



Fostering Health and Wellness  
Through  
SunAWARE™ Actions, Grades 9-12

Curriculum Team

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## National Health Education Standards

The National Health Education Standards (NHES) were developed to establish, promote, and support health-enhancing behaviors for students in all grade levels—from pre-Kindergarten through grade 12. The NHES provide a framework for teachers, administrators, and policy makers in designing or selecting curricula, allocating instructional resources, and assessing student achievement and progress. Importantly, the standards provide students, families and communities with concrete expectations for health education.

The SunAWARE™ curriculum aligns with the 8 NHES standards.

Standard 1: Students will comprehend concepts related to health promotion and disease prevention to enhance health.

Standard 2: Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.

Standard 3: Students will demonstrate the ability to access valid information, products, and services to enhance health.

Standard 4: Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.

Standard 5: Students will demonstrate the ability to use decision-making skills to enhance health.

Standard 6: Students will demonstrate the ability to use goal-setting skills to enhance health.

Standard 7: Students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.

Standard 8: Students will demonstrate the ability to advocate for personal, family, and community health.

Specific Performance Indicators for the Standards listed above will be referenced within the lesson sequence.

### **Goal:**

Through information and awareness activities, high school students will understand the health risks associated with overexposure to UV radiation from natural and artificial sources and to integrate primary and secondary prevention measures into their daily lives, thereby reducing the risk and impact of skin cancer.

### **Objectives:**

1. Students will understand the effects of ultraviolet radiation (UV) on the skin including gene mutations, melanin production, carcinogenesis, and vitamin D synthesis.
2. Students will identify the three types of ultraviolet radiation and their role in carcinogenesis.
3. Students will identify inherent and acquired risk factors that affect an individual's relative risk of developing skin cancer.
4. Students will identify proven methods of sun protection.
5. Students will identify current federal regulations pertaining to sunscreen ingredients and labeling.
6. Students will describe the characteristics of normal and malignant skin lesions.

7. Students will describe the impact, both emotionally and economically, of skin cancer on individuals and society.

**Materials:** UV Index (EPA), UV Apps, sun protective gear (hats, shirts, sunglasses, umbrella), sunscreen (lotion, spray, lip balm, eye stick), and measuring glass.

**Visuals:**

- UV Rays and Skin illustration
- Skin Types Chart
- Shadow Rule illustration
- Sunscreen Label illustration
- Ugly Duckling illustration
- Body Map
- Watch Your Back illustration
- Peer illustration

**Vocabulary:** ultraviolet radiation, ozone layer, pigmentation, melanocyte, melanin, congenital mole, nevus/mole, lesions, sporadic, cumulative, photokeratitis, cataract, ocular, basal cell carcinoma, squamous cell carcinoma, melanoma

**Opening Motivator:** How many of you have ever experienced a sunburn? How many of you know someone who has had skin cancer?

**Lesson Sequence:**

I. Understanding the Factors that Affect Ultraviolet Radiation Intensity (UV) <sup>a,b,c,d,e,f,g,h,i</sup>

1. Using the UV Rays & Skin illustration demonstrating the three different ultraviolet radiation wavelengths and the variability of skin penetration. <sup>a</sup>
2. Describe skin changes related to overexposure to UVA and UVB radiation including tan, sunburn, vitamin D synthesis, gene alteration, carcinogenesis, etc. <sup>b,c</sup>
3. Using the UV Rays & Skin illustration demonstrate variations in UV intensity caused by the ozone layer and the impact of planetary movement including rotation and revolution. Include concepts of seasons, time of day, weather, ozone depletion, altitude, latitude, and surface characteristics on UV intensity. <sup>d</sup>
4. Explore the impact of sporadic versus cumulative exposure to UV radiation, as well as intense versus intermittent exposure, on skin aging, relative skin cancer risk, and carcinogenesis of skin cancer. <sup>b,c,e</sup>
5. Discuss the risks associated with indoor tanning on the development of cutaneous and ocular melanoma and non-melanoma skin cancer. <sup>c,f,g</sup>
6. Introduce high-tech and low-tech UV monitoring tools including the UV Index, UV Apps, and Shadow Rule. <sup>h,i</sup>

<sup>a</sup>NHES 1: PI 1.12.3 – Students will determine how UV intensity in the environment and personal health are interrelated.

