



*Hi, I am Bruce Barber, welcome to Yale Cancer Center Answers. This week our hosts Dr. Edward Chu and Dr. Ken Miller are going to update us on skin cancer. Dr. Chu is the Deputy Director and Chief of Medical Oncology at Yale Cancer Center and Dr. Miller, a medical oncologist, is the Director of the Connecticut Challenge Survivorship Clinic at Yale Cancer Center. Yale Cancer Center Answers is a way to provide you with the most up-to-date information on cancer every Sunday evening here on WNPR. Dr. Chu and Dr. Miller welcome some of the nation's leading oncologists and cancer specialists who are in the forefront of the battle to fight cancer. They want to provide you with help and hope from Yale Cancer Center. They are also available to answer questions. If you would like to submit a question about cancer, e-mail it to [canceranswers@yale.edu](mailto:canceranswers@yale.edu) or call 1888-234-4YCC. If you are interested in listening to past editions of Yale Cancer Center Answers, or if you would like to learn more about a specific kind of cancer, all issues are posted in audio and written format on the Yale Cancer Center website which is [www.yalecancercenter.org](http://www.yalecancercenter.org). This evening Dr. Chu and Dr. Miller will discuss skin cancer. More than a million people are diagnosed in the United States each year with skin cancer. Protection obviously is the key to preventing skin cancer. Let's get started.*

*Good evening doctors.*

- Chu            Good evening Bruce. Today we are joined by Dr. David Leffell, Professor of Dermatology and Surgery and Chief of the Section of Dermatologic Surgery and Cutaneous Oncology here at the Yale Cancer Center. David is the author of the book, *Total Skin*. In addition to this, he is Deputy Dean for Clinical Affairs at the Yale School of Medicine and director of the Yale Medical Group.
- Miller        David, let us begin by talking about the different types of skin cancer. Can you describe to us how they may look alike and what makes them different?
- Leffell        There are 3 types of skin cancer. Melanoma, of course, is the most well known, but non-melanoma skin cancer is actually the most common skin cancer throughout the world. The most common non-melanoma skin cancers are basal cell carcinoma and squamous cell carcinoma. Today we are going to focus primarily on non-melanoma skin cancer. Basal cell cancer typically occurs as a small bump on the skin. It can appear as a sore that does not heal. Often patients tell me that they notice the area has been bleeding or they note spots of blood on their pillow at night. In my experience, that is one of the most common signs that a person has skin cancer. Squamous cell cancer can appear in a similar fashion, it can be red or scaly. In general, I tell patients that if they notice a new bump, generally on sun exposed area such as the face or head and neck, which has not resolved in few weeks, it should be examined and evaluated.
- Miller        If someone notices a little bleeding on their pillow and then the lesion or the spot

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on the skin totally heals up and goes away, but then it comes back a few months later, is that likely to be a skin cancer?

Leffell If it heals up and then comes back in the same spot, that is almost a classic story indicative of a basal cell cancer. If that happens, it is important to get it evaluated by a dermatologist and not wait for it to come back yet again.

Chu Is sun exposure the only risk factor for individuals in developing this type of skin cancer?

Leffell In the vast majority of cases skin cancer is caused by ultraviolet radiation from the sun; primarily the ultraviolet B waves but the ultraviolet A rays as well. In a very small number of cases there are people that develop basal cell cancer from radiation treatments they received for acne many years ago. People who have had exposure to arsenic, either from well water or pesticides that used to be used on farms, can develop skin cancer. By and large, the vast majority of skin cancers in this day and age are caused by sun exposures, something people can control.

Chu What about the involvement of age? Does that play a role at all in the development of skin cancer?

Leffell That is a great question. When I attended medical school many years ago it was uncommon to see skin cancer in people under the age of 50 or 60. Now, not a week goes by that I do not have a patient, usually a woman in her 20s or 30s, with a basal cell cancer. Those of us that specialize in diagnosing and treating skin cancer have seen a change in the age distribution of skin cancer which has been confirmed by studies. We are seeing more skin cancers in younger people and in people in whom we have never seen it before.

Chu Why is that David, is that because they are sun goddesses and sun gods worshipping the sun and are out sun bathing or is it due to tanning salons? I know that even in my gym there are these tanning booths that youngsters go into before or after they workout.

Leffell There are a couple of factors. One certainly is lifestyle. People are spending more time outdoors. Children are spending more time outdoors, and remember it is estimated that 85% of lifetime sun exposure that an individual receives occurs by age 18. If I am able to convey only the following message, it will be worthwhile. Tanning parlors are popular among young children, especially young women, but they are a major source of harmful ultraviolet radiation. I believe tanning parlors are the reason we are seeing skin cancer in women in their 20s. Almost all of the patients that I have seen with basal cell cancer in their 20s have told me that they used tanning parlors in their teens. If listeners take away no other message, take away this one. Stay away from tanning parlors, they are harmful. Ultraviolet

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radiation from these tanning parlors is carcinogenic and causes cancer. This is a factor that is contributing to the increase in skin cancer in my opinion.

