

Answers to Common Questions & Debunking Myths

1. Can indoor tanning beds help clear up my pimples or make my scars fade?

Tanning beds may initially make your acne better, but this is a short term, temporary effect. Indoor tanning beds do not heal acne or help scars to fade. In fact, tanning beds can make both conditions worse over time. The drying effects of ultraviolet (UV) rays can cause your skin to overproduce oil (sebum) and this can actually make you break out more. You may notice that the day or two after using a tanning bed your pimples seem to be clearing, but by the third to fourth day new pimples will form. As for scars, exposure to UV light can make new wounds scar with a darker color and become raised. It can also make old scars stand out white against tan skin.

2. My tanning salon says that tanning beds are safer than the sun. Is this true?

Tanning beds give off at least 2-12 times as much ultraviolet (UV) radiation as the noon day summer sun.¹ Natural sunlight is composed of ultraviolet A, B, and C wavelengths. Ultraviolet C (UVC) rays do not presently reach the earth's surface except possibly at the Poles where the ozone hole is large. Ultraviolet B (UVB) and ultraviolet A (UVA) rays reach the surface. UVB rays are partially blocked by the atmosphere; UVA rays are not. UVB rays are the "burning" rays. UVA rays are the "aging" rays. Both UVA and UVB rays increase the risk of skin cancer development.

The rays from the light bulbs of a tanning bed are composed primarily of UVA rays with approximately 2-6% UVB radiation.² These percentages are used in the hopes that the tanning salon patron doesn't leave with a burn as can occur from too much UVB exposure. Unfortunately, there is no early warning sign of skin damage with UVA rays since they don't burn your skin like UVB rays do. However, they penetrate deeper into your skin and cause more permanent damage (early wrinkling, loss of elasticity, freckling/dark spots, and skin cancers). Additionally, most tanning beds have a special rectangular insert to tan the face which can emit much higher doses of radiation than the bed's bulbs. In a 2003 study, the average wattage of indoor tanning lamps for UVA radiation was 192 W/m² and for erythemally-weighted UVB was 0.35 W/ m².³ These lights contain four times more UVA and two times more UVB than the radiation from the noon sun during the summer in Washington, DC.³

Tanning salons also have different level beds that emit higher amounts of radiation as the level increases. Level three and level five beds emit higher radiation doses than level one beds. In the high-pressure tanning beds, UVA doses of 10-15 times natural sunlight have been found by the FDA⁴ and can add 30-300% more UVA to one's annual solar exposure.⁵ Studies have shown that not only do patrons exceed recommended limits,⁶ but they also begin tanning at maximum doses usually reserved for *maintenance* tanning.³ Tanning bed use in adolescence increases with age, desire for the tanned look, peers who tan, and belief in the worth of getting burned to receive a tan.⁷ Think about it . . .if you use a higher level bed you tan for a shorter length of time, but you receive a higher dose of radiation.

Several studies and meta-analyses of case-controlled studies have demonstrated a significantly increased risk for all skin cancers, including melanoma, subsequent to the use of indoor tanning.⁸⁻¹⁰ Remember that tanning is the skin's way of protecting itself from UV rays, whether those rays are produced by the sun or by light bulbs. Overexposure to natural or artificial UV rays can cause eye injury, premature aging and rashes of the skin. It can also increase your chances of developing skin cancer.

3. The tanning salon I go to sells tanning lotions to use in the tanning beds. Won't these protect me from the UV radiation?

These lotions are called tanning accelerators. They are primarily composed of moisturizers with added

colorants like henna, carrot oil or dihydroxyacetone (main ingredient in most self-tanning preparations) that dye your skin a light orange-brown to give the appearance of a darker tan. Some tanning accelerators add a chemical that causes a warm skin tingling in reaction to the tanning bed lights to create the illusion of heat so you feel like you are getting a "good tan." Others may contain tyrosine (an amino acid precursor to melanin formation) and claim this increases one's ability to tan by increasing the amount of melanin. Several studies have not substantiated this claim and the FDA has issued warnings against its use.¹¹ Finally, most tanning accelerators do not contain sunscreen and will not protect you from the UV radiation.

