

## Lecture Outline and Script: Day Two or Part Two

### Prevention/Protection Methods and Alternatives to Tanning

[Non-italicized text is what appears on the slide. Italicized text are statements that should be made, additional background information, easy ways to explain slide points and tips on getting student participation.]

- **Slide 55 - ABC Game -- Title slide**

*\*\*Show the slide, allow the students to verbally answer which of the ABC's the lesion displays, and then discuss the answers. Underlined answers are the most prominent ABC.*

- **Slide 56**

- Evolution, Elevation, Asymmetry, Color, Border, Diameter

- **Slide 57**

- Diameter (2.5cm vs. 6mm), 2.5cm = 25mm, Evolving, Border, Color

*\*\*This is a superficial spreading melanoma, the most common subtype; has a radial growth phase (horizontal) which often allows detection before metastasis.*

- **Slide 58**

- Normal moles *or nevi*

- **Slide 59**

- Color, Border, Slight Asymmetry

- **Slide 60**

- Asymmetry, Evolving, Diameter, Border, Color

- Very early, Stage 0 (*in situ*) melanoma

- Commonly seen in older people with *high lifetime cumulative sun exposure*

*\*\*This is a lentigo maligna (a melanoma in situ often found on sun-damaged or elderly skin). These grow slowly (longer radial growth phase than traditional malignant melanoma in situ) and will eventually become a lentigo maligna melanoma (an invasive melanoma) if left alone for enough years.<sup>57</sup> These are often mistaken as harmless "age spots" by the elderly so they are frequently large at diagnosis and can leave sizable skin defects after removal.*

- **Slide 61**

- Evolving, Border (has spread into surrounding skin -- irregular pink areas), Asymmetry, Color

*\*\*Spread of color into surrounding tissue is a sign of melanoma growth.*

- **Slide 62**

- Normal mole

- **Slide 63**
  - Color (no color or pink), Border, Asymmetry, Evolving
  - \*\**This is an amelanotic melanoma (mostly non-pigmented).*
  
- **Slide 64**
  - Evolving, Border (has spread into surrounding skin), Asymmetry, Color
  
- **Slide 65**
  - Normal mole, notice the color, this is a redhead
  - \*\**Mole color is based on the amount of melanin (skin type). Lighter skin types will have lighter moles; darker skin types will have darker moles.*
  
- **Slide 66 -- Prevention/Protection -- Title Slide**
  - **Slide 67**
    - The bronzed look is not pretty or healthy
      - UVR leads to wrinkling, sagging, brown spots, leathery skin and skin cancer
    - \*\**Young and old pictures of Robert Redford and Donatella Versace illustrate skin aging effects of UVR.*
  
  - **Slide 68**
    - Tanned is banned
      - Natural skin tone is a sign of beauty
      - Protecting your skin from UVR will decrease signs of aging, old skin
  
    - \*\**We need to get rid of the "bronzed look is healthy" stereotype and let teens know that it can be fashionable and acceptable to be fair-skinned.*<sup>59</sup>
  
- **Basic Protective Measures**
  - **Slide 69**
    - Know your Skin Type<sup>60,61</sup>
    - *Skin types are based on:*
      - *Hair color without dyes*
      - *Natural skin color without a tan*
      - *Natural eye color without contacts*
    - *Skin types are divided into 6 levels*
      - *Skin Type 1 is the least protected = most at risk*
      - *Skin Type 6 is the most protected = least at risk*
    - Skin types:
      - Skin Type 1
        - Always burns, Never tans
        - *Very fair white skin, white blond or red hair, blue eyes, freckles*
        - Irish, Scots, Welsh

- Skin Type 2
  - Burns easily, Tans a little
  - *Fair skin, blond to sandy brown hair, blue, hazel green or brown eyes*
  - Northern Europeans
  
- Skin Type 3
  - Sometimes burns, Tans slowly
  - *Medium white, dark blonde to brown hair, grey to brown eyes*
  - Most of the Caucasian *students in the room will be a Skin Type 3*
  
- Skin Type 4
  - Minimal burning, Tans easily
  - *Light brown skin, dark brown hair, brown eyes*
  - Mediterraneans, Asians, Hispanics
  
- Skin Type 5
  - Rarely burns, Tans well
  - *Dark brown skin (heavily pigmented), black or brown hair, dark brown eyes*
  - Middle Easterners, Amerindians, Lighter African-Americans, *Darker Hispanics*
  