<sup>b</sup>NHES 1: PI 1.12.9 – Students will observe changes in the skin secondary to UV exposure.

<sup>c</sup>NHES 5: II 5.12.5 – Students will describe how exposure to different UV wavelengths damage the skin.

<sup>d</sup>NHES 1: PI 1.12.3 – Students will determine how the relative position of the Earth to the Sun impacts UV intensity daily and annually.

<sup>e</sup>NHES 6: PI; 6.12.1 – Students will identify short and long-term impact of UV exposure.

<sup>f</sup>NHES 7: PI 7.12.3 – Students will identify different behaviors to avoid that negatively impact health of self and others.

<sup>g</sup>NHES 2: PI 2:12:7 – Students will explore how social norms related to indoor and outdoor tanning impact unhealthy behaviors.

<sup>h</sup>NHES 3: PI 3.12.1 – Students will evaluate the validity of different UV monitoring tools.

<sup>i</sup>NHES 3: PI 3:12:3 – Students will determine the accessibility of UV monitoring tools.

## II. Understanding the Factors that Affect Skin Sensitivity<sup>j,k,l,m</sup>

1. Introduce the concept of pigmentation, explaining the role of the melanocyte in producing melanin in the skin and eyes. Describe melanin's role in protecting the skin from overexposure to UV radiation.<sup>j,l</sup>

2. Using the Skin Types chart describe the five different skin types related to the degree of skin pigmentation and reaction to UV radiation overexposure.<sup>m</sup>

3. Define sun sensitivity as related to skin color, eye color, freckling tendency, number of moles and characteristics of normal and atypical moles.<sup>j,l</sup>

4. Use UV photographs to illustrate the impact of the sun on the face, introducing the concept that freckles developing at sites of *cumulative* sun exposure and moles developing at sites of *sporadic* exposure.<sup>j,l</sup>

<sup>j</sup>NHES 1: 1.12.4 – Students will describe how inherent risk factors for skin cancer including skin and eye color, freckling tendency and mole count can impact health.

<sup>k</sup>NHES 1: 1.12.1 – Students will identify how choosing healthy behaviors can influence short and long-term health including sunburn and tanning, as well as skin cancer.

<sup>l</sup>NHES 1: 1.12.8 – Students will analyze personal susceptibility to injury when engaging in unhealthy UV exposure behaviors.

<sup>m</sup>NHES 5: PI: 5.12.5 - Students will predict the short and long-term impact of unprotected UV exposure, by determining their personal skin type as outlined in the Skin Type chart and inherent and acquired risk factors for skin cancer.

## III. Recognizing Signs of Skin Cancer<sup>n,o,p,q,r</sup>

1. Explore the risk factors for developing skin cancer including skin type, freckling tendency, mole count, sunburn history, family history, personal history, indoor tanning history, etc.<sup>n</sup>

2. Discuss characteristics of congenital, typical, and atypical moles (nevi) including number, location, size, and surface characteristics.<sup>n,o</sup>

3. Identify the two most common types of skin cancer: non-melanoma (basal cell, squamous cell) and melanoma.<sup>o</sup>

4. Use the Watch Your Back illustration to demonstrate the concepts of new, different, changing, and persistent in evaluating skin growths. Describe how these terms can be applied to recognizing signs of skin cancer.<sup>p</sup>

5. Introduce the concept of “ugly duckling sign” and “garden variety” as related to evaluating moles and skin cancer.<sup>p</sup>

6. Describe two acronyms used to help recognize skin changes associated with signs of melanoma and non-melanoma skin cancer: <sup>o</sup>

- PEER acronym for non-melanoma skin cancer recognition (basal and squamous cell skin cancer) including **P**ersistent, **E**nlarging, **E**asily irritated, and **R**ecurrent.
- ABCDE acronym for melanoma recognition including **A**symmetrical, **B**order irregular, **C**olor uneven, **D**iameter larger than an eraser head, and **E**volving.

7. Illustrate how a Body Map can be used to track location and changes in moles over time. <sup>q</sup>

8. Discuss the importance of advocating for oneself in one's own family, as well as in the health care system. <sup>q,r</sup>

<sup>n</sup>NHES 1: PI 1.12.4 Students will describe how a family history of skin cancer can impact personal skin cancer risk.

