



Fostering Health and Wellness  
Through SunAWARE, Grades 9-12  
[www.melanomaprevention.org/resource\\_center.html](http://www.melanomaprevention.org/resource_center.html)

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Massachusetts Frameworks, Strands, and Learning Standards Addressed:

***I. Comprehensive Health Curriculum: Personal and Community Health Information Strand***

**A. Consumer Health and Resource Management Learning Standards:**

1. Students will explain when and how to use self-care or professional health care services. (12.11)
2. Students will explain criteria for making consumer decisions about various kinds of products. (12.15)
3. Students will review the positive and negative influences of the media that impact on health. (12.16)
4. Students will analyze decisions about making specific purchases and maintaining those products or services. (12.18)
5. Students will explain the contribution of business, industry, and technology to the improvement of consumer products and choices. (12.20)
6. Students will evaluate methods to determine the accuracy of emerging health research. (12.c)

**B. Ecological Health Learning Standards:**

Students will gain knowledge of the interdependence between the environment and physical health, and will acquire skills to care for the environment. (13.0)

**C. Community and Public Health Learning Standards:**

1. Students will analyze the effects of diseases on the community and society. (14.7)
2. Students will explain how service in community health can improve the physical health of community members. (14.9)
3. Students will identify prevalent health concerns and health promotion initiatives in the United States and compare with other parts of the world. (14.10)
4. Students will analyze the reciprocal relationships among social, economic, and environmental factors and community and public health. (14.c)
5. Students will describe the implementation of public health policies, initiatives, and laws, and their subsequent contribution to the quality of life. (14.d)

***II. Science:***

**A. Earth and Space Science Learning Standards:**

1. Students will describe the characteristics of electromagnetic radiation and give examples of its impact on life and Earth's systems. (1.2)
2. Students will explain how the revolution of Earth around the Sun and the inclination of Earth on its axis cause Earth's seasonal variations (equinoxes and solstices). (1.5)
3. Students will read, interpret, and analyze a combination of ground-based observations, satellite data, and computer models to demonstrate Earth Systems and their interconnections. (1.8)
4. Students will read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. (SIS1)

## **B. Life Science (Biology) Learning Standards:**

1. Students will make observations, raise questions, and formulate hypotheses. (SIS1)
  - Observe the world from a scientific perspective.
  - Pose questions and form hypotheses based on personal observations, scientific articles, experiments, and knowledge.
  - Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories.

### **Goal:**

Through information and awareness activities, high school students will understand the health risks associated with exposure to UV radiation from indoor tanning equipment and to integrate primary and secondary prevention 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 ultraviolet radiation as a proven human carcinogen.
3. Students will identify inherent and acquired risk factors that affect an individual's chance 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 identify the steps in performing a total skin self-examination
7. Students will describe the characteristics of normal and malignant skin lesions.
8. Students will identify current federal and state legislative actions to regulate indoor tanning business practices.
9. Students will describe the impact, both emotionally and economically, of skin cancer on individuals and society.

**Materials:** flashlight, earth model, eye model, UV Index (EPA), UV meter, UV Frisbee, Glow Vista™ (skin analyzer machine), photographs, sun protective gear (hats, shirts, sunglasses, umbrella), sunscreen (lotion, spray, lip balm, eye stick), measuring glass

**Vocabulary:** ultraviolet radiation, electromagnetic, ozone layer/depletion, pigmentation, melanin, congenital, mole, nevus/nevi, 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 have had more than one?

### **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 such as earth model, eye model, flashlight, clothing, and Glow Vista™ (skin analyzer machine) to reinforce lesson.
4. Support active involvement by special needs students in the lesson presentation.
5. Select from audiovisuals listed in “Teacher Resources: Audiovisual.”

