



TRANSCRIPT

S2.E2 – Sun Protection

Dr Blake Mumford: Welcome to season two of the *Spot Diagnosis*, a podcast about all things dermatological brought to you by the Skin Health Institute in Melbourne Australia. I am Dr. Blake Mumford, Education and Research Fellow at the Institute.

A/Prof Alvin Chong: I'm Associate Professor Alvin Chong, Director of Education and specialist dermatologist. Blake and I are your co-hosts. Due to the COVID-19 pandemic, this episode has been recorded by telephone conference call. In fact, today is the first day of the stage four lockdown in Melbourne. The opening theme would be recognisable to many of you: that was Sid the Seagull singing and dancing in the original Slip-Slop-Slap public health campaign launched by the Cancer Council Victoria in 1981. Today's episode is about sun protection and the role of public health campaigns in skin cancer prevention.

We're very fortunate today to be joined by two guest speakers. Ms. Shannon Jones is the program coordinator of the SunSmart program at the Cancer Council Victoria. We also have Associate Professor Peter Foley, Director of Research at Skin Health Institute, whom our readers might remember from an earlier episode on Psoriasis. Welcome both of you to the Spot Diagnosis.

Ms Shannon Jones: Thanks for having me.

A/Prof Peter Foley: Thanks for inviting me back, Alvin. Blake, welcome Tom had to put up with me last time.

Dr Blake Mumford: That's okay. You've got me. A new tradition for this season of the podcast is to ask our guest speakers to share a fun, obscure dermatological fact with our listeners. Does anything come to mind?

Ms Shannon Jones: Well, my fun fact is that skin cancer can appear anywhere on the body. Bob Marley actually died of a melanoma on his toe.

A/Prof Peter Foley: I'm sure Professor Chong will tell you, Blake, but I don't do fun, but I do have a dermatological fact, which is rather obscure and that's that my Bachelor of Medical Science project in 1985 was the first national skin cancer survey in Australia. It was actually the first globally.

Dr Blake Mumford: Careful, Prof Foley. That means that listeners can calculate how ancient you are. If you've tuned into any of our previous amazing episodes, you'll know that UV radiation is like a bully in the school yard. It throws sticks and stones at your poor skin cells until one day they snap transforming into cancerous monsters: BCCs, SCCs, and the dreaded melanomas. Australia

has the highest reported rates of skin cancer in the world, and the cost of managing these skin cancers is significant. Australia has bragging rights when it comes to public awareness of sun protection though. In 1981, Cancer Council Victoria launched the internationally recognised sun protection campaign, Slip-Slop-Slap. It has been estimated that the SunSmart program has been responsible for preventing 103,000 skin cancers and a thousand deaths due to skin cancer in Victoria alone from 1988 to 2003.

Dr Blake Mumford: Peter, can you tell us a bit about UV radiation and its effect on the skin?

A/Prof Peter Foley: Ultraviolet radiation is part of the electromagnetic spectrum emitted from the sun. There are a few terrestrial sources, but it's mainly from sunlight that we receive our ultra violet radiation. Ultraviolet radiation is shorter than visible light. We can't see it and it doesn't actually produce heat. Ultraviolet radiation is arbitrarily divided into UVC, which in effect is blocked out by the ozone layer; UVB, which is mostly filtered by window glass; and UVA. All elements of the ultraviolet radiation spectrum can cause acute or short-term effects on the skin and chronic or long-term effects.

The acute effects, everyone knows about, sunburn, red, swollen, painful skin, but tanning, thickening up of the skin, and also dampening down of the immune system in the skin are short term effects, but over time with repeated exposure, we cause aging of the skin, wrinkles, fine lines, bruising, redness of the skin, that mottled pigmentation that old skin looks like. Of course, the main concern is that ultraviolet radiation is the main driver of skin cancer: melanoma, basal cell carcinoma, squamous cell carcinoma and less common forms such as Merkel cell carcinoma.

A/Prof Alvin Chong: Peter, sun exposure does have some benefits. Right?