- Skin Type 6
  - Never burns, Tans darkly
  - *Black skin (deeply pigmented), black hair, dark brown eyes*
  - African-Americans, Aborigines

**\*\* Ask the students to choose their skin type. Many studies on young people have shown that they often rate themselves as a more protected skin type than they are – if they are a type 2, they rate themselves as a type 3 or 4 (most young people believe they tan easily and burn a little). Explain that a burn is a pink color change. A burn doesn't have to be fire-engine red, painful or blistered.**

**\*\*If you have time, select student volunteers from the room who are the different skin types and line them up in order to visually demonstrate the difference in natural skin protection from pigmentation.**

- **Slide 70 -- Three Types of Ultraviolet Radiation**

- UVA (90% of sun's rays *that reach the earth's surface*)
  - Aging rays/skin cancer
    - Penetrates deeper (dermis)/ glass<sup>62</sup>
    - More skin components can absorb UVA
    - No warning sign (*sunburn*)
    - 20X more reaches earth than UVB<sup>63</sup>
    - Tanning bed bulbs<sup>66</sup>
    - Present all year long in *relatively* equal amounts
    - *Responsible for DNA changes*

- UVB (10% of sun's rays *that reach the earth's surface*)
  - Burning rays, skin cancer
    - Penetrates epidermis, but not clouds or glass<sup>62</sup>
    - Warning sign = sunburn<sup>64</sup>
    - Present in larger amounts in the summer<sup>65</sup>
- UVC (*Doesn't reach earth's surface except possibly at the poles where the ozone hole is large*)
- Differences between UVA and UVB
  - UVA penetrates deeper into the dermis than UVB<sup>65</sup>
  - 20 times more UVA reaches the earth's surface than UVB<sup>65</sup>
  - UVA penetrates glass/clouds/dermis, UVB doesn't<sup>62</sup>
  - UVB gives a sunburn, UVA has no warning sign that you're getting too much
  - Light bulbs used in tanning beds are mostly UVA (93-98%).<sup>66</sup>

- **Slide 71 -- How to Choose and Use a Sunscreen**

- **1st Check the SPF**, start with a 30
  - SPF 2 absorbs 50% of UV rays
  - SPF 15 absorbs 93.3%
  - **SPF 30 absorbs 96.7%**
  - SPF 50 absorbs 98%
  - SPF 70 absorbs 98.5%
    - UVB blockage = SPF
    - UVA blockage = no current rating in US, four star system<sup>67</sup> has been proposed and should be seen in 2009 on *most sunscreen labels*.

*\*\*Ask the students what words the acronym "SPF" stands for. The acronym SPF stands for Sun Protection Factor. Then ask them what SPF they normally use.*

*\*\*Explain that an SPF of 30 is a good number to use because it protects you from almost 97% of the UVR, but more important is both the amount you apply and reapplication within 2 hours.*

*\*\*SPF only describes UVB protection. However, most sunscreens contain both UVA and UVB coverage.*

- **Slide 72**

- **2nd Check the ingredients** (*listed under "Active ingredients" on bottle/tube*)
  - I. Chemical
    - Absorbs and reflects UVR
    - Clear in color
    - Apply 30 minutes before to allow absorption (*takes 20-30 minutes for these chemicals to bind with the skin cells*)
  - I. Barrier
    - Deflects UVR
    - The white stuff

- Immediate use (*doesn't have to be absorbed, sits on top of skin*)
- Good for sensitive skin (*allergic skin, post skin treatments*), babies, *those on acne meds*

\*\*Most sunscreens are a combination of *chemical and barrier sunscreens*

○ **Slide 73**

- Sunscreens for Teens
  - Look for
    - Non-comedogenic (less likely clog pores or cause acne)
    - Hypoallergenic (less likely to cause allergic reaction -- good for those on acne meds)
    - Oil-free (does not contain oil that can clog pores)
    - Dry touch/Dri-Block (dry to touch, not sticky/tacky)

○ **Slide 74** <sup>68</sup>

- **3rd Choose Type, Check smell, get one you like**
- *Discuss the pros & cons of the different vehicles (lotions, gels, etc) that sunscreens are carried in.*