<sup>o</sup>NHES 3: PI 3.12.4 Students will demonstrate an understanding of how to employ assessment acronyms to recognize skin changes and the early signs of skin cancer.

<sup>p</sup>NHES 4 PI 4.12.1 – Students will demonstrate an ability to use interpersonal communication skills to communicate concern regarding health behaviors or symptoms.

<sup>q</sup>NHES 8: PI 8.12.3 – Students will be able to work cooperatively as an advocate for personal, family, and community health.

<sup>r</sup>NHES 8: PI 8.12.4 – Students will be able to adapt health messages and communication techniques to a specific target audience.

#### IV. Proven Methods of Sun Protection <sup>s,t,u,v,</sup>

1. Explore the impact of culture and trends on total UV lifetime exposure including fashion, travel and leisure, attitudes, sun protection actions, etc. <sup>u</sup>

2. Introduce the concept of sun protective gear including regular and specialized clothing and sunglasses. Define Ultraviolet Protection Factor (UPF), a rating system for sun protective clothing. Describe how sunglasses protect the inner and outer eye from sun damage and ocular disease. <sup>s,t</sup>

3. Demonstrate the variation in degrees of sun protection provided by various hats, shirts, bathing suits, and sunglasses. <sup>t,v</sup>

4. Introduce the concept that sunscreen is an over-the-counter medication controlled by the Food and Drug Administration with a recommended dose and frequency of application.

5. Describe handfull dosing concept for ease of calculation of sunscreen needed to cover entire body. <sup>t</sup>

6. Using the Sunscreen label illustration review definition of terms including: Sun Protection Factor (SPF), broad spectrum, water resistance, dose, reapplication and expiration date. <sup>s</sup>

7. Discuss pros and cons of sunscreen formulations including lotions, creams, spray-on, and lip balm. <sup>s</sup>

8. Explore controversy and potential health implications of mineral versus chemical sunscreen ingredients and formulations. <sup>v</sup>

9. Using UV photographs show how proper sunscreen application appears on the skin.

Explain that chemical sunscreens absorb or filter UV rays therefore appearing black on the skin. Mineral sunscreens reflect UV rays appearing lighter on photograph. Reinforce that sunscreen creates a barrier between the skin and the UV rays and that the higher the UV the faster sunscreen depletes. <sup>t</sup>

10. Discuss the role of media and peer influences on consumer choices and behaviors.<sup>v</sup>

<sup>s</sup>NHES 3: PI 3.12.1 Students will demonstrate an ability to read labels to determine validity and reliability of sun protection products.

<sup>t</sup>NHES 3: PI 3.12.5 Students will identify how to locate and utilize appropriate sun protection products.

<sup>u</sup>NHES 2: PI 2.12.2 Students will describe the impact of culture on the use of different sun protection products.

<sup>v</sup>NHES 2: PI 2.12.5 Students will evaluate the effect of media on personal and family health.

#### V. SunAWARE™ Acronym<sup>w,x,y,z</sup>

Review the rationale and significance of each action step in the “AWARE” acronym as it pertains to primary (sun protection) and secondary (early detection) skin cancer prevention.

**Avoid *unprotected* exposure to sunlight, seek shade, and never indoor tan.**<sup>w</sup>

**Wear sun protective clothing, including a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses year-round.**<sup>x</sup>

**Apply recommended amounts of broad-spectrum sunscreen with a sunburn protection factor (SPF)  $\geq$  30 to all exposed skin and reapply every two hours, or as needed.**<sup>x</sup>

**Routinely examine your whole body for changes in your skin and report concerns to a parent or healthcare provider.**<sup>y</sup>

**Educate your family and community about the need to be SunAWARE™.**<sup>z</sup>

<sup>w</sup>NHES 5: PI 5.12.6 – Students will describe how they can choose healthy alternatives when making a decision about UV exposure from natural or artificial sources.

<sup>x</sup>NHES 7: PI 7.12.1 – Students will demonstrate an understanding of the importance of taking personal responsibility for appropriately using sunscreen, eye protection, and other sun protection gear.

<sup>y</sup>NHES 5: 5.12.3 – Students will describe when it is appropriate to collaborate on decision making as it pertains to the evaluation of new and changing skin growths.

<sup>z</sup>NHES 7: PI 7.12.2 - Students will describe how the five action steps in SunAWARE™ acronym will maintain personal health and that of others.

