TRANSCRIPT

S3:E1 – Principals of Topical Treatment

Dr Blake Mumford: Welcome to season three 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.

Dr Anneliese Willems: And I am Dr Anneliese Willems. I'm a GP, Medical Educator, and Research Fellow at the Skin Health Institute. Blake and I are your hosts today, and in today's episode, we'll be exploring topical therapies. Before we begin, I have some exciting news for our GP listeners. *Spot Diagnosis* has been accredited with RACGP and ACRRM. There is one CPD point per episode, so approximately 9 to 10 points per season. All you need to do is subscribe to the podcast, listen to all the episodes, and fill in a brief evaluation and reflection form on spotdiagnosis.org.au.

Blake: Our guest today is Dr Sarah Brennand. Sarah is a Consultant Dermatologist who works at the Skin Health Institute, dermatology outpatients at Austin Health, and Ivanhoe Dermatology.

Sarah, our *Spot Diagnosis* tradition is to ask our guest speakers to share an interesting fact about dermatology. Do you have something in mind that is definitely spontaneous and not at all premeditated?

Dr Sarah Brennand: Thanks for having me on the show, Blake. People have been using topical therapies and cosmetics such as perfumed oil since ancient times. The ancient Romans have had long-necked glass bottles called unguentaria to keep these products in. A Sumerian clay tablet from 2100 BCE described a recipe for an aqueous paste with ingredients such as pulverised snake and bats dung, plant extracts and earths, to treat skin disease. And do you know what? Even today, people are still putting all kinds of s*** on their face?

Blake: Thanks for that great dermatological fact there, Dr. Brennand. All right, let's move on to the questions now. Everyone loves a cream, both to eat and to apply to a skin rash, and let's be honest, it's the only one that most doctors know, and patients definitely prefer it. So why use anything different? Ointments, lotions, gels, and foams. Are these just a marketing gimmick?

Sarah: It all comes down to choosing the right tool for the job. You need different formulations for different sites and different conditions. Preferably the formulations won't contain any bat's dung. Creams are popular because they're easy to use and vanish easily. They're a mixture of a small amount of oil with a larger amount of water, and appear white and creamy. Because they contain

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preservatives, and additives are needed to mix the oil into the water, sometimes these additives can cause stinging, especially on broken skin. Rarely they can even cause allergic contact dermatitis, but generally, creams are a go-to formulation for many topical medications.

Anneliese: And what about ointments? What are they?

Sarah: Ointments have a greasy oil base such as paraffin. They're clear and greasy or oily in consistency. Dermatologists love ointments because we know they are more effective at increasing absorption of the active ingredient due to their occlusive nature. They're particularly good for dry scaly conditions such as eczema and psoriasis. They're less likely to wash off on hands and feet. Patients don't prefer ointments as much because they're sticky and they don't vanish. Because ointments don't contain water, they're less likely to require preservatives or additives, and less likely to cause irritation or allergic contact dermatitis.

Blake: What about lotions and gels? They sound cooler, more modern, what are they?

Sarah: Lotions are liquids. They have a base of water or alcohol with medication or a small amount of oil added. A gel is a clear or white semi-solid agent that contains a gelling agent, a solvent such as alcohol, and a preservative. In some situations, we prefer to use lotion or gel because they often vanish into the skin.

Blake: And foams, what about them?

Sarah: Foams are solutions with a pressurised propellant. They're often easier for patients to use, and vanish easily. Foams sometimes also improve the penetration of the skin, for example in topical corticosteroids.

Anneliese: It sounds like so many different formulations exist, for efficacy, ease of use, and compliance.

Sarah: Yes, that's true, Anneliese. Compliance is a very important factor in choosing a formulation. If your patient has had a greasy ointment before and expressed a dislike for it, they probably won't put it on. Sometimes changing to a different formulation such as a cream or lotion that is easier for the patient to use will make all the difference to their condition improving.

Blake: Dr Brennand, it is definitely necessary for me to inform all our listeners that I have very hairy legs, but I'm not alone in this affliction. Is there a topical treatment that's right for me and my hirsute brethren?

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Sarah: Thanks for sharing, Blake. Depending on what we're treating, I would recommend a more liquid base such as with a lotion, gel, or foam, as these can spread more easily. If these are not available for the topical treatment you need, a cream will spread more easily in hair-bearing skin than an ointment. Hairy skin can be prone to folliculitis, particularly if it is occluded with a thick moisturiser. If a moisturiser is needed, a lighter moisturiser may be more beneficial for hairy skin, and will vanish more easily. A lotion or a light cream will be easier to use.