4. Can children and teenagers get skin cancer too?

Skin cancer is uncommon in children. However, damage that later results in skin cancer is accumulated in childhood and during the teenage years. Skin cancer is becoming a problem for more and more young people—especially those in their late teens and early twenties. Studies have shown that early UVR exposure¹²⁻¹⁴ and blistering sunburns double to triple your risk of skin cancer.¹⁵⁻¹⁶ This means that it is important for you to protect yourself from the sun now.

5. Is it okay to take infants out in the sun?

Infants under the age of six months should never be directly in the sun; they should always be shaded and protected. They have less melanin in their skin at this age and are therefore more prone to sunburns.¹⁷ Whenever a baby is outside, they should be protected with wide brim soft hats, sunglasses with Velcro cloth closures that wrap around their changing head diameter, protective clothing, and high UPF umbrellas or tents. Chemical sunscreens are often not recommended for infants six months and under due to the risk of allergic (systemic and skin) reactions. Additionally, their skin may have different absorption rates and their bodily system may not be mature enough to metabolize and excrete any absorbed chemicals from the sunscreens.¹⁸ Physical (barrier) sunblocks containing titanium dioxide or zinc oxide are considered safe for infants/young children and can be applied on skin areas not covered by physical means (clothing, hats). The chemicals in some sunscreens may cause a young child's skin to react with redness and irritation. If so, use a barrier-only sunblock.

6. I tan really easily, so I don't need to worry about skin cancer, right?

Even if you don't burn when you're out in the sun, the sun's rays are still causing damage to your skin—this damage is what causes skin cancer. The damage is also cumulative (it adds up over time) so you may not notice until it's too late. How well you tan isn't the only factor in causing skin cancer. The number of moles or nevi (dark spots) you have on your body¹⁹ is also a risk factor for melanoma, as well as your family history,²⁰ and your lifetime sun accumulation.

7. Do I need to wear sunscreen while I'm in the car?

Yes. Windows and car windshields somewhat reduce exposure to UV radiation. Clear window glass in most vehicles blocks UVB rays, but not UVA. The Federal Motor Vehicle Safety Standard #205 states that window glass used in cars must allow 70% of the incident light to pass through for safety and visibility. However, this standard also allows for windows that are not needed for driving visibility to be tinted darker or glazed (side and rear windows).²¹ This means that front car windshields are partially treated against UVA rays through the installation of a shade band across the top portion of the window. Many older vehicles have tinted windows, but these do not necessarily shield from UV radiation; they shield from glare. Additionally, side windows are often not fully UVA protected. For these windows, a UVA protective film can be applied.²²

8. Can I catch diseases like AIDS or gonorrhea from a tanning bed?

No. Very few sexually transmitted infections (STI's) survive for long in the open air. Although some STI's can live in a hospitable environment (such as warm, wet towels) for a brief period of time, they can't survive on a tanning bed. In fact, ultraviolet radiation is very effective at killing many bacteria and viruses. Sometimes, however, you may develop a rash (usually red and itchy) wherever your body has touched the tanning bed from the chemicals they use to clean the bed's acrylic surface. Additionally, if you are taking certain medications (tetracycline, doxycycline, sulfa antibiotics, birth control pills, adapalene or isotretinoin, to name just a few) they can cause a skin reaction from exposure to UV light. They can also cause other problems, most notably sunburn and itchy rashes.

9. Won't a healthy tan protect my skin?

A tan might look good to some people, but it really means your skin has been damaged. Producing melanin, which makes your skin look darker, is your skin cells' response to block a damaging agent, ultraviolet radiation. The protective ability of a tan your skin can produce is limited based on skin type. For example, in a Skin Type II, a tan is only equivalent to an SPF of two to three.²³⁻²⁴

10. If I wear sunscreen, can I stay in the sun as long as I want?

No, sunscreens don't last forever, must be reapplied, applied in the proper amount, and used in conjunction with other non-sunscreen sun protective methods. Studies have shown that applying sunscreen once may give you a false sense of security that you are well-protected and thus can stay in the sun longer.²⁵⁻²⁶ This is a fallacy. There is no such thing as an all-day or 8-hour outdoor sunscreen. Sunscreens should be reapplied every 1-2 hours, in the proper amount of 1-2 full ounces, and with an SPF of 30 or above.