Type	Pros	Cons
Lotions	<ul style="list-style-type: none"> <li>▪ Spread easily</li> <li>▪ Good coverage/Can see coverage</li> <li>▪ Vehicle of most sunscreens</li> <li>▪ Assortment of smells</li> </ul>	<ul style="list-style-type: none"> <li>▪ May feel heavy or greasy</li> <li>▪ May feel hot</li> <li>▪ Hard to reapply on beach (sand)</li> </ul>
Sport or Dry	<ul style="list-style-type: none"> <li>▪ No oily film, dry to touch</li> <li>▪ Less runny with sweating</li> <li>▪ Often oil-free/non-comedogenic</li> </ul>	<ul style="list-style-type: none"> <li>▪ May have higher alcohol content</li> <li>▪ May be more easily removed</li> </ul>
Gels	<ul style="list-style-type: none"> <li>▪ Apply easily (hairy surfaces)</li> <li>▪ No greasy film/Dries quickly</li> <li>▪ Cologne-like smell</li> </ul>	<ul style="list-style-type: none"> <li>▪ Higher alcohol content</li> <li>▪ May burn sores, cuts or pimples</li> <li>▪ Caution using on face or babies</li> </ul>
Sprays	<ul style="list-style-type: none"> <li>▪ Hard to reach areas (back, legs)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Machine-gun spray pattern – messy</li> <li>▪ Uneven coverage/Still have to rub in</li> <li>▪ Sunscreen lost to air</li> <li>▪ Less coverage than lotions</li> </ul>
Mists	<ul style="list-style-type: none"> <li>▪ Easy to use/Easy to apply</li> <li>▪ No film, dry to touch, cooling</li> <li>▪ Don't have to spread or rub in</li> <li>▪ Hard to reach areas- back, legs, scalp</li> </ul>	<ul style="list-style-type: none"> <li>▪ Hard to see coverage</li> <li>▪ Spotty coverage (windy, focused spray)</li> <li>▪ Sunscreen lost to air</li> <li>▪ Don't inhale</li> </ul>
Sticks	<ul style="list-style-type: none"> <li>▪ Heavy coverage</li> <li>▪ Good for nose, lips, ears, sm. areas</li> <li>▪ Stick trick for outdoor sports</li> </ul>	<ul style="list-style-type: none"> <li>▪ Wax matrix – hard to spread</li> <li>▪ Uneven coverage over large areas</li> <li>▪ Melts in sun</li> </ul>
Mineral Powder	<ul style="list-style-type: none"> <li>▪ Light weight, easy to apply</li> <li>▪ Comes in a variety of skin colors</li> </ul>	<ul style="list-style-type: none"> <li>▪ Can clog pores</li> <li>▪ If skin dry, residue may show</li> </ul>

*\*\*Pick a student volunteer to apply some gel or lotion to his/her arm or apply to yourself. First, ask if they have any allergies to sunscreens. If so, choose another student or apply to yourself. After application, ask them how it feels and smells and how easy it was to spread. Next, apply a different sunscreen to the same student and have them verbalize the pros and cons. Allow another student to smell a sunscreen. Show them the differences in sunscreens, don't just tell them. This activity will increase participation and discussion, familiarize them with the various vehicles, and possibly increase use.*

o Slide 75

- Stick Trick -- Outdoor Sports
  - Keeps sunscreen from running in eyes.
  - Circle eyes w/ stick/lip sunscreen. *Take the stick sunscreen, and draw a circle around each eye, going over the eyebrow and under the eye. The eyebrow is a ridge with hair that is anatomically made to protect your eye. The wax will divert the forehead sweat down the nose and temples, away from the eyes.*
  - Powder eyelids and forehead. *For females, a light dusting of a facial powder will also help absorb sweat. This can be applied over the stick sunscreen (in addition to) or by itself.*

o Slide 76

▪ **4th How much, where?**

*\*\*Start this slide by asking the students how much they normally apply.*

- 1 ounce for body (golf ball sized glob) for average adult (5'4", 150#, 32" waist)<sup>69</sup>
  - One ounce = shot glass full or golf ball-sized glob
  - \*\*Show the students a golf ball placed in your two hands (cupped together). Explain that sunscreen is liquid and will take up more room than a solid golf ball. Show them a tube of sunscreen and ask a student to tell the class how many ounces are in that tube, then ask the class how many applications for one person are in that tube? Next ask how many students share a single tube with friends or family? How many use the same tube all summer? A six ounce tube is only six applications for one person.*