A/Prof Peter Foley: Vitamin D3 is formed in the skin as the result of ultraviolet radiation. However, repeated exposure to ultraviolet light actually starts to break down the vitamin D, whereas repeated exposure or prolonged exposure to ultraviolet light continues to cause damage to the skin and the cells of the skin. The other benefit of ultraviolet light is we often feel better sitting out in the sun and it's important for warmth as well.

Dr Blake Mumford: Shannon, a question for you now. Exactly how much does skin cancer cost the Australian health system and the public?

Ms Shannon Jones: Unfortunately in Australia we have over 2000 lives that are lost to skin cancer each year, about 1,400 of those are attributable to melanoma and about 660 are attributed to non-melanoma skin cancer, being a basal cell carcinoma and squamous cell carcinomas. The cost to the health system for skin cancer in Australia is estimated at over a billion dollars with rising use of immunotherapies. This will have grown and of course every one of those diagnoses is a person experiencing cancer with much broader impacts on family and carers. The good news, however, is that skin cancer is most often preventable.

A/Prof Alvin Chong: This has been briefly mentioned in our episode on melanoma, but how does one sun-protect? Shannon, can you remind us what Slip-Slop-Slap, Seek and Slide stand for?

Ms Shannon Jones: Sure. There's five fundamental steps to being SunSmart, Slip-Slop-Slap, Seek, and Slide that's sun protective clothing, sunscreen, a hat, shade, and sunglasses. We're slipping on some protective clothing that covers as much skin as possible. We're slopping on some broad spectrum 30 or higher sunscreen and using it within its used by date, applying and reapplying it according to the manufacturer's instructions. Now, the next bit's important. You need to apply adequate amounts of sunscreen, so that's about one teaspoon per limb, much more than most people think to apply. You need to apply it 20 minutes before going outside and then re-apply it every two hours or even more often if you've been sweating, swimming at the pool. Even if you apply it correctly, it's still not a hundred percent coverage and you shouldn't rely on sunscreen alone and should use it in combination with other forms of sun protection, such as the clothing, but also combining it with a broad-brimmed hat, shade and sunglasses, which is the Slap, Seek, and Slide element of the message.

Dr Blake Mumford: I think that's a good chance for a [skin tip](#). Relying on one component alone is not sufficient for sun protection.

Dr Blake Mumford: What types of sunscreens are there and how do they work?

A/Prof Peter Foley: In broad terms, there are two main sorts of sunscreens. There are what one's called the physical blockers, but they're probably best referred to as reflective sunscreens and there are what was called chemical sunscreens that are best thought of as absorbers. The reflective sunscreens, such as zinc oxide and titanium dioxide work a bit like putting paint on the skin. They reflect the ultraviolet light back. The absorbing sunscreens work by literally absorbing the ultraviolet radiation converting it to less active forms of light and being converted themselves to different chemicals.

Dr Blake Mumford: There's a lot of sunscreens available in supermarkets and pharmacies. The first things I see on the packaging is the SPF rating. What is SPF exactly?

Ms Shannon Jones: SPF stands for sun protection factor and that refers to a measure of how well it protects the skin from sunburn. SPF 30 sunscreen admits 1/30th of the ambient UV and an SPF 50 admits about 1/50th and so on. Sunscreens need to be applied liberally to achieve that SPF that's claimed on the label. We recommend using any sunscreen that's labeled broad spectrum, water resistant and SPF 30 or higher. All SPF 30 and 50 screens offer very similar UVB protection and there's only marginally more protection with an SPF 50 over a 30. There's only about a 1 to 2% difference between the two.

Dr Blake Mumford: I noticed that some of the sunscreens have a plus symbol like SPF 50+. Is this a marketing gimmick or do these sunscreens perform better than others?

Ms Shannon Jones: The plus sign simply means more than. For example, an SPF 50+ sunscreen must be at least an SPF 60 when it's tested in laboratory conditions. The broad-spectrum component refers to sunscreens which filter both UVA and UVB rays. UVB being a major cause of sunburn and increased skin cancer risk, and UVA being what contributes significantly to aging of the skin, as well as higher skin cancer risk.