### **Lesson Sequence:**

#### **I. Understanding Ultraviolet Radiation (UV)**

1. Discuss the impact of ultraviolet radiation on skin genetics, cellular biology, immunology, and carcinogenesis.
2. Explore the impact of sporadic versus cumulative exposure to UV rays, as well as intense versus intermittent exposure, in the development of different types of skin cancer.
3. Explore the impact of artificial tanning on the development of cutaneous and ocular melanoma and squamous cell skin cancer.
4. Using the eye model, illustrate the pathology associated with UV radiation on the inner eye (cataracts and ocular melanoma) and outer eye (basal and squamous cell skin cancer).
5. Describe the role of UVB rays in vitamin D synthesis in the skin.

#### **II. Understanding Skin Sensitivity**

1. Demonstrate the impact of inherent risk factors on sun sensitivity including pigmentation (skin and eye color), freckling tendency, and nevi (moles) count.
2. Introduce the concepts of pigmentation on vitamin D synthesis.
3. Invite students to volunteer to see their acquired sun damage through the GlowVista™ skin analyzer machine.

#### **III. Proven Methods of Sun Protection**

1. Explore the impact of culture and trends on total UV lifetime exposure including fashion, travel and leisure, attitudes, etc.
2. Introduce the concept and relative merits of sun protective gear including regular and specialized clothing and sunglasses. Define Ultraviolet Protection Factor (UPF), a rating system for sun protective clothing.
3. 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.
4. Discuss sunscreen labeling including Sun Protection Factor (SPF), broad spectrum, water resistance, dose and reapplication.
5. Discuss health implications of various sunscreen ingredients and formulations.
6. Discuss the role of media and peer influences on consumer choices and behaviors.

#### **IV. Skin Cancer Detection**

1. Discuss the importance of early detection in skin cancer prognosis including the steps in performing a total self skin examination.
2. Discuss characteristics of congenital, typical, and atypical nevi including number, location, size, and surface characteristics.
3. Illustrate the signs and symptoms of melanoma and non-melanoma skin cancer including ABCDE's of melanoma (**a**symmetrical, **b**order irregularity, **c**olor variance, **d**iameter enlarging, **e**volving), PEER characteristics (**p**ersistent, **e**asily irritated, **e**nlarging, **r**ecurrent) for non-melanoma skin cancer recognition, as well as the “new and

changing rule” and “ugly ducking sign” versus “signature” nevi.

4. Discuss the importance of advocating for oneself in one’s own family as well as in the health care system.

#### V. SunAWARE Acronym

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.

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

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.

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

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

#### 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 *Smart Sun Safety Program* is a teacher-student resource for independent activities including, posters, practice sheets, video, and *Go With Your Own Glow* campaign materials. Available at:

<http://www.skincancer.org/school/teacherresources/resources.ph's>

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. Melanoma Foundation of New England’s *Tanning is Out, Your Skin Is In* campaign. It is a promotional contest that asks high school students to pledge not to tan prior to the prom or school social. Available at:

<http://www.mfne.org/public/events/yourskinisin.php>

#### Reflection:

1. Knowing what you now know about ultraviolet radiation and skin cancer, how would you do things differently to prevent a sunburn?
2. Now that you are aware that UV rays from tanning beds cause cancer, how do you feel about visiting tanning salons?
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 tougher regulation of indoor tanning? If so, how? If not, why not?

#### Assessment Based on Objective

1. Performance on SunAWARE Grades 9-12 Post-Test. Available at:

[http://www.melanomaprevention.org/resource\\_center.html](http://www.melanomaprevention.org/resource_center.html)

2. Performance on various practice sheets listed in *Plan for Independent Practice and Student Initiatives, Extensions*, and the activities listed below on *Teacher Resources*.
3. Informal evaluation with teachers regarding sunburn and tanning incidence following vacations and prom season.
4. School participation in *Tanning Is Out, Your Skin Is In*.

### **Extensions**

1. Initiate and lead a team to provide skin cancer prevention program in your school.
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.