- *Why should you apply so much?*

- o *To get the full SPF on the bottle, you must apply a full ounce*
- o *If you apply half the amount needed (1/2 oz.), SPF protection doesn't decrease by 50%, it decreases by 75%<sup>37, 70-73</sup>*

*\*\*This is to reinforce why you suggested they start with an SPF of 30.*

- 1 teaspoon for face
- Double coat<sup>74-76</sup>
  - *Apply one coat of sunscreen*
  - *Wait 20 min*
  - *Apply a second coat*

*\*\*Studies have shown that most people's first coat is not a full ounce and misses body parts. A second coat will increase the SPF coverage and cover any missed body parts.*

- 1 (6-8 ounce) bottle = only 6-8 coatings

- Date it, *buy a new bottle every year*
  - *Use a permanent marker and date the bottle or tube*
  - *Sunscreens have a shelf-life of about 3 years<sup>101</sup>*
    - *If kept on a shelf in moderate temperatures*
    - *But sunscreens are usually left outside in the sun for hours at the pool or thrown in a car trunk where high temperatures can degrade them.*
  - *Apply daily year round.<sup>77</sup>*

○ **Slide 77**

- **5th Reapply every 1-2 hours<sup>58</sup>**
    - *Removes sunblock = rubbing, sweating, swimming, chlorine in pool, salt in ocean, and toweling off<sup>74</sup>*
    - *Water resistant = 40 min protection*
      - *Water-resistant means the substantivity of the sunscreen should last for up to 40 minutes in the water<sup>75</sup>*
    - *Very Water Resistant = 80 min protection*
      - *Very water resistant means the substantivity of the sunscreen should last for up to 80 minutes in the water<sup>75</sup>*
    - *There is no all-day sunscreen except a tent. Sunscreens degrade in UVR.*
    - *If one waits > 2.5 hrs to reapply sunscreen there is a 5X higher chance of sunburn than those who reapply q 2 hrs.<sup>76</sup>*
- \*\*As a lead-in to the next slide, ask students which of them has used a tanning bed. Who has used one this past weekend? How often do they go? Do their parents use tanning beds?*

• **Slide 78 -- Indoor Tanning Beds (No)**

- *Bulbs are 93-98% UVA --*
  - 2-15 times more UVA than summer noontime sun<sup>4, 5, 7, 77</sup>*
  - Tanning beds are made this way because UVB rays can cause a burn and clients want to look tan, not burned. Unfortunately, UVA penetrates deeper than UVB.*
- *Face insert emits more UVA than bed lightbulbs. If your face looks tan, you think the rest of your body looks tan.*
- *Tanning indoors adds 30-300% more UVA to one's annual solar exposure.<sup>78</sup>*
- *Higher level beds emit more radiation in a shorter time period than the standard tanning beds.<sup>5, 78-79</sup> Tanning beds come in various levels or strengths for beginner tanners and maintenance tanners.*

- **Alternatives to Tanning**

- **Slide 79 -- If you must be bronzed, Fake it don't bake --Title Slide**

- **Slide 80**

- UV-Free Spray Tanning and Air Brushing<sup>80-81</sup>
  - Relatively safe
  - Don't inhale (use nose filter/pincher)
  - Protect eyes (use goggles)
  - Protect lips (use balm)
  - Cover hair and nails (may discolor)
  - Don't use if asthmatic, pregnant, or allergic to DHA
- *Self-tanner has dihydroxyacetone (DHA) in amounts of 3-5%*
  - *DHA is relatively safe if not ingested or inhaled*
  - *DHA acts as a simple sugar that reacts with amino acids in the top most layer of the skin (stratum corneum)*
    - *Produces melanoidins*
    - *Melanoidins temporarily color the skin*
- *Self-tanner comes in various forms*
  - *Spray-on tanning booths in tanning salons (shower booths)*
  - *Airbrushing machines*
  - *Lotions, mousses, foams, wipes and sprays*
  - *Daily moisturizers with a lower percentage of DHA (1%)*
- *Spray-on tanning booths or airbrushing*
  - *Spray on booths*
    - *Similar to taking a shower*
    - *Several spigots in the booth spray self-tanner*
    - *Takes less time (15-30 seconds) and is relatively safe if you don't inhale*
    - *Use a shower cap, apply a barrier cream to your fingernails, toenails, lips, palms of hands and soles of feet or wear paper booties on your feet, wear goggles on your eyes, and hold your breath. DHA is absorbed more readily by areas of dry tissue (nails, palms of hands, knees, etc.)*
    - *Drawback: the same amount of DHA is sprayed for every client. This may be too much, especially for teens and smaller framed persons.*
  - *Airbrushing*
    - *Uses a misted version of the self-tanner*
    - *Offered in a hand-held spray gun or in a vacuum-cleaner-like machine*
  - *With either version:*
    - *Do not inhale or ingest, no available studies on consequences*
    - *May not want to use if you are asthmatic or pregnant*
    - *Do not use if you are allergic to DHA (self-tanner)*