#### **Reflection:**

1. Knowing what you now know about ultraviolet radiation and skin cancer carcinogenesis, how would you do things differently to prevent a sunburn or sun damage?
2. Now that you are aware that UV rays from tanning beds cause cancer, how do you feel about others using tanning devices?
3. How would you persuade a friend not to indoor tan?
4. How would you respond to negative peer pressure regarding sun protective behaviors?
5. Do you think there should be a total ban on indoor tanning? If so, how? If not, why not?

#### **Closure:**

1. Review acronym “AWARE” in SunAWARE™.
2. Emphasize that the “E” is for “educating others.”
3. Remind students that they should urge family and friends to seek immediate medical attention if they notice a suspicious growth.

**Plan for Independent Practice and Student Initiatives:**

1. Skin Cancer Foundation's *SunSmart U* is a resource for middle and high school students with interactive lesson plans and materials. Available at: <https://www.skincancer.org/about-us/education-programs/>
2. Melanoma Education Foundation's *How to Check Your Skin* is a step-by-step instruction sheet for performing a total skin self-examination. Available at: [http://www.skincheck.org/PDF%20Files/how\\_to\\_check\\_your\\_skin.pdf](http://www.skincheck.org/PDF%20Files/how_to_check_your_skin.pdf)
3. Impact Melanoma *Your Skin Is In* campaign allows students to become a Your Skin Is In ambassador. Available at: <https://impactmelanoma.org/our-work/your-skin-is-in/for-students/>

**Special Needs Adaptations:**

1. For visually impaired students, use large print handouts.
2. Provide Paraprofessional Aides with guidance for supporting the SunAWARE™ lesson in the school environment.
3. Use visuals (Addendums), as well as earth model, flashlight, sun protection gear, to reinforce lesson.
4. Support active involvement by special needs students in the lesson presentation.
5. Utilize videos listed in Teacher Resources.

**Assessment Based on Objective:**

1. Performance on SunAWARE™ Grades 9-12 Post-Test. Available at: <https://www.melanomaprevention.org/index.php/9-12>
2. Performance on various practice sheets listed in Plan for Independent Practice and Student Initiatives, Extensions, and the activities listed below on Teacher Resources.

**Extensions:**

1. Initiate, prepare, and deliver a skin cancer prevention program in your school or community.
2. Create a slide presentation on a skin cancer prevention and/or early detection topic of your choice.
3. Create a public service announcement for *Don't Fry Day*, the National Council for Skin Cancer Prevention's annual skin cancer awareness event.
4. Write an article about the importance of skin cancer prevention for your school newspaper.

**Additional Cross-Curricular Connections:**

1. Language Arts: use of SunAWARE™ books for discussion and as writing prompts. See *Teacher Resources: Books*.
2. Physical Education:
  - Recommend that school athletic coaches utilize "Skin and Sports" resource: <http://www.sciencenetlinks.com/lessons.php?DocID=445>

## Teacher Resources:

### Books:

Barrow, Mary Mills, and Maryellen Maguire-Eisen. *Pretty Prom*. Langdon Street Press, Minneapolis: 2008.

Barrow, Mary Mills and John F. Barrow. *Sun Protection for Life*. New Harbinger Publications, Oakland: 2005

### Videos:

SunAWARE™ Rap

<https://www.youtube.com/watch?v=JYNCg1Zy2Og&feature=youtu.be>

Holderness Family Sun Dance

[https://www.youtube.com/watch?time\\_continue=2&v=SvHCxr4QkFQ](https://www.youtube.com/watch?time_continue=2&v=SvHCxr4QkFQ)

SunAWARE™ Dance Craze

<https://www.youtube.com/watch?v=o-00WKZ8ctY&feature=youtu.be>

How the Sun Sees You

[https://www.youtube.com/watch?time\\_continue=9&v=o9BqrSAHbTc](https://www.youtube.com/watch?time_continue=9&v=o9BqrSAHbTc)

Glenna's Gift is an in-depth look at indoor tanning and melanoma. [YouTube](#) or at

<https://www.melanomaprevention.org/index.php/what-we-do/educate/sunaware-resources>

