

# AU InforMed

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## Key Inforbits

- What is melanoma?
- Description of UVA/UVB rays and their effect
- New Research on Vitamin A
- Coverage on new drug: Yervoy™
- Update from FDA on sunscreen
- The Dangers of Tanning Beds
- Photoallergic drugs
- Protect Your Eyes from UV radiation



## July is UV Safety Month!!

### What is Melanoma?

Melanoma is considered the most dangerous type of skin cancer which arises from melanocytes, the cells responsible for producing the skin pigment melanin. Of the different types of skin cancer, melanoma has the highest mortality rate, at around 14%. Approximately 1 in 50 people in the United States will develop melanoma in their lifetime, 8,000 of which will die from it every year. It is the most common cancer in young adults (25-29) but if detected early, survival rate is 99%. Only after a tumor has penetrated the skin does this rate fall to 15%. The cardinal presentation of cutaneous melanoma is a pigmented skin lesion that has changed and can be described by the following characteristics (ABCDE):

**A. Asymmetrical**

**B. Borders** – irregular borders

**C. Color** – discolored from tan to blue-black. May also be several different colors.

**D. Diameter** – sizes less than 6mm are usually benign but check any size with the other characteristics

**E. Evolution** – such as sudden, continuous growth of a lesion, or if a lesion becomes razed. It may also start to itch or become tender

*note:* Melanoma can also originate in the eye and can be caused by sun exposure or genetics.

### Be Proactive

Since early detection is key to a positive prognosis in melanoma, self-examination is important, and accounts for 50% of early detection. Likewise, people who perform self-examinations or have a caregiver to do so, develop advanced melanoma 50% less often. These self-examinations are far less invasive than waiting too late and can be done in a couple of minutes: looking into a mirror, raise arms and thoroughly examine the front, back, right, and left sides of your body



1. bend your elbows and examine forearms, upper arms, and palms and nail beds.
2. examine back of legs and feet, especially between your toes and soles of your feet.
3. check the back of your neck and scalp with a hand-held mirror
4. use a hand-held mirror to closely examine back and buttocks
5. here are a couple examples of what may need to be examined by a dermatologist:



**For more information on melanoma visit:** <http://www.cancer.gov/cancertopics/wyntk/skin>

1. Cheigh, N. Dermatologic drug reactions and self-treatable skin disorders. In: DiPiro JT, Talbert RL, Yee GC, Matzke GR, Wells BG, Posey LM, editors. *Pharmacotherapy: A pathophysiologic approach*. 8th ed. New York: McGraw-Hill Medical; c2011. p. 1577-87.
2. MedicineNet.com. [Internet]. New York, NY. c2011 [Last Updated: September 24, 2009]. Available from <http://www.medterms.com/script/main/hp.asp>

## Description of UVA/UVB rays and their effect

UV radiation is split into UV A, B, and C rays. UVA and UVB rays cause premature aging by disrupting DNA of the skin cells. UV radiation is ~95% and is recognized as the main cause of non-melanoma skin cancers (NMSC). UVA penetrates skin deeper than UVB but is less damaging than UVB. Because of their deep penetration they can reach the basal layer of the epidermis and initiate and propagate skin cancer development.

UVA rays are responsible skin darkening (tanning). The skin darkens to protect itself from further damage. UVB rays are the main cause of “sunburn” because their effect is more intense. They also contribute to premature aging and skin cancers.

1. UV Information [internet]. The Skin Cancer Foundation; [cited June 7,2011]. Available from: <http://www.skincancer.org/understanding-uva-and-uvb.html>

**New Research on Vitamin A....**The National Toxicology Program (NTP) released a report in December 2010 and in January the Environmental Working Group (EWG) reviewed it and strongly agreed with its results. The report determined that solar-simulating light and UVB activity was enhanced by Retinyl Palmitate (Vitamin A) in SKH-1 mice. With daily application of creams containing Vitamin A survival time decreased, skin lesion onset was sped up, and the number of squamous neoplasms was increased. This study was combined with previous studies on vitamin A’s photocarcinogenic activity. This is of interest since many sun-screen formulations contain Vitamin A!

1. White LD. National Toxicology Program Technical Reports Peer Review Panel: Draft Technical Report on the Photocarcinogenesis Study of Retinoic Acid and Retinyl Palmitate in SKH-1 Mice. Environmental Working Group. 2011 Jan 4. Available from: [http://ntp.niehs.nih.gov/ntp/about\\_ntp/TRPanel/2011/January/PublicComm/RARP\\_EWG.pdf](http://ntp.niehs.nih.gov/ntp/about_ntp/TRPanel/2011/January/PublicComm/RARP_EWG.pdf)

**New Drug ....**(March 25, 2011) The FDA approved **ipilimumab (Yervoy™** by Bristol-Myers Squibb) for the treatment of metastatic melanoma. It is a monoclonal antibody that inhibits CTLA-4 (which slows down the body’s immune response against cancerous cells). Ipilimumab increases survival in metastatic melanoma. A phase III clinical trial with 676 patients with advanced, inoperable melanoma was done. Patients received ipilimumab, gp100 vaccine (another immune stimulator), or both showed a median survival rate in the combination group and the ipilimumab group were much greater than the gp100 group alone. Yervoy™ is used IV every 3 weeks for a total of 4 doses. Several immune-mediated adverse effects have been reported so risk evaluation will be necessary for patients receiving it.