*\*\*Demonstrate for students the spray on self-tanner by spraying it on a sheet of white paper.*

- **Slide 81**

- Fake, Don't Bake
  - By age 18-19 years, 47% of Caucasian girls have used tanning beds<sup>82</sup>



- Slide 82

- How to Apply Self-Tanner<sup>83-84</sup>

- Dihydroxyacetone (DHA), a harmless sugar
- Skin Types 1 and 2, use "fair" or "light" formulation
  - *Amount of color change is based on your skin type. Starting with a dark formulation may turn you an abnormal color (orange) if you are lighter complected. Use the appropriate formulation for your skin color. Do not apply daily unless the DHA percentage is only 1%. Allow adequate time to develop a more natural tanned color (1-2 weeks). Many teens get the darkest formulation, apply it daily, and by day four they are orange. This makes them think the products do not work. Teach them to apply it correctly.*
- Exfoliate skin, shave first
  - Exfoliate (use a product with grains or beads)*
    - *The stratum corneum is composed of dried dead skin cells.*
    - *Removing as many of the dead cells as possible will prevent later skin flaking and overaccumulation of DHA leading to orange coloring.*
- Moisturize, wait 3 minutes, let sink in
  - *Nguyen found that moisturized skin will be more evenly hydrated, the uptake of DHA will be more balanced, and less likely to give one a patchy looking tan. However, overly moisturized skin will not absorb the DHA, so there needs to be a balance between the two.<sup>83</sup>*
- Wear disposable gloves when applying self-tanner
  - *Buy an inexpensive box of disposable gloves.*
  - *This will prevent your palms from turning orange as it takes about 10 minutes to apply self-tanner to an entire body surface. By then, handwashing will not eliminate the DHA that has already been absorbed.*
- Use a tanner with color to prevent streaks
  - *This will allow a more even application as you can see where it is applied and what sites have been missed.*
- Light coat on knees, elbows, ankles, eyes, mouth
  - *DHA is absorbed more in these areas due to the skin dryness, thinness, and wrinkling.*
- Color develops over 3-4 hours, then shower (to remove smell)
  - *Avoid tight clothing or shoes, sweating, and exercising for 3-4 hours after applying self-tanner. These actions may rub or sweat the DHA off and cause an uneven tan. DHA is a three-carbon sugar and tends to smell like burning cookies when mixed with your body's heat. The smell disappears after showering.*
- Start with a light or light-medium formulation and apply no more than every three days for the first two weeks
  - Prevents you from turning orange
- Reapply every 4-5 days to maintain color as the top layer of skin flakes off
  - \*\*Show the students a tube of exfoliating grains and a tube of self-tanner.*

- Slide 83
  - Non-self-tanners -- Wash off, Apply daily
    - Powdered bronzers
      - Apply to sun-kissed areas of face (X) --this will give a more natural appearing tan
      - Apply over sunscreen
      - Use all year not just in summer
    - Tinted foundations and sunscreens are other options
      - All of the above options will wash off and have to be applied daily
      - \*\*Demonstrate applying powdered bronzer on a volunteer female student.

- Slide 84
  - Freckles are spots from sun damage. More sun = more, larger, darker freckles.
  - Many teens believe that freckles have little to do with sun damage. When young, freckles may come and go with the amount of sun exposure and vary with the seasons, but eventually if exposure is constant, they will not fade and may become darker in color, larger in size, and greater in number.

● Slide 85-- Non-Sunscreen Sun Protective Methods -- Title Slide

- Slide 86
  - \*\*Ask students at what time of day do they have no shadow. At what time is their shadow the longest.