The SPF (Sun Protection Factor) number is meant to reflect how many minutes you can stay in the sun. For example, a person with Skin Type I can stay in the sun for about 10 minutes without sunscreen before they begin to burn. If that person applies a sunscreen with an SPF of 15, they should be able to stay in the sun for 150 minutes without burning (10 x 15). However, this equation allows a Skin Type I (most susceptible to skin cancer: fair skin, blond/red hair, blue eyes) to stay in the sun for 150 minutes if using an SPF of 15. That's longer than the two hours in which sunscreen should be reapplied and longer than the longest lasting sunscreens (very water resistant sunscreens last only a maximum of 80 minutes).

Unfortunately, this SPF equation doesn't reflect the reality of the situation. The SPF number is based on applying at least a full ounce to your body (5'4", 150#, waist 32"),²⁷ which the rare person does. In addition, the SPF was calculated in labs under solar simulators that use mostly UVB light and little or no UVA light. In comparison, natural sunlight has about 20 times the amount of UVA as UVB,²⁸⁻²⁹ the reverse of solar simulators. So natural sunlight has a lot more UVA compared to a laboratory solar simulator that uses mostly UVB light. Quite simply, the lab's solar simulators need to use more UVA light to mimic the light wavelengths of natural sunlight, and yet even more to mimic indoor tanning radiation output. Studies have shown that putting on half the appropriate amount of sunscreen does not decrease the protective coverage by half, but by 75%³⁰ since sunscreen protection does not decrease in a linear fashion.³¹ Additionally, the different types of sunscreen adhere and apply in different amounts based on their viscosity and spreadability³² (lotions cover best because they spread easily; sticks are better for small areas – lips, tip of nose, ears, but spread poorly due to their wax matrix; gels spread easily and cover well but are full of alcohol and if used on the face burn the eyes so people often put on less; sprays/mists can have less coverage due to the fact that much of it may be lost to the air and on other surfaces). Finally, sunscreen is removed by sweating, toweling off, friction from swimming, the salt in the ocean, and the chlorine in the pool. It must be reapplied.

The real answer is to limit your time in the sun between 10am-4pm. If you can't do that, then cover up, reapply using the right amount of sunscreen, and seek shade or use other sun protective methods. Sunscreen

use needs to be combined with other protective methods; it should not stand alone.

11. Do I still need to wear sunscreen during the winter or on cloudy days?

The sun may not feel hot during the winter or on cloudy days, but the UVA and UVB rays are still there and being absorbed by your skin. According to the CDC, 32% of the UV rays still reach the earth's surface on an overcast day.³³ UVA rays penetrate glass so they can easily pass through water vapor (clouds) and they are present all year long, whereas UVB is more prominent in the summer.³⁴ Remember your sunscreen and protective gear even when the weather is not sunny. Protect your skin 365 days a year by storing a bottle of sunscreen by your toothbrush. Just as we brush our teeth daily, we should get in the habit of applying sunscreen daily, all year long, especially to the face and neck (the principal areas of skin cancer location).

12. I'm going skiing in the mountains, not to the beach, so I don't have to use sunscreen, right?

In the mountains, the sun's rays are more intense because the air is thinner at higher elevations (less atmosphere), you are closer to the sun's rays, and there is more reflection off snow and ice surfaces. For every 1000 feet you increase in altitude, your UVR exposure increases by 8-10%.³⁵ Most U.S. ski runs are at 8,000-12,000 feet in elevation. This means if you live in St. Louis, MO (465 feet above sea level) and go skiing in Vail, CO, at 12,000 feet elevation, you increase your UVR exposure by 64-120 percent. Plus, you're not hot in the mountains, so you tend to stay in the sun longer. CDC studies have shown that the reflected rays from snow and ice are nearly equivalent to those reflected off of water (80-90%).³³

13. Are sunless tanning lotions really safe?

Yes. Sunless tanning lotions, otherwise known as self-tanners, are a great alternative to tanning beds or lying out in the sun. Sunless tanning lotions contain 3-5% DHA (dihydroxyacetone), a simple sugar that was first studied in the 1950's in diabetic children who ingested DHA as a glucose tolerance test. DHA dyes or stains the topmost layer of the epidermis (stratum corneum). This layer is composed of mostly dead skin cells that slough off regularly which is why you have to reapply sunless tanning lotion once a week.