Anneliese: Time for our first **skin tip**. Choosing the right formulation can improve compliance and medication delivery. Ointments are great for scaly rashes or broken skin that might sting. Lotions, gels, or foams are great for hair-bearing areas, and creams are the go-to for most other scenarios. Did I get that right, Sarah?

Sarah: Yes, that's correct, Anneliese.

Blake: Dr Sarah Brennand, I'm so incredibly relieved that there's a perfect product to keep my hairy legs adequately moisturised. Thank you for that.

Sarah: Pleased to hear it, Blake**.**

Anneliese: Back on to our questions, what effect does the formulation have on potency?

Sarah: An ointment base increases occlusion, which means that there's increased hydration and temperature of the skin and limits wash off. All of these factors increase penetration of the active ingredient into the skin which increases potency compared with a cream or a less greasy agent. Adding certain absorption enhancers such as propylene glycol to the formulation also allow for increased penetration of the skin. An example of this is seen with Diprosone OV ointment which has greater potency than Diprosone ointment due to the addition of propylene glycol. The OV stands for optimised vehicle.

This means we have a greater potency, but we also need to take care due to the added risk of increased side effects. Additive ingredients improve the effectiveness of topical treatments and make them easier to use and last longer, but the downside is they can sometimes irritate the skin or rarely cause an allergic contact dermatitis.

Blake: People often laugh at Dermatologists because there's this perception that all they do is prescribe topical corticosteroids. I have never laughed at or made this joke, Dr Sarah Brennand. Regardless, they are commonly prescribed for skin diseases. Can you take us through the different potencies or strengths of topical corticosteroids?

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Sarah: In Australia, the commonly used topical corticosteroids are classified into three groups by potency as mild, moderate, and potent, and you can find tables of the classification in the Australian Therapeutic Guidelines and in Australian Prescriber. Examples of mild topical corticosteroids include 1% hydrocortisone, which is available over the counter without a prescription. It is available as an ointment, cream, spray, or solution. Examples of moderately potent corticosteroids include triamcinolone acetonide 0.02%, otherwise known as Aristocort cream or ointment, betamethasone valerate 0.02%, which is also known as Antroquoril, Celestone-M, or Betnovate 1/5th. These moderately potent corticosteroids are available in 100-gram tubes.

Examples of potent corticosteroids include methylprednisolone aceponate 0.1%, known as Advantan, mometasone furoate 0.1%, known as Elocon, Zatamil, or Novasone, and betamethasone dipropionate 0.05%, otherwise known as Diprosone or Eleuphrat. Most of these are mainly available as ointments and creams, but some such as mometasone are available as lotions. They're available in 15-gram tubes and with streamline authority multiple tubes in repeats are available for patients with widespread and severe skin conditions.

Blake: We will include links to those corticosteroid potency tables in the podcast description. With topical corticosteroids, the generic medication is often accompanied by a percentage. What does this percentage mean?

Sarah: The percentage of the medication means how much of the topical agent contains active ingredient. Confusion sometimes arises when people try to compare different corticosteroid molecules that have differing potency. For example, 1% hydrocortisone has less potency than 0.1% mometasone furoate ointment.

Anneliese: Occasionally we recommend a topical treatment be used under occlusion, for example, under gladwrap or a bandage. Is this something best left to the specialists?

Sarah: Occlusion with gladwrap, vinyl gloves, cotton gloves, or socks, or any type of bandages, can help to increase drug delivery by 10 to 100 times. It is usually used to improve the efficacy of topical corticosteroids. Occlusion is used when skin surfaces are thick such as on the palms and soles, or when the skin condition has thickened skin associated with it, such as in hypertrophic lichen planus. This can lead to more rapid improvement, but also an increased risk of side effects.

Anneliese: What kind of side effects can occlusion give?

Sarah: Side effects of occlusion can include skin maceration due to over hydration, and with topical corticosteroids, it can cause folliculitis, miliaria, and skin atrophy. It's best to give guidelines or limits for how long to use the occlusion for. For example, for three days with topical corticosteroids,

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and have regular review to check progress. If used for prolonged periods, such as weeks to months, it can lead to permanent skin thinning and striae.

Blake: Are there any special parts of the body where you would favor one type of topical corticosteroid over another?

Sarah: Mild topical corticosteroids such as 1% hydrocortisone are used on the face and flexures. On the scalp, ears, trunk, and non-flexural areas of the limbs, it is safe to use a potent topical corticosteroids such as betamethasone dipropionate. In the axilla be careful using potent topical corticosteroids for prolonged periods. The occlusion effect of flexures can lead to atrophy.

Anneliese: As a GP, I've noticed that a lot of topical corticosteroids are labeled by the pharmacist to use sparingly. Why is this?