- Short Shadow, Seek Shade<sup>85</sup>
  - UVR is most direct at noon
    - No shadow since the sun is directly overhead
- Shadow Rule -- Shorter than you, seek shade
  - If your shadow is shorter than your height, you should find shade*
    - UVR is high
    - The sun's angle is direct (most direct 11am-1pm, get out of sun!)
    - The protective filtering of the atmosphere is low (when shadow equals a person's height, the SPF of the atmosphere is about 2-3).<sup>85</sup>
- Protect yourself from 10 am – 4 pm, out of sun 11-1

- Slide 87
  - Wear a hat
    - Hats are an easy way to protect your face and head*
      - Ball caps leave lower face, ears & neck exposed, but cover scalp and upper face.
      - A wide brim hat (3" brim) will decrease UVR on the face and cheeks by a factor of five.<sup>86</sup> Brims of 4-5" offer the best protection and more coverage. However, any hat is better than no hat.
    - \*\*Ask students to notice where the shadow is on the person's face wearing the ball cap.

- **Slide 88**
  - What type of hat does this outdoor worker have on? *Answer: ball cap*  
[Pictures of a 40 y.o. white female who spent five years outdoors conducting field research.]  
*\*\*Ask students what type of hat the woman is wearing.*
  
- **Slide 89**
  - *Picture of the same 40 y.o. white female with basal cell skin cancer on left upper lip (arrow).*  
*\*\*Ask students to note characteristics of basal cell skin cancer (this one is pink, pearly in appearance, almost normal looking, small in size).*
  
- **Slide 90**
  - *Pictures of the basal cell skin cancer removed by Mohs surgery.*  
*\*\*These same pictures are on page 34 of this manual.*
  
- **Slide 91**
  - *Sequential pictures of the scar.*
  - *Basal cell & squamous cell skin cancers have a better than 95% five year cure rate if recognized and treated early.<sup>87</sup>*
  
- **Slide 92**
  - **Wear Sunglasses**
    - **Labeled "100% UV" or "400 UV"<sup>88</sup>**  
*Prevents cataracts, retinal degeneration, skin cancer*
    - **Wrap around**
      - *Up to 30% of UVR enters in non-covered side areas*
      - *Want the glasses to wrap around the outer edges of the eye orbit and fit close to the skull<sup>89</sup>*
    - **Just because lenses are dark doesn't mean they block UV**
      - *Ask the students what happens to the pupil of their eye when in a dark room. Answer: it expands, and thus lets in more light. Therefore, dark lenses without UV protection can actually allow in more UVR.*

*\*\*Demonstrate the wraparound sunglasses by placing them on your eyes and point out the "100% UV Protected" label.*
  
- **Slide 93**
  - **Wear a shirt**
    - **Sun protective clothing can be purchased with an UPF**
      - *UPF = Ultraviolet Protection Factor; same protection as SPF (UPF 30 = 97% protection)*
      - \*\*Hold up the UPF shirt for the students to see. Show them the UPF tag.*
      - *UPF clothing can be purchased at sports stores, department stores and online*

- Fabric UV Protection
  - *Qualities of regular clothing that make them sun protective*
    - Weave, tighter is better
    - Color, darker is better
    - Weight, heavier is better
    - Stretch, less is better
    - Wetness, dry is better
    - White t-shirt =SPF 7 when dry  
SPF 3 when wet<sup>14</sup>
    - Clean is better
      - *Detergents contain optical brightening agents<sup>90</sup> that deflect UVR*
    - Polyester or polyacrylic better than nylon or cotton
      - *due to smaller pore space (holes between fibers)<sup>90-91</sup>*

*\*\*Ask the students what fabric they wear all the time that has one of the highest UPF's. Answer: Denim has an UPF of 1700.*

*\*\*Ask the students what they think the UPF for a white t-shirt is (seven). Then ask them what it is when wet (three). Point out that many put on a t-shirt when sunburned at the pool or beach and then get back in the water. In reality, this offers them very little protection and is why they often end up with a bad sunburn.*

#### ○ Slide 94

- Reflection and Cloud Cover<sup>15</sup>
  - Sand reflects 20-30% of the UV rays
  - Snow and ice reflects -- 80-90%
  - Water reflects -- 100%
  - Reflection off natural surfaces (water, ice, snow) increases UVR*
  - Clear skies allow 100% UV rays to reach *earth's* surface
  - Scattered clouds allow 89% of UVR to reach surface
  - Overcast clouds allow 32% of UVR to reach surface
  - This is why some people get sunburned on cloudy days. Sun protection is necessary even on cloudy days and in the winter.*

