurses are invaluable in teaching parents effective sun protection. Sun-safety education must be taught with a common sense approach. With proper guidance and support from nurses, parents should be able to protect their children from overexposure to the sun's dangerous rays without it affecting their children's quality of life or dampening their enjoyment of recreational activities. ■

References

- Adams, J.E. (1999). The role of fabrics in sun protection. *The Melanoma Letter*, 17, 1-6.
- American Academy of Ophthalmology. (2005). *Ultraviolet light and sunglasses*. Retrieved September 4, 2005, from <http://www.aao.org/newsroom/facts/uvexpose.cfm>
- American Academy of Pediatrics. (1999). *Ultraviolet light: A hazard to children*. Retrieved September 3, 2005, from <http://www.aappolicy.aappublications.org/cgi/content/full/pediatrics;104/2/328>
- Banks, B.A., Silverman, R.A., Schwartz, R.H., & Tunnessen, W.W., Jr. (1992). Attitudes of teenagers towards sun exposure and sunscreen use. *Pediatrics*, 89(1), 40-42.
- Buller, D.B., Hall, J.R., Powers, P.J., Ellsworth, R., Beach, B.H., Frank, C.A., et al. (1999). Evaluation of the "Sunny Days, Healthy Ways" sun safety CD-ROM program for children in grades 4 and 5. *Cancer Prevention Control*, 3(3), 188-195.
- Centers for Disease Control (CDC). (2002). *Guidelines for school programs to prevent skin cancer*. Retrieved September 3, 2005, from <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5104al.htm>
- Crane, L.A., Schneider, L.S., Yohn, J.J., Morelli, J.G., & Plomer, K.D. (1999). "Block the sun, not the fun": Evaluation of a skin cancer prevention program for child care centers. *American Journal of Preventive Medicine*, 17(1), 31-37.
- Davis, K.J., Cokkinides, V.E., Weinstock, M.A., O'Connell, M.C., & Wingo, P.A. (2002). Summer sunburn and sun exposure among U.S. youths ages 11 to 18: National prevalence and associated factors. *Pediatrics*, 110(1), 27-35.
- Environmental Protection Agency. (2004). *A guide to the UV index*. Retrieved September 3, 2005, from www.epa.gov/sunwise/doc/uviguide.pdf
- Feldman, S.R., Liguori, A., Kucenic, M., Rapp, S.R., Fleischer, A.B., Jr., Lang, W., et al. (2004). Ultraviolet exposure is a reinforcing stimulus in frequent indoor tanners. *Journal of the American Academy of Dermatology*, 51(1), 45-51.
- Geller, A., Rutsch, L., Kenausis, K., & Zhang, Z. (2003). Evaluation of the SunWise school program. *Journal of School Nursing*, 19(2), 93-99.
- Geller, A.C., Colditz, G., Oliveria, S., Emmons, K., Jorgensen, C., Aweh, G.N., et al. (2002). Use of sunscreen, sunburning rates, and tanning bed use among more than 10,000 US children and adolescents. *Pediatrics*, 109(6), 1009-1014.
- Grant-Kels, J.M. (1993). The impact of ozone depletion on the skin. *Pediatric Dermatology*, 10(1), 81-83.
- Grant-Petersson, J., Dietrich, A.J., Sox, C.H., Winchell, C.W., & Stevens, M.M. (1999). Promoting sun protection in elementary schools and child care settings: The SunSafe project. *Journal of School Health*, 69(3), 100-106.
- Hall, H.I., McDavid, K., Jorgenson, C.M., & Kraft, J.M. (2001). Factors associated with sunburn in white children aged 6 months to 11 years. *American Journal of Preventive Medicine*, 20(1), 9-14.
- Kamin, C.S., O'Neill, P.N., & Ahearn, M.J. (1993). Developing and evaluating a cancer prevention teaching module for secondary education: Project SAFETY (Sun Awareness for Educating Today's Youth). *Journal of Cancer Education*, 8(4), 313-318.
- Kennedy, C., Bajdik, C.D., Willemze, R., & Gruijl, F.R. (2003). The influence of painful sunburns and lifetime sun exposure on the risk of actinic keratoses, seborrheic warts, melanocytic nevi, atypical nevi, and skin cancer. *Journal of Investigative Dermatology*, 120(6), 1087-1093.
- Koh, H.K., Geller, A.C., Miller, D.R., Grossbart, T.A., & Lew, R.A. (1996). Prevention and early detection strategies for melanoma and skin cancer. Current status. *Archives in Dermatology*, 132(4), 436-443.
- Lazovich, D., & Forster, J. (2005). Indoor tanning by adolescents: Prevalence, practices and policies. *European Journal of Cancer*, 41(1), 20-27.
- Lazovich, D., Forster, J., Sorensen, G., Emmons, K., Stryker, J., Demierre, M.F., et al. (2004). Characteristics associated with use or intention to use indoor tanning among adolescents. *Archives of Pediatrics & Adolescent Medicine*, 158(9), 918-924.
- Maguire-Eisen, M. (2003). Risk assessment and early detection of skin cancers. *Seminars in Oncology Nursing*, 19(1), 43-51.
- National Association of State Boards of Education. (2005). *Sample policies to promote sun safety and prevent skin cancer*. Retrieved on September 3, 2005, from http://www.nasbe.org/Healthy_Schools/Sample_Policies/sun_safe_ty.html
- Olson, A.L., Dietrich, A.J., Sox, C.H., Stevens, M.M., Winchell, C.W., & Ahles, T.A. (1997). Solar protection of children at the beach. *Pediatrics*, 99(6), 1-5.
- Rhodes, A.R. (1995). Public education and cancer of the skin. What do people need to know about melanoma and nonmelanoma skin cancer? *Cancer*, 75(2 Suppl.), 613-636.
- Robinson, J.K., Rigel, D.S., & Amonette, R.A. (2000). Summertime sun protection used by adults for their children. *Journal of the American Academy of Dermatology*, 42, 746-753.
- Robinson, J.K., Rigel, D.S., & Amonette, R.A. (1997). Trends in sun exposure knowledge, attitudes, and behaviors: 1986 to 1996. *Journal of the American Academy of Dermatology*, 37, 179-86.
- Schmid-Wendtner, M.H., Berking, C., Baumert, J., Schmidt, M., Sander, C.A., Plewig, G., et al. (2002). Cutaneous melanoma in childhood and adolescence: An analysis of 36 patients. *Journal of the American Academy of Dermatology*, 46(6), 874-879.
- Silverberg, N.B. (2001). Update on malignant melanoma in children. *Archives of Dermatology*, 67(5), 393-396.
- Stryker, J.E., Lazovich, D., Forster, J.L., Emmons, K.M., Sorensen, G., & Demierre, M.F. (2004). Maternal/female caregiver influences on adolescent indoor tanning. *Journal of Adolescent Health*, 35(6), 528, 1-9.
- Sun Safety for Kids. (2005). *The Billy bill*. Retrieved September 3, 2005, from <http://www.sunsafetyforkids.org/sb310.htm>
- Tsao, H., Atkins, M.B., & Sober, A.J. (2004). Management of cutaneous melanoma. *New England Journal of Medicine*, 351, 998-1012.
- William S. Graham Foundation for Melanoma Research. (2005). *Major outcomes associated with the Billy Foundation*. Retrieved September 4, 2005, from <http://www.bfmmelanoma.com/aboutus.htm>

