This is a summary of what we’ll be talking about today.

**Bullet #2:** The number of people who develop basal (\textit{bay}-sul) and squamous (\textit{skway}-mus) cell skin cancers each year is not known for certain. Statistics of most other cancers are known because they are reported to cancer registries, but basal and squamous cell skin cancers are not reported. This means that all the numbers presented here are estimates.

- Each year about 5.4 million basal and squamous cell skin cancers are diagnosed in about 3.3 million people (people often have more than one). Most of these are basal cell cancers.
- In contrast, an estimated 87,110 new cases of melanoma will be diagnosed in the US in 2017.

The skin is the largest organ in the body. It does several different things:

- Covers the internal organs and protects them from injury
- Serves as a barrier to germs such as bacteria
- Prevents the loss of too much water and other fluids
- Helps control body temperature

The 3 layers of the skin are:

- Epidermis
- Dermis
- Subcutis (\textit{sub}-q-tis)

The outermost part of the epidermis is made up of dead skin cells that are continually shed as new ones form. The cells in this layer are called squamous cells.
Living squamous cells move up from the lowest part of the epidermis, the basal layer. The cells of the basal layer, called basal cells, continually divide to make new skin cells to replace the older ones that wear off the skin's surface.

Cells called melanocytes (mel-an-o-sites) are also found in the epidermis. These skin cells make the protective brown pigment called melanin. Melanin is what makes the skin tan or brown. This helps protect the deeper layers of the skin from the harmful effects of the sun.

**Bullet #1**: Other names for this cancer include malignant melanoma and cutaneous melanoma.

- Melanocytes can also form benign (non-cancerous) growths called moles.

- Having darkly pigmented skin lowers your risk, but it’s not a guarantee that you will not get melanoma.

**Bullet #3**: The trunk is defined as the chest and abdomen, including the back and shoulders.

- Melanoma can also develop on the palms of the hands, soles of the feet, and under the nails.

- Melanomas can also form in other parts of your body such as the eyes, mouth, and vagina, but these are much less common than melanoma of the skin.
Melanoma and moles are discussed in a separate American Cancer Society document, *Melanoma Skin Cancer*.

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**Basal cell skin cancers**
- Under the microscope these cancer cells look a lot like the basal cells of the epidermis.
- They usually develop on sun-exposed areas, especially the head and neck.

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**Bullet #1**: Probably because younger people are spending more time in the sun with their skin exposed and unprotected.

**Bullet #3**: Metastasize (mu-h-tass-tuh-size) means the spreading of cancer to other sites in the body. These new sites are called metastases (mu-h-tass-tuh-sees). A single area of spread is called a metastasis (mu-h-tass-tuh-sis).

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**Basal cell skin cancers**
- If not treated can grow into nearby areas and invade the bone or other tissues beneath the skin.
- After treatment, basal cell carcinoma can recur (come back) in the same place on the skin.

**Bullet #1**: Basal cell cancers can grow deeper into the skin and other tissues and may require extensive surgery to remove if they are not removed early. Given that they are often found on the face, this can be disfiguring.

**Bullet #2**: People who have had basal cell cancers are more likely to get new ones elsewhere on the skin. As many as half of the people who are diagnosed with one basal cell cancer will develop a new skin cancer within 5 years.
actinic keratosis = ak-tin-ick kair-uh-TOE-sis

Because deeper and more extensive procedures are needed to remove those that have grown into the skin, early treatment can minimize disfigurement.

Bullet #1: Most of this radiation comes from sunlight, but it can also come from man-made sources such as tanning booths/lamps.

Usually it’s not clear exactly when UV exposure causes DNA damage that might eventually lead to cancer. Some of this exposure may have occurred within the few years of the development of the cancer, particularly for squamous cell carcinoma. But many of the cases may be caused by exposures that happened many years earlier. Children and young adults often receive a lot of intense sun exposure that may not result in a cancer until many years or decades later. Repeated and unprotected sun exposure over many years increases the person’s risk of skin cancer.

Bullet #2: Ultraviolet (UV) radiation can damage DNA. Sometimes this damage affects certain genes (segments of DNA with a specific function) that control how and when cells grow and divide. If these genes do not function properly, the affected cells may form a cancer.

Usually the body can repair the DNA damage. But if there is too much, in some situations, it can lead to the start of a cancer.
A risk factor is anything that affects your chance of getting a disease such as cancer. Different cancers have different risk factors. For example, using tobacco is a risk factor for lung, bladder, and many other kinds of cancer. But risk factors don’t tell us everything.