If you go to an indoor spray-on tanning booth or use airbrushing to receive a sunless tan, there are precautions you should take because the self-tanner is aerosolized. Precautions include not inhaling (holding your breath is usually fine since the session lasts only 15-30 seconds) or using a nose filter, protecting your eyes (wear goggles), protecting your lips (lip balm), and protecting your nails (with Vaseline) and hair (with a shower cap). Most tanning salons supply a shower cap, goggles, and a towel to wipe off excess self-tanner. If you are allergic to DHA, are pregnant, or have asthma it is probably best to avoid using spray-on tanning methods.³⁶ Areas of skin that are more wrinkled (elbows, knees, ankles, crow's feet, and lines around mouth) or thicker (palms and soles) tend to absorb more of the DHA and become darker as time goes on. Dihydroxyacetone is minimally photoprotective by itself (SPF 2-3)³⁷ so you must still use a sunscreen, unless the product has a sunscreen built in.

14. What about tanning pills?

Tanning pills usually contain a mixture of vitamins, carotenoids and antioxidants, such as vitamin C and vitamin E. Tanning pills tint the skin an orange color, especially the palms, but don't produce a "real" brown tan. The color change is due to the accumulation of carotenoids (also found in carrots) in the skin. The color is temporary and usually fades within a few weeks after discontinuing the pills. Canthaxanthin, a beta carotene found in plants and crustaceans, has been associated with retinopathy, urticaria, hepatitis, and aplastic anemia when ingested in large quantities.³⁶ It has shown up in crystallized form in the eyes leading to injury and impaired vision.³⁸ Other pills called psoralens are used by dermatologists to treat skin conditions. Psoralens are legally dispensed by prescription and are to be used under a physician's guidance. Improper use

of psoralens not only exposes you to higher doses of radiation, but can cause ocular damage and definitely causes premature aging, drying, elastosis (loss of elasticity), lentigenes (brown age spots), and skin cancer.³⁹ Medicinal use of psoralens exposes you to the same side effects, but the benefits of resolving psoriasis lesions outweighs the risks for most patients. Additionally, the dose of psoralen and UV light are medically managed and timed.

Tanning pills do not protect against sunburn. When your skin is exposed to ultraviolet (UV) light, it stimulates cells known as melanocytes, which make a brown pigment called melanin. This is your skin's way of protecting against UV damage. Tanning pills don't increase production of melanin, so they don't provide the same protection. Tanning accelerators containing tyrosine have not been shown to work¹¹ and, while banned by the FDA, are still available.

There is currently a pill (Melanotan) under study that may help increase melanogenesis in low phenotypes, but it is still in the early stages of research.⁴⁰⁻⁴¹

15. How do I apply self-tanning lotion without it looking fake?

If applied properly, most self-tanners today do not cause the same orange discoloration of the old formulations. As stated earlier, self-tanners contain a simple sugar called dihydroxyacetone (DHA). This sugar reacts with amino acids to produce yellow-brown pigments called melanoidins and only colors the topmost layer of the epidermis known as the stratum corneum. It is essentially harmless.

In order to obtain a good coloration from DHA, you should first purchase a self-tanning lotion that is colored or tinted so you can visually see where and how much you are applying. This will allow you to apply an even coat and prevent streak marks. It is also a good idea to buy a box of inexpensive disposable gloves. Wearing these will prevent your palms from absorbing the DHA. If you don't have gloves, wash your hands immediately after applying self-tanner. Next, prepare the skin surface by shaving (if applying to an area that will be shaved like females' legs), exfoliating to remove dead skin cells (the dead cells uptake more of the self-tanner and will initially appear darker and then peel off to reveal a lighter patch of skin), and then moisturizing the shaved and/or exfoliated skin (allow the moisturizer to sink in for about 3 minutes). Uniform moisture content of the stratum corneum over several hours is important to the development of even pigmentation from the DHA.⁴² Under- and overhydration can decrease the pigmentation reaction. Finally, apply the self-tanner in even strokes and with a lighter application on highly mobile body areas (knees, elbows, ankles, around eyes and mouth) which will uptake more of the self-tanner and turn darker. Also, those areas of your body naturally tan a lighter color than other parts and will shout "fake tan" if darkened.