- Miller In a sense the same way that we know cigarette smoking causes lung cancer, tanning booths should have a warning too.
- Leffell Actually in many states access to tanning parlors by people under 18 is relatively well regulated, and the risk of cancer is well noted. Connecticut lags behind other states in that regard, and we are working to try to get legislation that properly advises people of the risks of cancer.
- Miller Along those lines is there such a thing as a healthy tan? Is there anything about the sun that is good for us?
- Leffell Technically speaking there is no such thing as a healthy tan because a tan is the body's reaction to an injury. As a result of ultraviolet radiation, the body's pigment cells produce melanin which leads to tanning. This does not mean that a tan is not attractive. Fortunately, there are many alternatives to harmful radiation exposure. One can use artificial tans, which are attractive and help you avoid the harmful effects of artificial rays and sun rays itself. The sun is definitely an attractive environmental element and we all enjoy going out in the sun. We are happy when we are in the sun and during those long dark winters in the northeast when there is not much sun, we are sad. One has to adopt a strategy that uses commonsense. Everything in moderation, when you are out in the sun, use sun protection and try to avoid the sun during peak hours.
- Chu What is interesting to me is that dermatologists like Dr. Leffell actually follow these words of wisdom. If you look at dermatologists in general, you do not see tanned individuals like some of the other physicians in different specialties.
- Leffell I think you are right. We do not tell people to go crawl under a rock. You have to live your life and enjoy it, but just as you would not walk out in front of a bus, or ideally just as you would not smoke cigarettes, you should be cognizant of the risks that you are taking and try to minimize them.
- Chu That is terrific advice. So David, if someone is concerned that they might have skin cancer, what is the next move that they should make? Who should they go see to have it fully evaluated?
- Leffell The ideal approach is to seek out someone who has expertise in skin cancer. All board certified dermatologists in the state of Connecticut have been rigorously trained in evaluating, diagnosing, and treating skin cancer. Very often, we will see patients referred to us who had their initial cancer identified by their primary care doctor, who then sends them to the dermatologist for further evaluation. The

most important thing to keep in mind is that more often than not, patients themselves are the first to become aware of a lesion. My rule of thumb is, when in doubt, check it out. If you see something you are not sure about have it looked at. If you follow that dictum, I think you will be in pretty good shape.

Miller If the patient goes to a dermatologist like yourself, or a dermatologic surgeon which is your specialty, how do you find out if it is a cancer?

Leffell Understandably, nobody wants to go to the doctor. On the other hand, the fear that people have about going to the doctor can be minimized in this regard, because the process for making a skin cancer diagnosis is very rapid. In our referral practice at the Yale Cancer Center we see patients who are referred by dermatologists who have already made a diagnosis. The way they have made that diagnosis is by doing a small biopsy. It is done in the office and takes only a matter of minutes. It involves numbing the skin very briefly with some anesthetic and then shaving off or sampling a small piece of the growth. This sample is then sent to a specialist in pathology of the skin called a dermatopathologist who looks at the biopsy under the microscope and renders a diagnosis; whether the growth is a skin cancer or benign.

Miller In general, when you or other dermatologists look at a skin lesion, how accurate are you based on observation as opposed to when you actually compare it with the results of the biopsies?

Leffell Dermatologists have been shown to have a very high degree of accuracy when you compare their clinical diagnosis, what they thought from looking at it, to what it actually turns out to be when it is looked at under the microscope. Dermatologists are visual experts and we rely on pattern recognition. It is not very difficult to teach people what to look for. In my book *Total Skin*, there are 8 pages of colored pictures that are intended to give the lay reader an opportunity to understand what to look for themselves.

Miller We would like to remind you to e-mail your questions to us at [canceranswers@yale.edu](mailto:canceranswers@yale.edu). We are going to take a short break for a medical minute. Please stay tuned to learn more information about skin cancer with Dr. David Leffell from the Yale Cancer Center.