Dr Blake Mumford: Peter, what about aerosol sunscreens? I know a couple of friends that like to use those because they're easier to apply. Do they offer adequate protection?

A/Prof Peter Foley: Whilst aerosol sunscreens may be more aesthetically pleasing to apply, they're actually quite difficult, particularly in windy conditions. You've already heard from Shannon that we need to apply about a teaspoon to each limb, so it's very difficult to get the right amount onto the skin and therefore we'd actually recommend people using sunscreen creams and or lotions.

Dr Blake Mumford: I think it's time for our next [skin tip](#). To correctly apply sunscreen, you should do so 20 minutes before going out in the sun, and you should reapply frequently. You should put on more than you think you need.

A/Prof Alvin Chong: Shannon, I actually thought I was being a very socially responsible guy by keeping tubes of sunscreen in my car, but it turns out this may not be such a great idea. Is that correct, Shannon?

Ms Shannon Jones: [laughs] Well, it was, well-meaning Alvin. Sunscreens are basically water and oil emulsion, so if the sunscreen is stored for long periods at temperatures say above 30 degrees, it can cause the emulsion to separate and result in a non-uniform mixture. It can't be relied upon to provide that same level of protection that's advertised on the packaging. You can in future keep that sunscreen in something like a cooler bag in the car, which might just help it to maintain that temperature, but it's important as we're also coming into the peak UV season, it's really important to check the expiry date on your sunscreen and buy a new one if it's past that date.

A/Prof Alvin Chong: Okay. Well, I see a lot of patients who tell me that they always wear sunscreen when they're trying to get a tan so they don't get burned so they don't have to worry. Shannon, what do you think about that?

Ms Shannon Jones: Well, there's nothing healthy about a tan. A tan is actually a sign that the damage has already occurred to the skin. It's an important reminder that no sunscreen will block out all of the UV and all the damage that you're receiving adds up over time to contribute to an increased skin cancer risk. If you're using sunscreen, you should make sure that you are using it in combination with other forms of sun protection, such as your broad-brimmed hat and long sleeve clothing.

Dr Blake Mumford: Peter, there's obviously a huge range in skin tones and therefore the amount of melanin that's protecting the skin from UV radiation. I definitely need to take sun protection seriously because I have very pale skin, but do people with much darker skin need it as much?

A/Prof Peter Foley: Skin cancer can occur in people of any skin colour. Whilst dose for dose, someone with very fair skin is more likely to develop skin cancer than someone with darker or pigmented skin, there's such good sun protection available now and it's actually acceptable to be wearing hats and clothing when outdoors. The very fair-skinned individuals end up getting less ultraviolet exposure, whereas those individuals who are less likely to burn and have darker skin probably end up with much higher doses of UV over time, and therefore have a greater risk of developing skin cancer. Anyone with any skin type can develop skin cancer, and it's important that everyone protect themselves in the sun.

Ms Shannon Jones: Just to add to that, Peter, mineral sunscreens can sometimes produce a whitening effect on the skin, so for cosmetic reasons these people may like to use absorbing sunscreens to reduce that ghosting effect if they have that problem.

Dr Blake Mumford: Peter is sunscreen allergy a recognised problem?

A/Prof Peter Foley: Allergy to the suncreening chemicals is very uncommon, can occur, but very unlikely, but suncreening chemicals are made up into products that contain preservatives, fragrances, things to make the sunscreen feel nice, and people are much more likely to develop an allergy to those extra ingredients in the sunscreen. There is an uncommon condition called photoallergy where putting a sunscreen on isn't a problem. Sunlight apart from causing burn doesn't cause a problem, but the sunlight may convert the sunscreen or the sunscreen in chemicals to ingredients or chemicals that the person may develop an allergy to or develop a rash upon exposure.

It can occur but sun-induced allergy, whilst photoallergy can occur, it's much more likely if someone reacts to a sunscreen, that allergy to one of the other ingredients in the sun cream, or they've developed an irritant reaction, so just irritation of the skin as a result of applying a chemical to the skin.

A/Prof Alvin Chong: One of the things that I really love is the SunSmart App, which is developed by Cancer Council. Shannon, can you tell us something about the SunSmart App?