### Websites:

- American Association for the Advancement of Science (AAAS)  
Science NetLinks Skin Deep Project: The Skin Deep Project introduces students in grades 6 through 12 to the science of skin, including its role in protecting the body from invading microbes, maintaining temperature, and sensing the environment.  
<http://sciencenetlinks.com/collections/skin-deep-project/>
- Center for Disease Control: Guidelines for Schools to Prevent Skin Cancer:  
[www.cdc.gov/mmwr/preview/mmwrhtml/rr5104a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5104a1.htm)
- Children's Melanoma Prevention Foundation: SunAWARE™ Curriculum, student and teacher resources, UV index, digital and print news items, professional publications:  
[www.melanomaprevention.org](http://www.melanomaprevention.org)
- Environmental Protection Agency UV Forecast  
<https://www.epa.gov/sunsafety>
- Melanoma Action Coalition, a consortium of melanoma prevention and education organizations, available at <http://www.melanomaactioncoalition.org>
- National Council for Skin Cancer Prevention, *Don't Fry Day* resources:  
<https://skincancerprevention.org/get-involved/dont-fry-day/>
- National Health Education Standards  
<https://www.cdc.gov/healthyschools/sher/standards/index.htm>
- Polka Dot Mama Melanoma Foundation  
<https://polkadotmama.org/>
- Skin Cancer Foundation's Sun Smart U Program  
<https://www.skincancer.org/about-us/education-programs/>
- World Health Organization



- Health Topics: UV Radiation  
[www.who.int/topics/ultraviolet\\_radiation/en/](http://www.who.int/topics/ultraviolet_radiation/en/)
- *Sun Protection and Schools*  
<https://www.who.int/uv/publications/en/sunprotschools.pdf>

**Articles:**

The Community Guide: Skin Cancer: Primary and Middle School-Based Interventions: Available at: <https://www.thecommunityguide.org/findings/skin-cancer-primary-and-middle-school-based-interventions>

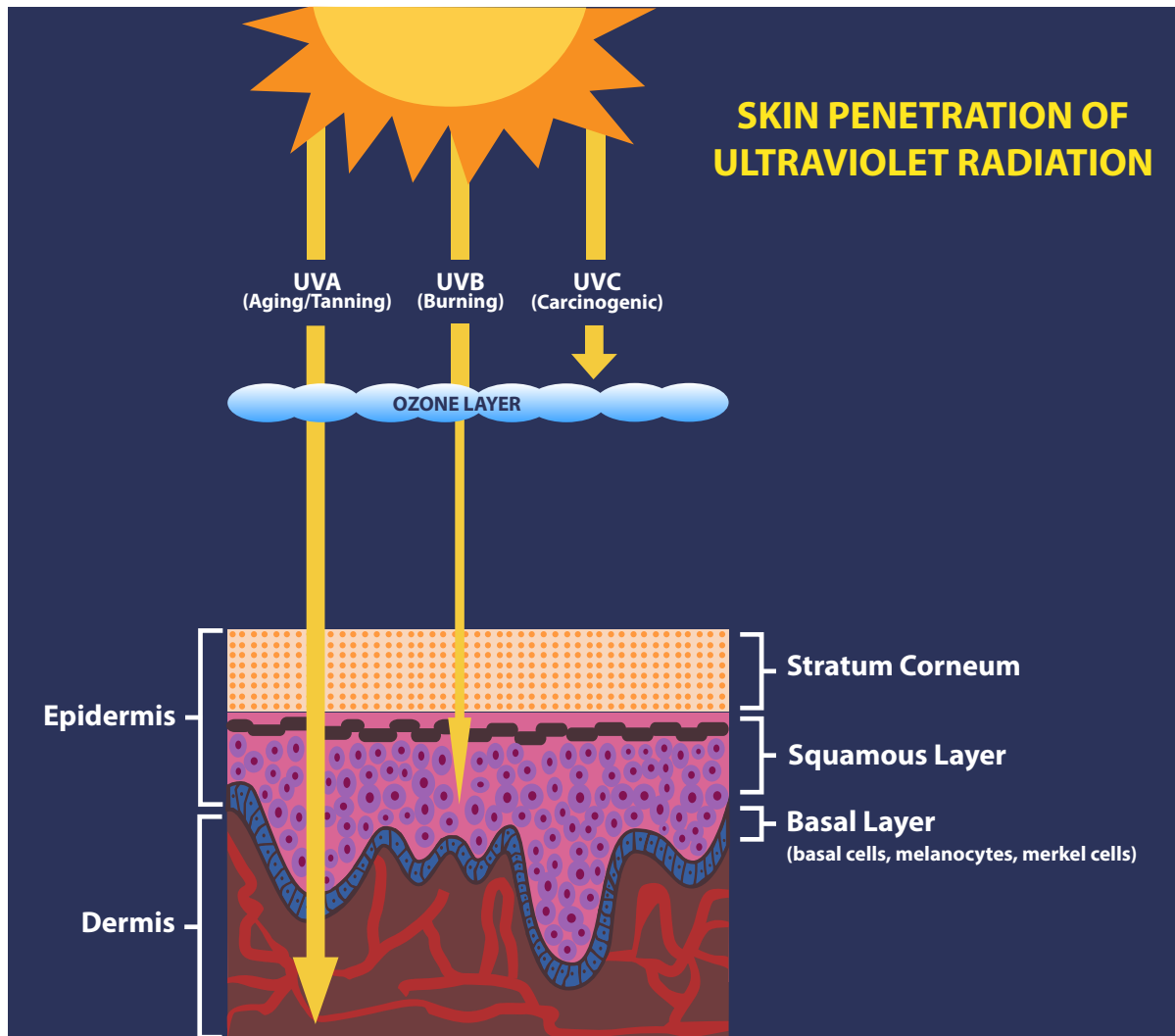
The Important Role of Schools in the Prevention of Skin Cancer, Gery P. Guy, Jr, PhD, MPH, Dawn M. Holman, MPH, and Meg Watson, MPH (2018) Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6048593/>