1. FDA Approves Ipilimumab (Yervoy) for Treatment of Metastatic Melanoma.[Internet] Oncology Times. 2011 Mar 25.[cited June 4, 2011] Available from:<http://journals.lww.com/oncology-times/blog/onlinefirst/pages/post.aspx?PostID=162&tID=162>

**Sunscreen updates from the FDA.....** (June 14, 2011) The FDA is attempting to help protect sunscreen consumers from sun exposure by enforcing new labeling requirements for sunscreen manufactures. These requirements include the following:



- Establishing a standardized test for over-the-counter sunscreens to determine if the term “broad spectrum” can be listed on the label. “Broad spectrum” refers to a sunscreen that provides protection from both UVA and UVB rays.
- New labeling will allow sunscreen products that are “broad spectrum” and sun protection factor (SPF) 15 or greater to state that the product not only prevents sun damage, but also if used appropriately can reduce the risk of skin cancer and premature aging.
- Sunscreens that are not broad spectrum or that are SPF 2 to 14 must have labeling that states the following: “Skin Cancer/Skin Aging Alert: Spending time in the sun increases your risk of skin cancer and early skin aging. This product has been shown only to help prevent sunburn, not skin cancer or early skin aging.”
- Water resistant sunscreens must provide labeling that notifies consumers the duration of skin protection provided by the product while swimming or sweating. This duration of protection labeling will be based on standardized testing and is allowed to be listed as providing either 40 or 80 minutes of protection.
- Sunscreen manufacturers can NO longer label their products as “waterproof”, “sweat proof”, or “sunblock”. Additionally, claims that protection from the sun is immediate after application of the product (i.e. “instant protection”) and protection lasting more than 2 hours without reapplication of product is NOT allowed unless data to support such claims are provided to the FDA.

## The Dangers of Tanning Beds



Tanning beds are a very popular way for men and women alike to achieve the “perfect” tan. However, while the “perfect” tan may be aesthetically pleasing, the potential damage to the skin caused by tanning beds is alarming. Ultraviolet (UV) exposure from either the sun or tanning beds has long been associated with increased risk for skin cancer.<sup>1</sup> In 2009, both the International Agency for Research on Cancer (IARC) and the World Health Organization (WHO) stated that tanning bed use is “carcinogenic to humans.”<sup>2</sup> Their evidence showed an association of tanning bed use before age 30 with a 75% increase in the risk for melanoma development. Additionally, the IARC placed tanning bed exposure into highest risk category of carcinogens, Group 1. Other Group 1 carcinogens include asbestos, cigarettes, and arsenic.<sup>2</sup>

In 2005, the WHO made the recommendation that nobody under the age of 18 should use a tanning bed. Additionally, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) identified the following groups as having a particularly high risk for having adverse effects from UV exposure, either from the sun or from tanning beds:

- People with skin types I or II (based on a scale of I to IV ranked from lightest to darkest skin)
- Age less than 18
- People with many moles
- People prone to freckling
- History of frequent childhood sunburns
- People with pre-malignant or malignant skin lesions
- People with skin damaged by the sun
- Wearing cosmetics (can increase UV sensitivity)
- Certain prescription medications<sup>3</sup>

In March 2010, the Food and Drug Administration (FDA), which regulates radiation-emitting products like tanning beds, held an advisory committee to evaluate potentially placing tighter restrictions on tanning bed regulations. This committee focused mainly on revising requirements and enforcing labeling on tanning beds informing tanning bed users of the potential dangers.<sup>4</sup>

In summary, the potential adverse effects caused from tanning beds are not worth the purely cosmetic benefit of having the “perfect” tan. While tan skin does look nice, it comes at a price. The incidence of skin cancer has risen dramatically over the past few years, with tanning bed use being a potential source for this increase. There is no “safe” way to tan and in fact measures should be taken to protect skin from harmful UV radiation year round.

1. WHO Facts Sheet N0 287 [Internet]. Geneva: World Health Organization; c2011. Sunbeds, tanning, and UV exposure; 2010 April [cited 2011 June 9]; [about 2 screens]. Available from: <http://www.who.int/mediacentre/factsheets/fs287/en/>

2. Woo DK, Eide MJ. Tanning beds, skin cancer, and vitamin D: an examination of the scientific evidence and public health implications. *Dermatol Ther.* 2010;23:61-71.