Having a risk factor, or even several risk factors, does not mean that you will get the disease. And some people who get the disease may not have any known risk factors. Even if a person with skin cancer has a risk factor, it’s often very hard to know how much that risk factor may have contributed to the cancer.

Still, researchers have found several risk factors that may increase a person’s chance of developing skin cancer.

Two risk factors increase your chance of both melanoma and non-melanoma skin cancers.

**Bullet #1:** Sunlight is the main source of UV radiation, which can damage the genes in your skin cells. Tanning lamps, beds, and booths are other sources of UV radiation. People with excessive exposure to light from these sources are at greater risk for skin cancer.

The amount of UV exposure depends on the intensity of the radiation, length of time the skin was exposed, and whether the skin was protected with clothing and sunscreen.

Many studies have linked the development of melanoma in the trunk, legs, and arms to frequent sunburns (especially in childhood).

**Bullet #2:** This is due to the protective effect of melanin (skin pigment). People with fair (light-colored) skin that freckles or burns easily are at especially high risk. Although people with lighter skin are more likely to get sun burn, dark-skinned people (of any ethnicity) can also be affected by UV exposure.
Bullet #1: Moles are not usually present at birth but begin to appear in children and teenagers.

A dysplastic nevus (dis-plas-tick nee-vus), or atypical mole, is a type of mole that particularly increases a person’s risk of melanoma. Dysplastic nevi (nee-eye) – nevi is the plural of nevus, the medical term for a mole – often look a little like normal moles but also look a little like melanoma. They can appear in areas that are exposed to the sun as well as those areas that are usually covered, such as the buttocks and scalp. They are often larger than other moles.

Bullet #2: The increased risk may be due to a shared family lifestyle of frequent sun exposure, a family tendency to have fair skin, or a combination of both factors.

It may also be due to inherited gene changes (mutations) in a family. Most experts do not recommend genetic testing in these families at this time. Rather, they advise that people with a strong family history of melanoma do the following:

• Have regular skin exams by a dermatologist
• Do thorough skin self-exams so they know what’s normal and can quickly notice changes
• Be particularly careful about sun protection

In the United States, men have a higher rate of melanoma than women overall, although this varies by age, as noted here. This may be due to the fact that US men as a group get more sun exposure than women – more men work outside, and some of them work without shirts during the summer when sun is strongest.
**Bullet #1:** This is likely due to the accumulation of sun exposure over time. Still, these cancers are now being seen in younger people as well, probably because they are spending more time in the sun with their skin exposed and unprotected.

**Bullet #2:** This is thought to be due mainly to higher levels of sun exposure.

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**Bullet #1:** Arsenic is a heavy metal found naturally in well water in some areas. It’s also used in making some pesticides and certain medicines.

**Bullet #2:** This is particularly a concern in children who have had cancer treatment. Almost all of these cancers are basal cell carcinomas.

**Bullet #3:** Anyone who has had a skin cancer has a much higher chance of developing another one.

**Bullet #4:** Scars from severe burns, areas of skin over severe bone infections, and skin damaged by some severe inflammatory skin diseases are more likely to develop non-melanoma skin cancers, although this risk is generally small.
**Bullet #1:** Psoralen and ultraviolet light treatments (PUVA) given to some patients with psoriasis (pronounced soar-eye-uh-sis, it’s a long-lasting inflammatory skin disease) can increase the risk of developing squamous cell skin cancer and probably other skin cancers too.

**Bullet #2:** Xeroderma pigmentosum (XP) (zer-oh-der-muh pigment-uh-sum)  
This very rare inherited condition reduces the skin’s ability to repair damage to DNA caused by sun exposure. People with this disorder often develop many skin cancers, sometimes starting in childhood.

**Basal cell nevus syndrome**  
This rare condition is present at birth, and causes multiple basal cell cancers. Most, but not all, cases are inherited. Affected people may also have abnormalities of the jaw and other bones, eyes, and nervous tissue. One clue to having this syndrome in your family is if the affected person began developing basal cell cancers when he or she was young (for example, under age 20).  
[If there are questions about how a person can have something like this at birth but it isn’t inherited, it may help to know that some DNA mutations happen in the womb, when the first few cells are dividing, as well as later on in fetal development.]