Sun Protection and Schools: How to Make a Difference. Available from the World Health Organization at <https://www.who.int/uv/publications/en/sunprotschools.pdf>





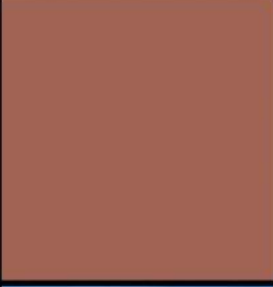


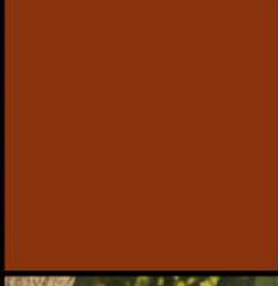


Is Sunscreen Safe and Effective for Your Child, OPED, Maryellen Maguire-Eisen, published May 20, 2019. Available at: <https://patch.com/massachusetts/hingham/skin-protecton-remains-critical-amid-extended-fun-sun>

Skin Cancer: A Growing Health Problem for Children. Seminars in Oncology Nursing, Vol 29: 206-213,2013. Maguire-Eisen, M. Available at: [https://www.melanomaprevention.org/images/sidebar/Skin\\_Cancer\\_A\\_Growing\\_Health\\_Problem\\_for\\_Children.pdf](https://www.melanomaprevention.org/images/sidebar/Skin_Cancer_A_Growing_Health_Problem_for_Children.pdf)

Ultraviolet Radiation Exposure and Its Impact on Skin Cancer Risk. Seminars in Oncology Nursing, Vol 32 (3): 241-254, 2016. Watson, M, Holman, D., Maguire-Eisen, M. Available at: <https://www.melanomaprevention.org/index.php/what-we-do/educate/additional-resources>