Ms Shannon Jones: Absolutely, Alvin. The SunSmart app tells us the times of day when sun protection is required. The World Health Organisation defines UV index level of three is the level where it can cause skin damage and contribute to skin cancer risk. The App tells us the times of day when UV index levels are forecast to be above three. Therefore during those times, sun protection is recommended, but because our senses can't detect UV, it can be an invisible enemy, and that's where the App can be so beneficial. It uses the Bureau of Meteorology report UV forecast and the Australian Radiation Protection and Nuclear Safety Agency also has a real-time UV index rating within that feed. I use the app feature. For example, every morning I get a reminder on my

phone that tells me what times of the day sun protection is required, and that way I can plan the sun protective behaviors of myself and my family for the day ahead.

Dr Blake Mumford: I really love the SunSmart App, both my wife and I use it and it's a great way to make sure you don't get caught out on overcast days where the UV can be deceptively high.

Dr Blake Mumford: That brings us to our next **skin tip**. You should apply sunscreen if you're going outside and the UV index is three or more.

Dr Blake Mumford: I do have a confession to make. I'm one of those typical males that does not engage in manscaping. I don't like putting on creams, especially greasy ones like sunscreen. Are there any tips for hopeless cases like me, Shannon?

Ms Shannon Jones: [laughs] Yes, Blake, the great news is that there's so many different formulations of sunscreen available. You just need to really try them out and find one that suits you that meets those requirements of being an SPF 30 or higher, broad-spectrum sunscreen, and remember, it's not just about the sunscreen, so if you're still not happy with those formulations, you can use a rashie or another form of sun protection instead.

A/Prof Peter Foley: Find yourself a fashionably acceptable hat.

Dr Blake Mumford: Thanks for the tip, Peter. There was a study published in the Journal of the American Medical Association last year, which raised some concerns about sunscreen ingredients being absorbed systemically at levels above what was recommended by the Food and Drug Administration. We're obviously still using sunscreens, so I assume they're safe, right?

A/Prof Peter Foley: All sunscreen ingredients in any sunscreen available in Australia has to be on the Australian Register of Therapeutic Goods, so it's controlled by a regulatory body. One of the concerns is the presence of nanoparticles in sunscreens and the TGAs actually looked at this on a number of occasions dating way back to 2006 and repeated more recently, what they've concluded on each occasion is that on current evidence, all suncreening chemicals including titanium dioxide and zinc oxide, including the nanoparticles are unlikely to cause harm when used as ingredients in sunscreens, and when sunscreens are used as directed.

Dr Blake Mumford: Right, it sounds like the sunscreen chemicals are getting absorbed, but they're probably not causing harm. Is that right?

A/Prof Peter Foley: To date, that is what the evidence would suggest.

Dr Blake Mumford: Thanks, Peter. In 2014, two British newspapers published articles on a drinkable sunscreen called Harmonized H2O, which claimed to have an SPF of 30 and protect the skin via some kind of forcefield hovering over the skin. What sort of regulations exist for manufacturers of sunscreen in Australia? Can I just go to a vending machine, buy a bottle of water and slap a label on it and call it sunscreen?

A/Prof Peter Foley: The Australian sunscreens are regulated by an Australian standard, which relates to what is required to be labeled as sunscreen, and also, with regards to applying a sun protection factor or SPF label on the sunscreen. There are quite stringent laboratory conditions that have to be met for sunscreen to be tested under, and it's only then that people can label their product as a sunscreen in Australia.

A/Prof Alvin Chong: Shannon, the SunSmart program is one of the most successful public health programs in the world. In fact, when I go overseas, I find that the only people putting on hats and wearing clothing and rashies and putting sunscreen on tend to be Australians. Can you share with our listeners some of the wonderful work that this program has done, Shannon?

Ms Shannon Jones: Thanks, Alvin. It's great to have you as an ambassador for the program. Most people will know the SunSmart schools in early childhood programs because of the signs on the school and early childhood fences, and also the campaigns that the SunSmart program have contributed to the TV screens since the 1980s, but there's actually significantly, quite a lot more that we do as a program. We've worked across a number of other settings to improve skin cancer prevention and early detection strategies. We work with health professionals, we work with workplaces who also employ outdoor workers who are outside exposed to UV for long periods.