Medical minute

*Did you know that this year over a 170,000 Americans will be diagnosed with lung cancer, more than 85% of lung cancer diagnoses are smoking related, and quitting smoking even after decades of using cigarettes can significantly reduce your risk of developing lung cancer? Everyday patients with lung cancer are surviving due to increased access to advanced therapies and specialized care.*

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*New treatment options and surgical techniques are giving lung cancer survivors more hope than they have ever had before. Clinical trials are currently underway at Yale Cancer Center, Connecticut's federally designated comprehensive cancer center, to test the innovative new treatments for lung cancer. Patients enrolled in these trials are given access to newly available medicines, which have not yet been approved by the Food and Drug Administration. This has been a medical minute brought to you as a public service by Yale Cancer Center. More information is available at [www.yalecancercenter.org](http://www.yalecancercenter.org).*

Miller Welcome back to Yale Cancer Center Answers. This is Dr. Ken Miller. I am here with my co-host, Dr. Edward Chu, and Dr. David Leffell discussing the latest information on skin cancer.

Chu David, before the break we were talking about how a diagnosis of skin cancer is made. Once the diagnosis has in fact been made and confirmed by the dermatopathologist, what are the next steps involved?

Leffell The next step of course is to treat the skin cancer and there is good news here. Most treatments for skin cancer, basal cell cancer and squamous cell cancer, are very straightforward and more often than not can be performed by a dermatologist in the dermatologist's office. We make decisions based on how the skin cancer appears under the microscope because there are different types of basal cell cancers. Depending on the model of skin cancer they have, one treatment might be better than another. Treatments can range from scraping or burning it off to actually excising it; cutting it out in the office under local anesthetic. You may find that your dermatologist wants to refer you to someone who specializes in an advanced form of treating skin cancer called Moh microscopic surgery. This technique is reserved for skin cancers on the face and in important cosmetic areas where you want to minimize the surgery, recurrent cancers and large cancers. The advantage of this technique, in which the specially trained dermatologist actually reads the pathology slides during the removal of the cancer, is that it has the highest cure rate and leads to preservation of the most amount of tissue so the end result can be cosmetically optimal as well.

In addition to surgery, which is the gold standard for treatment, new treatments have become available in the form of creams. One in particular called Aldara is a cream that is applied to the skin and stimulates your own immune system to fight off the cancer cells. This cream is used for only certain types of skin cancer, certain models of basal cell cancer, but you should ask your dermatologist whether your particular skin cancer would benefit from that approach. As we move forward and understand more about how skin cancer forms and grows, we are going to continue to have other treatments that will be non surgical. One for example is called photodynamic therapy. In this treatment we paint a solution onto the growth and wait awhile to allow it to incubate. Then

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we shine a light which activates the solution which then kills the cancer cells. This is an approach that we will be hearing more about.

Chu To follow up more on this cream that you just mentioned, is the cream used to treat the skin cancer itself or is it used once the removal has been done to try and prevent the skin cancer from coming back?

Leffell That is great question. In fact, it has FDA indications for treatment so we would use this instead of surgery, but those of us that spend all day treating skin cancer have used it and will probably use it more and more as a preventative in certain patients because it does seem to function that way as well.

Miller That is a fascinating thought that the immune system can be used to fight skin cancer. Can you tell us more about that, and I also want to ask if the skin is active from an immune point of view.

Leffell Well, in my humble opinion, the skin is the most important immune organ in the body, and when you think about it, it makes a lot of sense because our skin is our first interface with our environment. Therefore, where would you need your immune defenses to be the greatest; in your skin. There has been an enormous amount of research over the past three decades focusing on how the skin functions as an immune organ. Let me put it in a simple context that listeners will understand. If any of you listening have ever had a cold sore, you know that it can be activated after you have been out in the sun, but why is that? It turns out that ultraviolet B rays from the sun will suppress the immune system of the skin, thus giving the virus a chance to get reactivated. Knowing that, you can appreciate immediately how important the immune system of the skin is. What Aldara does is it stimulates your natural immune capacity to destroy the skin cancer. We know, for example, that people who are immune suppressed for medical reasons, patients that have kidney transplants, have an increased risk of skin cancer. That is because their immune system has been suppressed allowing their precancerous cells to grow.

Chu Once the skin cancer has been treated, what are the recommendations that you give to patients with respect to followup?

Leffell The types of people that are at risk for skin cancer are those with blonde or red hair; blue, green, or grey eyes, fair skin. People that tend to burn rather than tan, and those of you listening who fit the description know who you are because you probably already had sunburns in childhood, have to take special care not to get sunburned on a daily basis while outside. It is this group of people that are at the greatest risk of skin cancer and I recommend that they have a full body skin examination once a year. More often than not, patients who have had skin cancer have a chance of getting another one. In fact, if you had one basal cell cancer on

your face, you have a 40% chance of getting another one within five years. So you have got to be vigilant and alert to new lumps and bumps that come up. Do not become so paranoid that you are not able to enjoy life, but be aware of things that come up that may bleed or that heal and come back. Make sure they are evaluated by your dermatologist.

