SUN PROTECTION: HOW TO PROTECT YOURSELF THIS SUMMER

Why should I protect myself from the sun this summer?
Sunlight contains ultraviolet (UV) rays. The World Health Organization (WHO) officially recognizes UV rays as an environmental carcinogen.

- Skin cancer is the most common form of cancer in the U.S and accounts for nearly half of all cancers.
- Melanoma is the most serious type of skin cancer and is one of the most common cancers found in young adults.
- Over 70,000 new cases of Melanoma develop each year; about 13% of these cases are fatal.
- About 8,700 of the 11,790 deaths from skin cancer last year were from melanoma. Detecting melanoma in its early stages greatly increases the chance of survival.

Why are rays from the sun harmful?

- The sun releases 3 types of ultraviolet radiation, UVA, UVB, and UVC.
- UVA rays pass entirely through the ozone layer and therefore make up the majority of the UV rays in the Earth’s atmosphere. These rays penetrate deeper into skin and are mainly responsible for tanning, as well as the premature-aging of skin; exposure can lead to skin cancer.
- UVB rays are partially absorbed by the ozone layer, but many still pass through to Earth. UVB rays are responsible for most sunburns and skin cancers.
- UVC rays are deadly to humans but fortunately are completely absorbed by the ozone layer.

How can UV radiation lead to skin cancer?

- UV radiation is poisonous to the skin. Specifically, UV will causes a double bond to form between the thymine bases found in the DNA of the skin.
- A strand of DNA may look something like this: C-G-T-C-T-T-C.
  When the skin is exposed to UV, the two T’s (representing thymine) will bond together. This forms something called a thymine dimer. Dimers can wreak havoc on the DNA replication process.
- This is how UV exposure causes skin cell mutations which can eventually lead to cancer. Mutations develop when cell DNA damage is not successful repaired by natural processes over a period of time.
- Just as with other types of radiation, increased UV radiation exposure is related to an increased risk for developing cancer.

What's the difference between a tan and sunburn?
Both tanning and sunburns are forms of skin damage from UV exposure, i.e. indicators that DNA in the skin cells has been broken down.

- Tanning is mainly a result of UVA radiation. When skin is exposed to these rays, skin cells called melanocytes produce melanin, a brown pigment which darkens the cells of the epidermis. While naturally dark skin is the best defense against future UV damage, tanned skin indicates damage has already taken place.
- Sunburn, is mainly a result of UVB radiation. After exposed, blood rushes the vessels nearest the surface of the skin because the skin’s surface is damaged. Just one blistering sunburn in childhood/adolescences can DOUBLE your risk for developing melanoma (the most dangerous form of skin cancer) later on in life.

Can UV get through a heavy cloud cover or windows?

- YES. While UVB rays usually do not travel through glass, they readily penetrate cloud coverage. UVA rays penetrate glass and clouds easily. Therefore, it is important to wear sunscreen even on cloudy days or if you are inside sitting near a window.

Are tanning beds safe to use?

- NO. Tanning beds (no matter what type of UV rays they omit) cause skin damage. In fact, the World Health Organization has recommended that no one use a tanning bed for cosmetic purposes. Tanning beds are now listed as a “known human carcinogen”.
Can I develop a “base tan” to protect myself from future sun damage?

- No. Naturally darker skin, i.e. skin with higher concentrations of melanin, does offer some protection from sunburns and skin cancer. However, the majority of evidence supports that if you have lighter skin tanning will damage your skin and therefore is not an effective way to protect yourself from skin cancer.

Why else should I protect myself from the sun?

- Prevent premature aging: Scientific studies have shown that repeated ultraviolet (UV) exposure breaks down collagen and impairs the synthesis of new collagen. The sun also attacks our elastin—structural proteins found in connective tissue. Because of this, sun-weakened skin ceases to spring back as readily as it does otherwise. As a result, skin becomes loose, wrinkled, and leathery much earlier with prolonged UV exposure.

- Prevent cataracts and other eye damage: UV radiation increases the risk for developing cataracts and can also lead to tissue growth and/or cancer around the white of the eye. This can cause deteriorated vision and even blindness.

What about Vitamin D?

- Studies show that 10 minutes of mid-day sun exposure is enough for most individuals to produce 5 times the daily recommended amount of Vitamin D. If you’re worried about Vitamin D deficiency, it is acceptable to stand outside for 5-10 minutes before applying sunscreen each day.

The Centers for Disease Control (CDC) Recommends the Following to Protect Yourself from Harmful UV Rays:

- Seek shade, especially during midday hours (10:00am—4:00pm) when UV is most direct. Plan outdoor activities in the early morning or evening when sunlight is least direct. *Tip* Take the shadow test: If your shadow is shorter than you, the sun’s rays are at their strongest.

- Use sunscreen with sun protective factor (SPF) 15 or higher, with “broad spectrum” protection. *Note: If the sunscreen is not labeled as offering “broad spectrum” protection, it likely does not block UVA rays. Be sure to reapply every two hours and even more if you go swimming or are excessively sweating. Don’t forget those easy-to-miss areas, i.e. your ears, your toes, feet and the edges of your bathing suit. It may be helpful to also use a lip balm that contains SPF—the skin on your lips is extra sensitive because it does not contain melanin – the body’s natural defense against harmful UV!

- Wear lightweight clothing that covers exposed areas. This can keep you cool in the summer heat as well! But try this first: Place your hand between a single layer of clothing and a light source. If you can see your hand through the fabric, the garment offers little protection. Wear protective fabrics, like polyester or nylon. Even better: check out some chemically dyed or produced clothing that is engineered to block UV! Today, most sports brands produce ultra-violet protective (UPF) clothing lines.

- Wear a hat with a wide brim to shade the face, head, ears, and neck. This will help you avoid premature aging as the skin on our face is especially susceptible to UV damage.

- Wear sunglasses, the most protective shades will wrap around your face and block close to 100% of UVA and UVB rays. Read the sunglass labels and avoid sunglasses that fail to mention UV protection. Remember: UV radiation can damage the skin of your eyelid, your cornea, lens and can contributes to the development of certain types of cataracts and even macular degeneration.

- Avoid indoor tanning and the use of tanning beds. Remember: there’s no such thing as a “healthy glow” when it comes to tanning. Tanned skin is damaged skin.

References:
Skin Cancer Foundation: www.skincancer.org
Center for Disease Control and Prevention: www.cdc.gov/cancer/skin/
Occupational Safety and Health Administration: http://www.osha.gov/Publications/OSHA3166/OSHA3166.html

According to the CDC, people will burn or tan depending on their skin type, the time of year, and the duration of UV exposure. The CDC identifies these six skin types:

- I: Always burns, never tans, sensitive to UV exposure.
- II: Burns easily, tans minimally.
- III: Burns moderately, tans gradually to light brown.
- IV: Burns minimally, always tans well to moderately brown.
- V: Rarely burns, tans profusely to dark.
- VI: Never burns, deeply pigmented, least sensitive.

Although everyone’s skin can be damaged by UV exposure, people with skin types I and II are at the highest risk.