Many countries look to us to understand how to run programs in their states and territories, and we're actually the global leaders as a World Health Organisation collaborative center for UV. The SunSmart program has been in operation since the 1980s. We've got 90% of Victorian schools currently registered to the SunSmart membership program. We now see outdoor workers using sun protection at work as a result of our UV safety training program. By the increased shade in our public parks, our gardens, and the strong public support that we had that led to a ban on commercial Solariums.

Melanoma incidence has decreased among Victorians under 60 who have grown up exposed to our SunSmart program, and while the incidence is increasing among those who are over 60, it's reflective of the damage that was done prior to the program's inception and takes decades to develop. Recently, we've been really lucky that with philanthropic and government support, we've been able to develop a new and innovative evidence-based program for general practice to access equipment and training in skin cancer. We're quite a diverse program, but I do feel honoured to be part of it.

Dr Blake Mumford: The Skin Health Institute helps distribute sunscreens at events during the summer months. At one of these, I remember talking to a lady who was very worried about vitamin D deficiency and have relaxed sun protection because of this. How do people make sure they get enough vitamin D while protecting their skin at the same time?

A/Prof Peter Foley: The main source of vitamin D is production in the skin as a consequence of exposure to ultraviolet radiation, but that system is very quickly overwhelmed or saturated. We only need a very small amount of sun exposure on most days, ideally whilst exercising to achieve adequate vitamin D production and vitamin D stores. Continued ultraviolet exposure will result in increased damage to the skin and increase the risk of skin cancer. Continued exposure to ultraviolet radiation does not continue to increase excess vitamin D. In fact, it starts to break down the vitamin D. Alternative sources of vitamin D are food, particularly oily fish, but also vitamin D is available as a supplement at pharmacies.

Dr Blake Mumford: It sounds like you'd probably err on the side of advising sun protection, and then maybe if she becomes vitamin D deficient, she could start supplements.

A/Prof Peter Foley: I think ideally, people should not deliberately expose the skin to the sun in order to maintain their vitamin D levels. They should exercise out of doors. That's good for all of us, and it should be done outside the peak UV periods, so early in the morning, later in the evening to obtain small amounts of sun, but particularly protecting the head and neck where very high percentage of skin cancers occur. Obtain small amounts of light on areas off the head.

A/Prof Alvin Chong: Shannon, when I go for my annual beach holiday on Phillip Island, I see that nearly every adult has some degree of sunburn on their skin, but the children are dressed in rashies and hats and have all that sunscreen on. Why is there such a difference in behaviour?

Ms Shannon Jones: We do know that parents are really great at protecting their children, particularly at the beach, but they often forget about themselves. It's true children are extremely vulnerable with their sensitive skin and it's important to make sure that they are protected, but the UV is so extreme in Australia that we are all vulnerable and need to take it seriously.

A recent survey examined the sun protection practices of Australian adults and it found that the majority of parents reported that the young child's skin was regularly protected from the sun when outdoors. but less than half of those parents regularly protected their own skin themselves. It's great to see that the parents are protecting their children from the UV, but they're not always as careful when it comes to their own skin.

The other concern around that is that dads are actually worse than mums at protecting their skin, and these statistics are quite a worry because men are not only more likely to get skin cancer, but they're also more likely to die from skin cancer than women. We've got a bit of work to do in this area. We're working hard in the SunSmart program, establishing protective behaviours at an early age, throughout early childhood in schools programs, which helped to make SunSmart the norm, but role modeling is definitely really important from parents and older adults.

A/Prof Alvin Chong: Thanks, Shannon. Apart from this, what are some of the other issues which are facing the SunSmart program?

Ms Shannon Jones: Yes, we're in a very different environment today than what we were in the 1980s when the program first came to light. In the 1980s, we had pro-tanning billboards on our beaches as we approach the peninsula, for example. Today, more and more people are getting their sun exposure through incidental activity like mowing their lawns or walking at a park rather than the planned activity that they might have had in the 1980s that contributed to their risk.