3. WHO notes for the media [Internet]. Geneva: World Health Organization; c2011. The World Health Organization recommends that no person under age 18 should use a sunbed. 2005 Mar [cited 2011 June 9]; [about 2 screens]. Available from: <http://www.who.int/mediacentre/news/notes/2005/np07/en/>

4. FDA: Consumer Updates[Internet]. Silver Spring: Food and Drug Administration; c2011. Indoor Tanning: The Risk of Ultraviolet Rays ; 2010 May 11 [cited 2011 June 13]; [about 2 screens]. Available from: <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm186687.htm>

## Photoallergic drugs

- First of all, there is a difference in how a photoallergic drug affects your body
  - **Phototoxic reaction:** drug may get activated by sun exposure, thus causing damage to the skin. The skin appears sunburned, and is most commonly associated with ultraviolet A radiation. Ultraviolet B may also cause this reaction. This type of reaction should discontinue after the drug has been stopped, and will not return even after re-exposure to light
  - **Photo-allergic reaction:** in this type of reaction, ultraviolet light changes the structure of the drug, so that the drug is seen by the body’s immune system to have an allergic response. These reactions usually resemble eczema and are long-lasting. This type of reaction may continue even after the drug is discontinued.

- There are several drugs that may cause an allergic response to the sun. The condition can occur in the heat or cold, and the sensitivity can continue long after stopping the offending medication. A photo-allergy can develop from even using some **sunscreens**:
  - par-aminobenzoic acid (PABA)
  - salicylates
  - oxybenzone
  - benzophenones
- There are hundreds of drugs that cause degrees of sun sensitivity, a few of the more well known drugs are listed here, for a more complete list, a link has been provided. Note that some drugs are more likely to cause this than others and your patients should not stop taking a medication until they consult their doctor.

some antibiotics	epidermal growth factor receptor inhibitors	quinidine
NSAIDs	neuroleptics	enalapril
diuretics	antifungals	oral contraceptives
retinoids	sunscreens (PABA, etc.)	hydroxychloroquine
sulfonylureas	amiodarone	felbamate
HMG-CoA reductase inhibitors	diltiazem	5-fluorouracil
		alprazolam

Stoppler MC. Sun-sensitive drugs (photosensitivity to drugs). [internet]. MedicineNet, Inc. [about 6 p.] 2008 August 28 [cited 2011 June 15]. available from [http://www.medicinenet.com/sun-sensitive\\_drugs\\_photosensitivity\\_to\\_drugs/article.htm](http://www.medicinenet.com/sun-sensitive_drugs_photosensitivity_to_drugs/article.htm)

## Protect Your Eyes from UV radiation

When most people think of protecting themselves from the harmful effects of UV radiation produced by the sun, sunscreen is the first item that crosses their mind. However, protecting your eyes from harmful UV radiation is just as important as protecting your skin. The cornea can actually become sunburned (photokeratitis). This is a reversible condition; however, it can result in temporary vision loss. Light reflecting off of snow, sand, or water further increases UV exposure and increases the risk for photokeratitis.<sup>1</sup>

Protecting the eyes from UV radiation is as easy as wearing sunglasses. However, not all sunglasses are created equal. When purchasing sunglasses look for a label that states the glasses provide 99 to 100% UV protection. You may also see stickers that list UV absorption of 400 nm, which is synonymous with 100% UV protection.<sup>2</sup> Polarized lenses function to only reduce glare from light reflection and do not provide UV absorption. However, some polarized lens sunglasses have incorporated UV protection.<sup>2</sup> Also, a higher price is not necessarily correlated with superior UV protection. Fashion sunglasses often do not provide adequate UV protection. To further protect the eye from harmful UV radiation, wearing sunglasses that wrap around the temples and hats should be worn when in direct sunlight.<sup>1,2</sup> While eye damage from the sun can occur at any time of the year or any time of day, the greatest risk occurs from 10:00 a.m. to 4:00 p.m. So, the next time you are going to be in the sun protect your eyes as well as your skin.

1. FDA: Consumer Updates: Sun Safety: Save Your Skin [Internet]. Silver Spring: Food and Drug Administration; c2011. Protect the Eyes; 2010 June 1 [cited 2011 June 9]; [about 2 screens]. Available from: <http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm049090.htm>
2. Eye Health Lifestyle Topics [Internet]. American Academy of Ophthalmology; c2011. People at Risk for UV Eye Damage; 2011 [cited 2011 June 9]; [about 2 screens]. Available from: <http://www.geteyesmart.org/eyesmart/glasses-contacts-lasik/uv-eye-damage-risk.cfm>



### The last “dose” ...

“Truth is like the sun. You can shut it out for a time, but it ain't goin' away.”  
Elvis Presley [1935 - 1977]

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