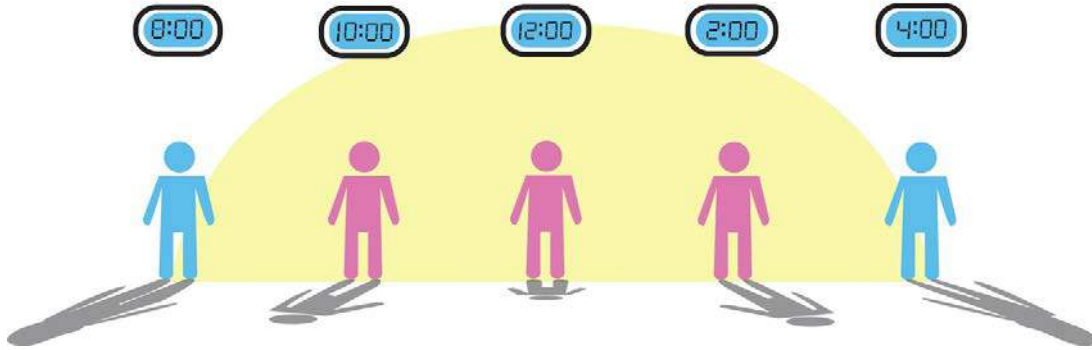


**SKIN TYPES**

<p><b>TYPE 1</b> Always Burns, Never Tans</p>		
<p><b>TYPE 2</b> Burns Easily, Tans Minimally</p>		
<p><b>TYPE 3</b> Sometimes Burns, Slowly Tans</p>		
<p><b>TYPE 4</b> Burns Minimally, Always Tans</p>		
<p><b>TYPE 5</b> Rarely Burns, Deeply Pigmented</p>		

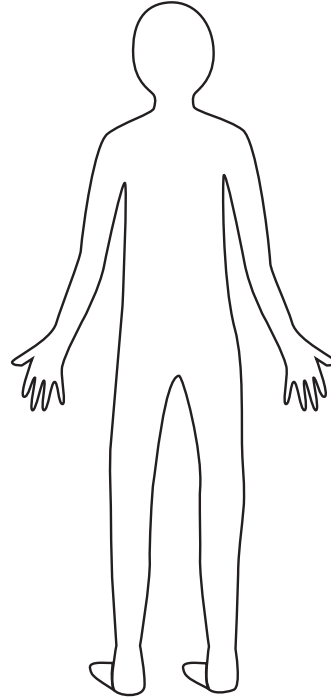
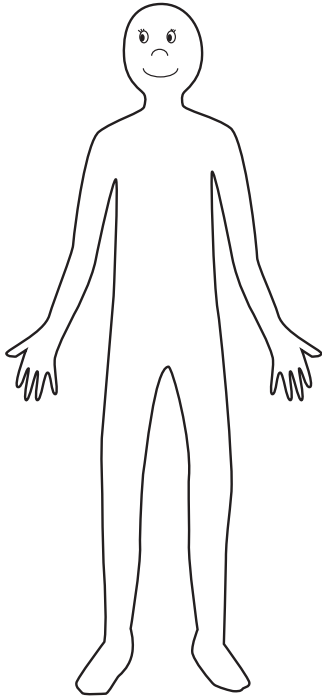


**THE SUN'S UV RAYS ARE STRONGEST WHEN...  
...YOUR SHADOW IS SHORTER THAN YOU**



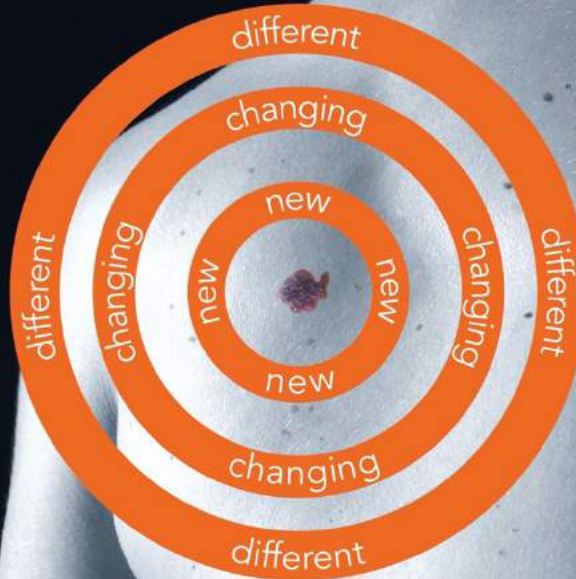


## BODY MAP



**NAME:** \_\_\_\_\_

# Watch your back.



**But if you can't, find someone who can.**







**Be SunAWARE:**  
**R**outinely examine your skin for new and different spots!

# Sun

# A



Avoid unprotected exposure to sunlight, seek shade and never indoor tan.

# W



Wear sun protective clothing, including a long-sleeved shirt, pants, a wide-brimmed hat, and sunglasses year round.

# A



Apply recommended amounts of broad-spectrum sunscreen with a Sun Protection Factor (SPF)  $\geq 30$  to all exposed skin and reapply every two hours as needed.

# R



Routinely examine your whole body for changes in your skin and report concerns to your healthcare provider.

# E



Educate your family and community about the need to be SunAWARE.