**Bullet #3:** People who smoke are more likely to develop squamous cell skin cancer, especially on the lips. Smoking is only a risk for squamous cell cancer; it’s not a risk factor for basal cell cancer.

**Bullet #4:** Human papilloma viruses (HPVs) are a group of more than 100 viruses that can cause papillomas, or warts. Some of the HPV types, especially those that people get in their genital and anal area, seem to be related to skin cancers in these areas.

**Bullet #5:** The immune system helps the body fight cancers of the skin and other organs. People with weakened immune systems (due to certain diseases or medical treatments) are more likely to develop non-melanoma skin cancer, particularly squamous cell cancer.

Skin cancers in people with weakened immune systems grow faster and are more likely to be fatal. Treatment with corticosteroid drugs can also depress the immune system. This may also increase a person’s risk of skin cancer.
So what can you do to prevent and beat skin cancer?

**Bullet #1:** The most important way to lower your risk of skin cancer is to protect yourself from exposure to ultraviolet radiation. Practice sun safety when you are outdoors.

“Slip! Slop! Slap! ... and Wrap” is a catch phrase that reminds people of the 4 key methods they can use to protect themselves from UV radiation. Slip on a shirt, slop on sunscreen, slap on a hat, and wrap on sunglasses to protect the eyes and sensitive skin around them from ultraviolet light.

Many people believe the UV rays of tanning beds are harmless. This is not true. Tanning lamps give out UVA and usually UVB rays as well, both of which can cause long-term skin damage and can contribute to skin cancer. People who use tanning beds are more likely to get skin cancer.

**Bullet #2:** Clothes provide different levels of protection, depending on many factors.

A typical light T-shirt worn in the summer usually provides little protection. Long-sleeved shirts, long pants, or long skirts are the most protective. Dark colors generally provide more protection than light colors. A tightly woven fabric protects better than loosely woven clothing. Dry fabric is generally more protective than wet fabric.

Some companies now make clothing that is lightweight, comfortable, and protects against UV exposure even when wet. The level of protection the garment provides from the sun's UV rays is on a scale from 15 to 50+.

Newer products are also available to increase the UPF value of clothes you already own. Used like laundry detergents, they add a layer of UV protection to your clothes without changing the color or texture.
**Bullet #1**: A hat with at least a 2- to 3-inch brim all around is ideal because it protects areas often exposed to the sun, such as the neck, ears, eyes, forehead, nose, and scalp. A shade cap (which looks like a baseball cap with about 7 inches of fabric draping down the sides and back, as in the second picture from the left) is also good. These are often sold in sports and outdoor supply stores.

A baseball cap can protect the front and top of the head but not the back of the neck or the ears, where skin cancers commonly develop. Straw hats are not recommended unless they are tightly woven.

**Bullet #2**: Use broad-spectrum sunscreens and lip balms (which protect against UVA and UVB rays) with an SPF factor of 30 or more on areas of skin exposed to the sun, especially when the sunlight is strong (for example, in hot or high-altitude locations or between the hours of 10 am and 4 pm). Use sunscreen even on hazy days or days with light or broken cloud cover because the UV light still comes through.

Always follow directions when applying sunscreen. A 1-ounce application (a palm full of sunscreen) is recommended to cover the arms, legs, neck and face of the average adult. Protection is greatest when sunscreen is used thickly on all sun-exposed skin.

Many sunscreens wash off when you sweat or swim and must be reapplied for maximum effectiveness. And don’t forget your lips; use a lip balm with sunscreen.

**Bullet #3**: Some people use sunscreens in order to stay out in the sun longer without getting sunburned. Sunscreen should not be used to gain extra time in the sun, as you will still end up with damage to your skin.

It’s important to remember that although sunscreens may help reduce your exposure to UV light, they will not prevent melanoma if you get too much exposure, particularly if you have other risk factors.
**Bullet #1:** Wrap-around sunglasses with at least 99% UV absorption provide the best protection for the eyes and the skin area around the eyes.

**Bullet #2:** Another way to limit exposure to UV light is to avoid being outdoors in sunlight too long.

Plan activities out of the sun during these times. If you must be outdoors, protect your skin. Keep in mind that sunlight (and UV rays) can come through clouds, can reflect off water, sand, concrete, and snow, and can reach below the water’s surface.