As a not-for-profit, we always have way more ideas than we do money, and we're lucky that we've had the success that we've had over this time. The program has had long-term funding, but prevention always gets just a small fraction on the budget of the treatment component does despite skin cancers being largely preventable. We have been doing this since the 1980s, and sun protection can sometimes always be seen as a tick box, which makes people think they know it all, or we've already solved this problem and can move on. We haven't yet, and we still got more work to be done just as long as the sun is shining, and in fact, even when it's not shining, we need to just keep doing our work.

Dr Blake Mumford: We all wanted to share some myths about sun protection and ultraviolet radiation. Alvin, do you want to get us started?

A/Prof Alvin Chong: One of the myths is, well, I call them myths, but I have some patients who come in saying, "What's the point of protecting myself in the sun now? I've had 30 years of sun exposure and I'm getting some skin cancers." Well, the reality is that it's never too late to start sun protection. I've had patients who had multiple skin cancers, but then when they actually become very strict with sun protection, over a period of time, they get fewer and fewer, and actually their keratoses actually start to clear. It's never too late. That's one of the myths which I really want our listeners to take home. All right, well, Peter, you've got any?

A/Prof Peter Foley: One of my favorite myths is that a fake tan because it darkens the skin protects the skin from the sun. The reality is that most fake tanning lotions don't have an SPF. They're in effect dyes or stains on the skin and don't provide protection. People should not rely on a fake tan as a means of protecting their skin in the sun.

Dr Blake Mumford: Shannon, do you want to share one?

Ms Shannon Jones: Yes, one of the big ones I get is that you can't get burned on a cool cloudy day, and it's absolutely a myth. The UV peaks in the middle of the day where the temperature peaks later in the day, but lots of people think that they can feel themselves getting sunburned, but it's actually that UV, so sometimes it's those cooler, cloudy days that we don't always have the sun protection top of mind, but the UV levels on those days can be just as high. In fact, sometimes even higher than those warm sunny days as the scattered cloud can help contribute to that. That's where the SunSmart app can help to take out that guesswork.

Ms Shannon Jones: Another myth that we come across, we've all heard it. It's the person who reports it, they'd been outside walking on the beach, out on the boat on a windy day, and they've got reddening of the skin, they report as being wind-burned. I often ask them, have you ever

experienced this same sensation at night? Funnily enough, the answer's always no, it's the ultraviolet radiation from the sun that causes the burning, it's not wind burn. The wind can certainly dry out the skin making you more susceptible, but it's the UV that causes the damage that's actually sunburn.

Dr Blake Mumford: I've got one. President Donald Trump recently suggested that ultraviolet radiation might be able to kill Coronavirus. This is true for Coronavirus that might be found on the surface. Ultraviolet radiation can kill viruses and other pathogens on surfaces, but it can't do anything if the pathogen is inside the body.

Dr Blake Mumford: That concludes this episode on sun protection. We hope you found this episode irradiating, illuminating, sunlight, UV radiation. Yes, that was bad. Even by my standards.

A/Prof Alvin Chong: Thank you, Shannon and Peter, for sharing your expertise with us.

Ms Shannon Jones: Thanks for having me.

A/Prof Peter Foley: It's been a pleasure as always.

Dr Blake Mumford: We would also like to thank Jo Coughlin and Peter Monaghan at the Skin Health Institute.

A/Prof Alvin Chong: We hope you have enjoyed this episode of *Spot Diagnosis*. Remember these podcasts are not meant to replace medical attention. If you have a skin condition that requires attention, we strongly encourage you to see your medical practitioner.

Dr Blake Mumford: For listeners who want more illuminating information on the subject, a transcript of this episode and links to other resources can be found on our website spotdiagnosis.org.au.

A/Prof Alvin Chong: Please share *Spot Diagnosis* with your friends and colleagues. Rate and review us. Let us know what you think. We would really welcome and appreciate your feedback and any suggestions. Thank you for listening.

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