ANSWER/EVALUATION FORM

ANSWER/EVALUATION FORM:
The ABCs of Sun Protection for Children

This test may be copied for use by others.

COMPLETE THE FOLLOWING:

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Preferred telephone: (Home) _____ (Work) _____

CE application fee: DNA member \$10.00
 Nonmember \$15.00

Posttest Instructions

1. To receive continuing education credit for individual study after reading the article, complete the answer/evaluation form below.
2. Detach and send the answer/evaluation form along with a check or money order payable to *Dermatology Nurses' Association to: Dermatology Nursing*, East Holly Avenue Box 56, Pitman, NJ 08071-0056.
3. Test returns must be postmarked by December 31, 2007. Upon completion of the answer/evaluation form, a certificate for 1.0 contact hour(s) will be awarded and sent to you.

This article was reviewed and formatted for contact hour credit by Marcia J. Hill, MSN, RN, Dermatology Nursing Editor; and Sally Russell, MN, CMSRN, DNA Education Director.

Answer Form

1. If you could imagine that you have fully implemented what you learned from this activity into practice, what would be different?

Evaluation

2. By completing this offering, I am able to meet the stated objectives.
 - a. Describe the risk of skin cancer in children.
 - b. Discuss sun-protection policies recommended for children.
 - c. List characteristics of sun-protective clothing.
 - d. Describe the characteristics of sunblocks for protecting children from the sun.
3. The content was current and relevant.
4. The content was presented clearly.
5. The content was covered adequately.
6. I am more confident of my abilities since completing this material.
7. The material was (check one) ☐ new, ☐ review for me

**Strongly
disagree**
**Strongly
agree**

1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

Comments _____

8. Time required to complete reading assignment: _____ minutes

9. I verify that I have completed this activity _____

Signature

This independent study is provided by the Dermatology Nurses' Association (DNA) for 1.0 contact hours. DNA is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. DNA is a provider approved by the California Board of Registered Nursing, Provider Number CEP5708.