**The UV index:** The amount of UV light reaching the ground in any given place depends on a number of factors, including the time of day, time of year, elevation, and cloud cover. To help people better understand the intensity of UV light in their area on a given day, the National Weather Service and the US Environmental Protection Agency have developed the UV Index. It gives people an idea of how strong the UV light is in their area, on a scale from 1 to 11+. A higher number means a higher chance of sunburn, skin damage, and ultimately skin cancers of all kinds. Your local UV Index should be available daily in your local newspaper, on TV weather reports, and online (www.epa.gov/sunwise/uvindex.html).

**Bullet #1:** Children need special attention, since they tend to spend more time outdoors and can burn more easily.

Parents and other caregivers should protect children from excess sun. Older children need to be cautioned about sun exposure as they become more independent. It’s important, particularly in parts of the world where it’s sunnier, to cover your children as fully as is reasonable. You should develop the habit of using sunscreen on exposed skin for yourself and your children whenever you go outdoors and may be exposed to large amounts of sunlight. (Remember that most sunscreens are not recommended for children under 6 months old. Keep babies out of the sun!)

**Bullet #2:** Using tanning beds and sun lamps is hazardous because the UV radiation they deliver damages the skin.
Bullet #1: Depending on the appearance of these moles, your doctor may want to watch them closely by regular exams or may remove them if they have certain features that suggest they may be changing into a melanoma.

Routine removal of many moles is not recommended. Some melanomas may develop from moles, but most do not. If you have many moles, a careful, routine exam by your doctor or a dermatologist, along with regular skin self-exams may be recommended.

If you find an unusual or changing mole, it should be checked by a doctor experienced in recognizing skin cancers.

How much vitamin D is made depends on many things, including how old you are, how dark your skin is, and how intensely the sun shines where you live.

At this time, doctors aren’t sure what the optimal level of vitamin D is. When possible, it’s better to get vitamin D from your diet or vitamins rather than from the sun. These sources do not increase risk for skin cancer.

For example, most milk and milk substitutes, such as soy milk have vitamin D added. (If vitamin D is added it will be listed on the food label.)

Recommended Dietary Allowances (RDAs) for Vitamin D in adults [from http://ods.od.nih.gov/factsheets/VitaminD-HealthProfessional/]:

- 1–70 years = 600 IU (15 mcg)
- >70 years = 800 IU (20 mcg)
Any suspicious spots or unusual moles should be seen by your primary doctor or a dermatologist, a doctor who specializes in skin problems. Don’t hesitate to ask your doctor to look at areas that may be hard for you to see.

You can play an important role in finding skin cancer early. For instructions on how to do a skin self-exam, see the American Cancer Society’s Skin Self-exam Gallery at www.cancer.org/skinselfexam.

Friends and family members can also help you with these exams, especially for those hard-to-see areas, such as the lower back, scalp, or the back of your thighs.

Spots on the skin that are new or changing in size, shape, feel, or color should be evaluated promptly. Any unusual sore, lump, blemish, marking, or change in the way an area of the skin looks or feels may be a sign of skin cancer or a warning that it might occur. The skin might become scaly or crusty or begin oozing or bleeding. It may feel itchy, tender, or painful. Redness and swelling may develop.

Since moles may develop into melanoma or indicate an increased risk for melanoma, it’s important to know the difference between melanoma and an ordinary mole. Sometimes this may be hard to tell, so show your doctor any mole that you are unsure of.
Another very important warning of melanoma is that a mole has been growing or changing its shape or color. Some melanomas do not fit the ABCD rule, so it’s important to report changes in skin lesions (lee-zhunz), new skin lesions, any growths that look different from the rest of your moles, and any sores that don’t heal.

Keep in mind that a few melanomas are not dark, and that they can happen other places than the skin, such as in the eyes and under fingernails and toenails.

See a doctor right away if you notice any changes in a mole.

Some pictures to show you how the ABCD rule can work.

Point out:
- **Asymmetry**: One half of the mole does not match the other half.
- **Border irregularity**: The edges of the mole are irregular, ragged, blurred, or notched.
- **Color**: The color of the mole is not the same all over. There may be differing shades of tan, brown, or black, and sometimes patches of pink, red, blue, or white.
- **Diameter**: The mole is larger than 6 millimeters or about ¼ inch, but melanomas can be smaller than this.

Emphasize that although these are typical, not all melanomas look like this: they can be smaller and even flesh-colored.
Be sure to show your doctor any area of your skin that concerns you.

More information
- You can get more information on skin cancer on our website, www.cancer.org
- Call 1-800-227-2345 and speak to one of our cancer information specialists

Thank you!

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