Miller Are there machines that will scan the entire body and record what things look like?

Leffell No, we have not yet arrived at the ultimate Buck Rogers' world of dermatology yet. You will read a lot in the popular magazines about devices that allow your doctor to map your moles; basically these are very well designed cameras, photographic methods. It is still the case that the best computer sits between the two ears of the dermatologist. I would also say that patients themselves have a sixth sense that is uncanny. I have noticed this over the past 20 years. Patients will come in and say, "You know doc, I don't like this thing," and they will point to a growth on their arm. We may look at it and see few pattern recognitions and say it does not seem like much, but I teach our residents that if a patient has a spot that they do not like, even if it looks normal to us, it has got to be biopsied because patients have a sixth sense that no computer could ever have.

Miller I want to ask you about some work that has been done at Yale on identifying a skin cancer gene.

Leffell This is a very exciting development. We follow a group of patients that have a genetic syndrome. It is not very common, but these are people we have known for a long time and make up hundreds of skin cancers. Allen Bale, who is a leading genetic researcher at Yale Cancer Center, led the effort to identify the cancer gene by working with the patients we care for and others. In 1996, he published the actual gene that underlies this syndrome. In subsequent work that was done it turns out that 70% of people with just non-inherited skin cancer, basal cell cancer, have this gene as well. Having a gene identified is one thing; taking advantage of it is another. At the Dermatologic Surgery Cutaneous Oncology Unit at Yale we have an active clinical trial program as part of the Cancer Center. Most recently, we conducted a very early phase study where we applied a topical agent that has been used in other conditions, but which we had reason to believe would have an effect on the abnormality that the gene causes in skin cancer. We are still analyzing that data, but this is a good example of what we nowadays call translational research. In other words, we identify something in the laboratory and then seek a way to move it into the patient arena; into a treatment or diagnostic device that helps the patient get better. The Cancer Center itself is very strongly focused on translational research. Yale recently won a very major grant for advancing clinical research at Yale, and of course, the Cancer Center itself is a National Cancer Institute designated Comprehensive Cancer Center.

- Chu            Again, not to toot our own horn, but we believe that is the significant advantage of a designated Comprehensive Cancer Center; taking the best and brightest ideas from the laboratory and bringing them into the clinic. What you are doing in your Cutaneous Oncology Program highlights that translation research that is going on here.
- Leffel        It does, and frankly, it is one of the many rewarding aspects of university based practice. To be able to tell a patient that we have been doing surgery on for years that pretty soon we will have nonsurgical approaches to managing skin cancer is a goal that we all share and look forward to.
- Chu            Right now you are working very closely with Susan Mayne and her group in the Cancer Prevention and Control Program of the Yale Cancer Center, perhaps you could tell the listeners a little bit more about that.
- Leffel        There are several projects that we are involved in that take advantage of the epidemiology strength. Epidemiology is the study of populations and diseases in populations. It allows us to look at big numbers and understand why, for example, skin cancer appears to be increasing in young people. This is the case with one of the grants that we have. Is it a change in behavior as we talked about earlier or is there something else happening in the environment? Another interesting study that we are doing is a high tech study where we are trying to see if we can measure levels of carotene, a vitamin A type of nutrient in the body, without taking any blood but by using a laser; putting it on the skin and seeing if we can adequately measure what are called serum carotene levels. Why is this important? We hear so much about the role of diet and nutrition in cancer, whether it is antioxidants in blueberries, pomegranates or green tea, but the ability to actually do studies and figure out whether these nutrients help decrease skin cancer depends on getting accurate measurements of those compounds in the body. You cannot rely on what someone says they had for breakfast. You have to get numbers. If we can find a way of using a probe on the skin to get a sense of how much keratin a person has then we would be able to screen large numbers of people and get good scientific data about the role of nutrition in cancer.
- Miller        David, as we are about to close, any last minute thoughts you want to share or recommendations for the listeners?
- Leffel        I would like to sign off by reminding people to use sunscreen on a regular basis because when it comes to skin cancer prevention, it is still the number one approach. Ignore the labels that talk about being waterproof or having longevity; still apply it every couple of hours while you are active outdoors and make sure it has a sun protection factor of 30 and that it protects against UVA rays. Wear a brimmed cap that goes all the way around, wear sun protected clothing and avoid

the sun during peak hours, between 10:00 and 4:00, by playing in the shade.

Miller I want to thank Dr. David Lefell for joining us on Yale Cancer Center Answers.

Chu David, thank you so much. This has been a perfect session and we look forward to hearing from you in the future. Until next week, this is Dr. Edward Chu and Dr. Ken Miller from the Yale Cancer Center wishing you a safe and healthy week.