#### ○ Slide 95

- Altitude, Latitude, Time of Day and Year
  - UVR increases by 8-10% *for every 1000 feet increase in elevation<sup>92-93</sup>*
  - *There is 40-50% more UVR at 5000' (most ski resorts are 5000' and above) than at sea level*
  - Increase in altitude means there is less atmosphere to filter UVR = increase in exposure. These percentages do not take in the additional increased radiation from reflection off the snow and ice.*
  - Top of mountain (10,000 feet) = 80-100% more UVR
  - Increased UVR at noontime (*most direct angle of daily UV rays*), in summer

(most direct rotational angle of the sun's rays), and closer to equator (more UVR, a thinner ozone layer, and more direct sun's rays).<sup>60, 77, 94</sup>

- **Keeping Yourself Healthy**

- **Slide 96**

- *Perform a Monthly self skin exam*
      - *Examine your body for changes in skin spots on a regular basis*
        - Be sure to check where the “sun doesn’t shine”
          - *Melanomas and basal cell skin cancers can grow in non-sun-exposed areas*
        - *Look in places you don’t always put sunscreen*
          - *Part your hair and look at your scalp*
          - *Check your ears and behind your ears*
          - *Look at the soles of your feet*
          - *Look between your fingers and toes*
      - *Note the size, shape and color of existing spots*

- **Slide 97**

- Know your family medical background
      - *If skin cancer runs in your family, you should definitely have regular full body skin exams by a doctor*
    - See a dermatologist for abnormal spots

- **Slide 98**

- Who finds melanoma cancers? You do<sup>95-98</sup>
      - Patients themselves -- 53%
      - Medical care providers -- 26%
      - Family members -- 17%
      - Others -- 4%

*Patients found changes in spots the majority of the time, not doctors or nurses. YOU find the changing spots. You know your body better than anyone else*

- **Slide 99**

- When in Doubt, Get it Checked Out
      - People wait an average of 1 year before getting a lesion checked.<sup>99-100</sup>  
*A year can be too long for some forms of melanoma.*

- **Slide 100**

- Good news, bad news
      - Bad news with skin cancer
        - it often has an iceberg effect
        - grows in high risk anatomical areas (*nose, mouth, ears, eyes*)

○ Slide 101

- Iceberg effect
  - Often by the time the skin cancer is visible on the surface, it has spread in a larger area under the surface skin.

*Pictures of pre- and post-op sizes of a basal cell skin cancer.*

*\*\*Basal cell skin cancers rarely spread to other sites in the body, but often create considerable tissue damage before they are diagnosed. Mohs surgery is a tissue sparing treatment that removes layers of skin (one level at a time) that are then stained and differentiated under the microscope. A map is then drawn, quadranting the lesion site to identify areas of cancerous and normal cells. Only the cancerous sections are then removed. This process is repeated until all tissue samples are normal. Mohs surgery has the highest cure rate (99%) for basal and squamous cell cancers.<sup>56</sup> There is controversy over its use in melanoma, but it shows promise for use in lentigo maligna melanomas.<sup>57</sup>*

○ Slide 102

- High risk anatomical areas
  - Nose, Mouth, Eyes, Ears
  - Most skin cancers appear on the head and neck, may leave a large surgical hole *after removal*, and may take several surgeries to reconstruct *facial features like noses, ears, eyes and lips.*
  - Protect Your Face!

● Conclusion

○ Slide 103

- The Good News
    - If found early, skin cancer is 90-95% curable<sup>56</sup>
    - It's one of the few cancers you can see
- \*\*That is why it is important to know what to look for in lesion changes like the ABC's of melanoma.*

***For two day course only:*** *Today we have concentrated on early detection and what to look for in skin cancers. Tomorrow we will talk about prevention or the different methods of sun protection. In a few minutes we are going to use the skin analyzer machine so let's look at what you'll be looking for in the SAM.*

○ Slide 104

- Female, age 17 years
  - *Left – a color photograph taken with a standard camera*
  - *Middle – a black and white photo taken with a standard camera*
  - *Right – a photo taken with an ultraviolet camera that illuminates sun damage in the upper layer of the skin.*