### **Additional Cross-curricular Connections**

1. Language Arts: use of SunAWARE books for discussion and as writing prompts. See *Teacher Resources: Books*.
2. Physical Education:
  - Provide school athletic coaches with "Skin and Sports" resource: <http://www.sciencenetlinks.com/lessons.php?DocID=445>
  - Sports and recreation ideas and initiatives from the Collette Coyne Melanoma Awareness campaign available at: [http://www.ccmac.org/index.php?option=com\\_content&view=article&id=148&Itemid=4](http://www.ccmac.org/index.php?option=com_content&view=article&id=148&Itemid=4)

### **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

#### *Audiovisual*

Glenna's Gift: Created by CMPF to teach teens about the hazards of indoor tanning and self skin examination. Available on YouTube or at [www.melanomaprevention.org](http://www.melanomaprevention.org)DVD: Colette Coyne Melanoma Awareness Campaign. Available at:

[www.ccmac.org](http://www.ccmac.org)

DVD: *The Dark Side of the Sun: Practice Safe Sun*. Available at:

[www.MolliesFund.org](http://www.MolliesFund.org)

SunAWARE video: Describes the five easy action steps to SunAWAREness along with info about Don't Fry Day, a national day of skin cancer awareness. Available at:

[www.dnanurse.org](http://www.dnanurse.org).

#### *Websites:*

- Children's Melanoma Prevention Foundation: SunAWARE Curriculum, Links to IBook and Kindle for free SunAWARE book downloads, UV index, print and video news items, professional publications and US SAILING resources, <http://www.melanomaprevention.org>

- U.S Environmental Protection Agency: *SunWise* curriculum, UV materials.  
<http://www.epa.gov/sunwise>
- National Council for Skin Cancer Prevention: *Don't Fry Day* Resources  
<http://www.skincancerprevention.org/resources>
- Colette Coyne Melanoma Awareness Campaign: online public service announcements on tanning and melanoma  
[www.ccmac.org](http://www.ccmac.org)
- Skin Cancer Foundation: teacher resources  
<http://www.skincancer.org/school/teacherresources>
- Science Net Links: *Science Inside Your Skin*  
[http://www.sciencenetlinks.com/skindeep/SI\\_Skin\\_Book.pdf](http://www.sciencenetlinks.com/skindeep/SI_Skin_Book.pdf)
- 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)
- World Health Organization: *Health Topics: UV Radiation*  
[http://www.who.int/topics/ultraviolet\\_radiation/en/](http://www.who.int/topics/ultraviolet_radiation/en/)
- World Health Organization: *Sun Protection: A Primary Teaching Resource*  
<http://www.who.int/uv/publications/en/primaryteach.pdf>
- National Weather Service Office of Climate, Water and Weather Services.  
<http://www.nws.noaa.gov/os/uv/>
- Science NetLinks: *Skin Deep Project*  
<http://www.sciencenetlinks.com/skindeep/>

*Articles:*

Maguire-Eisen, M. Skin Cancer: A Growing Health Problem for Children. *Seminars in Oncology Nursing*, Vol 29:206-213, 2013.

Maguire-Eisen, M. Food and Drug Administration's Final Ruling on Sunscreens: Have We Simply Rearranged the Deck Chairs on the Titanic? *Jrnl Derm Nurs*, Vol 3 (5):255-259, 2011

Demierre M, Maguire-Eisen M, Cabral H, et al. for Dermatology Nurses Association, *A Sun Protection Community Intervention in Quincy Middle Schools: Insights from the Use of Ultraviolet Photography and its Impact on Sunburn*. *Journal of the Dermatology Nurses' Association*, 2009: Vol 1 (2):111-118.

Maguire-Eisen M, Demierre M, Rothman K. *The ABC's of Sun Protection for Children*. *Dermatology Nursing* 2005: Vol 17, (6) 419-433.

Maguire-Eisen M, Demierre M. *Educating Teens and Parents in Effective Sun Safety*. *Practical Dermatology*, 2005: 2 (4) 39-45.

Maguire-Eisen M. *Risk Assessment and Early Detection of Skin Cancers*. *Seminars in Oncology Nursing*, 2003: Vol 19, No. 1 (February), 43-51.