Applying self-tanner daily in an effort to get a dark tan quickly will create an abnormal coloration. It is best to reapply it no more than every 2-3 days and to start with a light to medium formulation rather than dark. The resulting color is also dependent upon your skin type and natural coloration. Darker blonds and brunettes have the best color results. Redheads (Skin Type I) and darker haired persons, especially those with olive skin tones do not have as "natural" a result as those with golden undertones.¹¹ Many people purchase the "dark" formulation and apply it daily which will eventually turn their skin orange. Self-tanners work well for Skin Types II and III if you start with the "light" or "medium" formulations, apply it no more often than every three days, and allow yourself to "tan" over a period of about 1-2 weeks. Trying to get an overnight tan will turn you an abnormal color.

Moisturizers with self-tanner have a lower percentage (1%) of DHA than products marketed as self-tanners. These may be applied on a daily basis depending upon your skin type.

16. Is it OK to tan if you are wearing sunscreen?

Tanning indicates a defensive reaction of your skin to ultraviolet radiation, so no tan is healthy or safe. Use a broad-spectrum sunscreen that blocks both UVA and UVB rays with an SPF of at least 30 and a

high UVA rating. Remember you need to apply sunscreen 20-30 minutes before going out in the sun. This allows the chemicals in the sunscreen to bind with the skin's cells and not be as easily washed off by the chlorine in the pool or the salt in the ocean. Reapply sunscreen every 2 hours, and more often if you are swimming, sweating, exercising or toweling off. Wright found that people who waited longer than 2.5 hours to reapply sunscreen increased their chance of sunburn 5-fold compared to those who reapplied every two hours.⁴³

17. Don't I need a lot of sun exposure to ensure I get adequate levels of Vitamin D?

Vitamin D synthesis in the skin occurs with the absorption of UVB which causes the production of D₃ (cholecalciferol). Presently, the average Caucasian adult needs about 5 to 15 minutes of sun exposure on the hands and face three times a week³ to produce a sufficient supply of Vitamin D. Current daily suggested dosages of vitamin D are 200 IU (5 mcg) for age 0-50 years, 400 IU (10 mcg) for 51-70 years, and 800 IU (20 mcg) for 71+ years.⁴⁴ However, new research⁴⁵⁻⁴⁶ is showing other possible beneficial effects of Vitamin D in modulating immune responses, cardiovascular disease, and diabetes, and decreasing the risk of colorectal adenomas and breast cancer, in addition to the long term known effects on skeletal homeostasis. Thus, increasing the required daily intake (to >30mcg) has been proposed.⁴⁷ While Vitamin D can be obtained from fortified liquids (two cups of Vitamin D fortified milk or orange juice supplies 200 IU) and foods (salmon, sardines, shitake mushrooms, tuna, eggs, cod liver oil),⁴⁸ to reach higher levels, vitamin supplementation is usually required.

However, there are a few caveats.⁴⁹ Persons with gastric malabsorption may not be able to absorb oral Vitamin D. Darker skinned individuals don't produce Vitamin D as easily from sun exposure as do lighter skinned people. Plus, many darker skinned persons are lactose intolerant so intake of Vitamin D enriched milk is not an option. Living at higher latitudes, older age, darker pigmentation, and those who religiously avoid sun exposure (ie: Middle Eastern women who cover their head/body with clothing) may require higher levels of Vitamin D intake. Ingestion of Vitamin D is a safer alternative than exposure to UVR, especially for lighter skinned individuals. Regarding the use of sunscreen and vitamin D: several clinical trials have shown that sunscreen use had little or no effect on Vitamin D levels and osteoporosis,⁵⁰ vitamin D levels and clothed infants, and vitamin D levels within a six year study of patients with xeroderma pigmentosum who used sunscreen.²³ Beyond that, the maximum possible cutaneous vitamin D synthesis occurs within a few minutes of sun exposure for light-skinned people (too much sun begins the destruction of vitamin D₃ and the initiation of skin cancer DNA changes) and incidental sun exposure is high.^{46, 49} The current best advice is to wear sunscreen and take a vitamin D supplement.