*\*\*Note the dark spots across the nose, upper lip, chin, and forehead. The UV camera photo shows skin damage in a way we cannot see with the naked eye. Note in the far left photo that you can barely see even a freckle on the girl's face, but in the far right photo there is sun damage (spots) across her nose, under her eyes, on the top of her forehead, and on her chin.*

○ **Slide 105**

- Female, age 64 years
  - *Left – a color photograph taken with a standard camera*
  - *Middle – a black and white photo taken with a standard camera*
  - *Right – a photo taken with an ultraviolet camera that illuminates sun damage in the upper layer of the skin.*

*\*\*Note the skin damage visible in the far left photo and the increase in spots in the far right photo. Sun damage is cumulative and causes not only skin cancer, but also wrinkles, sagging skin, and pigment discolorations. Many of the signs of aging skin are due to UVR.*

○ **Slide 106**

- Skin Analyzer Machine (SAM)
  - \*\*Explain that this is the machine they will be putting their heads in.*

○ **Slide 107**

- *Normal digital photo (left) and photo using skin analyzer machine (right)*
- SAM -- What the colors mean
  - Blue purple = hydrated skin
  - Brown-purple spots (look like freckles) = sun damaged areas
  - White = Dead skin, scars, clogged pores, teeth, lint
  - Yellow or orange = oily skin, make-up, sunscreen
  - Red-pink = dehydrated skin, thin skin

○ **Hands On Demonstration with the Skin Analyzer**

- **Give the following verbal instructions:**

*"The skin analyzer box that we will be using in a few minutes does the same thing as the UV camera in the previous slides. [Open the SAM and pull back the metallic curtains to show them the inside of the SAM as you talk.] It is a box with a round mirror and several black lights. The light bulbs inside illuminate the skin layer in a way not visible to the naked eye. This shows sun damaged skin."*

*"Place your chin close to, but not on, the bottom mirror and look down at your own face. Do not place your face close to or on the lights. You can wear eyeglasses in the SAM. There is a slight plastic smell. If you have recently had eye surgery, you should not use the SAM."*

*"There is a viewing port on the back of the machine through which another student can see the student inside the SAM. If you do not want your classmates viewing your skin, we can place our hand over the viewport."*

*"This is not meant to scare anyone. This is meant to show you your current level of sun damage and encourage you to use sun protection. Damage you see today can be kept from migrating to the surface sooner if you use preventative methods."*

*Explain the colors of normal and sun damaged skin. Redheads are the skin type*

*that show the most damage in the SAM. Be cognizent of student's feelings and their privacy.*

*Ask the teacher how he/she would like to move the students through the SAM. Some teachers will want students to go up in pairs, others will move students by rows or tables.*

*Be careful of the electric cord. Students also tend to get excited using the SAM and may pull the lid down upon their head by pulling on the drapes that shield the outside light. It is a good idea to put one hand on the top of the SAM holding it at the handle while the students use the machine. This will keep it from being tipped over, pulled off the table due to someone catching the electric cord, and also allow you to cover the viewport if needed.*

***Background information on the SAM (for SPOTS teachers only, not teen students):***  
*The SAM utilizes long-wave UVA light (325 nm) that is emitted from lightbulbs within a curtained box. UV light from the SAM penetrates predominantly in the stratum corneum and the epidermis where melanin is distributed. Light penetration is up to 2mm and illuminates different areas in various fluorescent colors. Hyperpigmentation (melanin accumulation) appears as dark spots on a background of skin. Normal hydrated skin appears blue, oily skin appears yellow to pink, and dry skin appears purple. Damaged hyperpigmented skin appears as dark "freckles", dead or very dried skin appears white, and heavy make-up or sunscreen will block the effect of the SAM's lights. It is similar to the Wood's Lamp (365 nm) used in dermatology offices to diagnose and treat skin diseases.<sup>102, 103</sup>*

- o **While one SPOTS teacher is running the SAM, the other SPOTS teacher can tell the students this begins the short question and answer period.**

*\*\*Ask them questions if they don't ask you. This will break the ice and encourage participation. What was new to them? Was anything confusing? What did they like the most (made the biggest impression)? Thank the students for their time and attention. If you're doing a two-day course, then give them a short preview of what will be covered during the next session.*