18. Doesn't a tan help you look healthier?

Too much sun actually ages you prematurely. Compare skin on your face and hands with skin on a part of your body that is not regularly exposed to the sun and see the difference. A tan is a short-term bronzed look that can easily be achieved by self-tanners, bronzing powders, tinted sunscreens and other cosmetics. The use of these methods will help to prevent early signs of aging. Early aging is another compelling reason to protect your skin from the damaging effects of ultraviolet light.

19. My mom's doctor told her to go to a tanning bed. Why can't I?

Rarely, an individual may have a medical condition — such as certain types of eczema or psoriasis — for which a doctor recommends exposure to special kinds of UV light. In these people, the UV exposure helps treat their skin condition (the benefits outweigh the risk of the UV light causing skin cancer). The treatment is typically done in a medical setting where the UV light output is both wattage-regulated and time-controlled by a medical professional. Most indoor tanning is not as stringently controlled. These patients also have an

increased rate of skin cancer.⁵¹ The risks versus benefits need to be considered by physicians before advising use of indoor tanning.

20. My facial foundation has an SPF of 15, so I'm protected, right?

Facial foundations with sun protection factors are better than those without SPF. According to Draelos, most facial foundations degrade due to accidental removal, perspiration, oil production, and tearing, thereby decreasing the photoprotection within about two hours.⁵² It is recommended that foundation be reapplied every two hours if using for photoprotection. An alternate method is to apply a sunscreen first and then apply a foundation on top of the sunscreen. Either way, reapplication should occur every two hours if using for sun protection.

21. If I put on a sunscreen with an SPF 15 and then put on more sunscreen with an SPF 10, do I get a total SPF of 25?

No, the highest SPF you apply is the highest SPF coverage you will receive. So, in the above case it would be an SPF of 15. Sun protection factors cannot be added mathematically to get a higher level of protection. The best method is to start with an SPF of 30 and apply two coats⁵³ twenty minutes apart. This will increase your SPF coverage (since most people don't apply the required amount of 1-2 full ounces to receive the sunscreen's stated SPF) and cover areas missed on the first application.^{50, 54}

22. If I tan pre-vacation, then I won't burn, right?

No, a tan is equivalent to an SPF of only 2 - 3 for a skin type II.²³⁻²⁴ The lighter your skin, hair, and eye color, the less protected your skin is from ultraviolet radiation (UVR). A tan is the body's protective response to a damaging agent -- ultraviolet radiation (UVR). Melanin pigment (the brown color in a tan) is produced to help prevent UV radiation from going deeper into the skin, but there is a limit as to how much melanin your skin can produce and thus, how well it can protect you. This limit is based on your skin type. Tanning also produces an increased growth and thickness of the epidermal cells, causes cell damage to melanocytes and keratinocytes, and the tan itself is inadequate to prevent DNA damage. Acquiring a base or pre-tan only increases the risk of skin cancer.²³⁻²⁴

23. I was at the beach the other day for four hours and started to get a little burned after one hour so I put on a white t-shirt and ended up very sunburned. I thought the shirt would protect me. What happened?

This is a common misunderstanding. Once you have a pink color change to your skin, you are burned. You should go inside, seek shade, and get out of the sun. A white t-shirt has an SPF of seven until it gets wet, and then the SPF decreases to three.⁵⁵ We often put a t-shirt on to protect ourselves from further sunburn, go back in the pool or the ocean, it gets wet, further decreasing its protectiveness. Increasing the moisture content of fabric even by exercising and sweating in hot temperatures will decrease the SPF/UPF of fabric.⁵⁶ Finally, cotton (most common t-shirt material) is the least sun protective fabric; polyesters and nylons have a tighter weave and smaller porosity making them a better choice.^{55, 57}

24. What is the difference between a sunscreen and a sunblock?

In general, sunscreens contain chemicals that absorb the UV light and sunblocks contain barriers or physical blocking agents that reflect UV light. Physical sunblock creams are made of zinc oxide and titanium dioxide, the white stuff. Chemical sunscreens contain active ingredients with long names like benzophenones, octylmethylcinnamate, and salicylates. Most sunscreens are a combination of sunscreen chemicals and a sunblock barrier. There are also sunscreens that contain only zinc oxide or titanium dioxide, which are called sunblocks by dermatologists and plastic surgeons, that are used after skin resurfacing procedures such as

lasering, chemical peels, and dermabrasion. These sunblock-only lotions are also good for sensitive skin and babies. Currently, zinc oxide deflects the widest spectrum of UVB and UVA rays. However, the use of the term “sunblock” is a misnomer since no sun lotion totally blocks all of the UV rays. Sunscreen is a better word to use.

25. Wouldn't it make more sense for me to indoor tan because I would be spending less time in the sun?

As explained earlier, tanning beds use lamps that emit primarily UVA wavelengths with minimal UVB radiation. UVA radiation penetrates deep into the dermis, but has no warning sign of a sunburn. It also affects more skin cell components than UVB. Also, when you are outside in the sun, you usually apply sunscreen which affords you some protection unlike in a tanning bed where you don't wear sunscreen. Additionally, when outdoors, the heat will often cause you to seek shade or go indoors whereas most tanning beds have built-in fans and some even have air conditioning units allowing longer stays. Finally, consider the amount of UVR you are receiving in a very short time period (refer to answer for question two).

26. How can I guesstimate how much sunscreen is an ounce without using a measuring cup?

An ounce is approximately equivalent to the size of a golf ball or a shot glass. Another suggested measuring technique by Taylor and Diffey is to use the rule of nines (burn assessment using body surface area percentages). Using the rule of nines, the body is divided into 11 surface areas: head, neck, and face; left arm; right arm; upper back; lower back; upper front torso; lower front torso; left upper leg and thigh; right upper leg and thigh; left lower leg and foot; and right lower leg and foot. Use a strip of sunscreen squeezed onto two fingers (the index and middle fingers from the palmar crease to the fingertip) and apply these two strips to each of the 11 body areas.⁵⁸ This will approximate one ounce.

27. Is it okay to use bug spray with sunscreen mixed together?

Several studies have shown that using a combination insect repellent and sunscreen or using them concomitantly will increase the repellent (DEET) and the sunscreen (benzophenones) absorption and skin penetration,⁵⁹ and decrease the SPF.^{28, 60} Plus, due to the need to reapply sunscreens more often than repellents, if using a combination and re-applying correctly this will result in a higher dose of DEET than recommended.⁶¹ Because higher concentrations of DEET, especially in children, have been associated with eye and skin irritations, headaches, irritability, and seizures, the American Academy of Pediatrics recommends using repellants with less than 10-15% concentrations of DEET.⁶² It may be best to apply bug repellent and sunscreen separately.

28. When I tan I feel better. It's almost as if I *have to tan*. I feel *the need to tan*. Why is that?

Studies have shown that the absorption of ultraviolet light by the skin may be addictive due to the release of "pleasure" chemicals (serotonin, endorphins).⁶³⁻⁶⁴ It has also been found that UVR is a reinforcing stimulus in frequent indoor tanners⁶⁵ and evidence of UV light as a substance related disorder has been demonstrated in college students.⁶⁶⁻⁶⁷ Furthermore, younger age with first use of indoor tanning (14-15 years) and more frequent use (> 3 times) were associated with difficulty in quitting.⁶⁸

29. Does sunscreen prevent skin cancer?

Studies of nevi in children have shown that with broad spectrum sunscreen use the number, size, and dysplasia of the nevi are reduced.⁶⁹⁻⁷⁰ With a reduction in the amount, size, and dysplasia of nevi there is a concomitant reduction in skin cancer incidence.