Sarah: Unfortunately, the term "use sparingly" has contributed to corticosteroid phobia in the community, and promotes the idea that the topical corticosteroid should only be used if the eczema or other skin condition being treated is severe. One Australian study published in 2016 showed that 54% of pharmacists counsel patients to apply topical corticosteroids sparingly. In Australia, apparently the phrase "use sparingly" is sometimes automatically printed by pharmacy software. It is better to recommend that patients use the topical corticosteroid liberally, and then carefully rub or massage into inflamed skin. The fingertip unit can be used as a guide to how much topical corticosteroid should be used.

Blake: And can you explain exactly to our listeners what a fingertip unit is?

Sarah: A fingertip unit is the amount that can be squeezed from a tube of ointment, cream or gel onto the end of the index finger from the distal skin crease to the fingertip. This amount should cover an area equivalent to twice the size of a flat adult hand with the fingers together, so the fingers plus the palm. You can obtain a table to guide amounts for topical corticosteroid usage in children from the Australian Medicines Handbook, which describes how many fingertip units are required to cover different body parts according to age.

So for example, in a three-month-old, you would only need one fingertip unit to cover the face and neck, but in a 10-year-old, you would need two and a half fingertip units to cover the same area.

Anneliese: We'll include a link to the Australian Medicines Handbook table in the podcast description. Now, Sarah, there's a lot of concern from patients that all corticosteroids, even topical corticosteroids, are dangerous. Why do you think that is, and is there any truth to this?

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Sarah: There's a lot of fear and concern by patients, their families, pharmacists, and healthcare workers surrounding the use of topical corticosteroids. One of the most frequent misunderstandings is around skin atrophy or thinning. This fear is not well founded. It is based on low quality early studies from the 1960s to 1980s that had low numbers of patients, and do not reflect current topical corticosteroid use. For example, in some of the studies, potent topical corticosteroids were used for prolonged continuous periods under occlusion in flexural areas. While under these circumstances, topical corticosteroids can cause skin atrophy, more recent studies have shown that irreversible skin thinning does not occur if topical corticosteroids are stopped when the dermatosis has resolved. Patients also sometimes misinterpret the changes of active atopic eczema or dermatitis to be evidence of skin thinning. Education about what skin changes require treatment helps to reassure patients.

Blake: It's **skin tip** time. Skin atrophy is a rare complication of topical corticosteroids, and does not occur when they are stopped when the dermatosis has resolved.

Anneliese: Skin striae and the HPA axis suppression are Internet favorites when it comes to warning people away from topical corticosteroids. Are these side effects that we should be worried about, Sarah?

Sarah: So, striae or stretch marks occur most commonly in patients undergoing rapid growth, such as in children or teenagers, and they can sometimes occur in rapid weight gain or in pregnancy. Topical corticosteroids can sometimes cause striae if used inappropriately. For example, if they're used under occlusion, or if a potent topical corticosteroid is used in flexural areas such as the axillae or in the inguinal region. There is only low level evidence of topical corticosteroids causing striae when used correctly.

Physiological or reversible HPA axis suppression can occur when potent or super potent topical corticosteroids are used over large areas for a prolonged period of time, or when occlusion is being used. However, clinically significant or pathological adrenal suppression is very rare, especially in children. It is not reported with routine management of eczema in children.

Anneliese: How safe are topical corticosteroids when used in the periorbital area?

Sarah: There are a few case reports of ocular complications in patients who used potent or super potent topical corticosteroids for months to years around the eye. Usually, we would recommend that mild topical steroids, that is 1% hydrocortisone, be used on the eye area. If a patient requires long-term intermittent use of corticosteroids around the eye, consider using a topical calcineurin inhibitor such as pimecrolimus cream, otherwise known as Elidel®.

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Blake: I have always been a little bit nervous about using topical corticosteroids on the face. I didn't want to make things worse by causing perioral or periorificial dermatitis. Am I being too cautious?

Sarah: Topical corticosteroids from the moderate to potent group can cause an acne-like reaction on the face if used for prolonged periods. In some predisposed individuals, even mild topical corticosteroids such as 1% hydrocortisone can cause periorificial dermatitis. This presents with multiple erythematous papules and sometimes pustules around the mouth or eyes, usually with sparing immediately around the lips. If this occurs, the topical steroids and any other creams should be stopped.

Blake: **Skin tip** time. Topical corticosteroids are an incredibly safe treatment, and their benefits far outweigh the risks of untreated eczema.

Anneliese: I once had a patient who had moderate eczema on her arms, and she came in concerned that it was not improving despite using a potent topical corticosteroid cream daily for one month. I asked her to bring the tube in. In one month, she'd barely gone through half of the 15 gram tube. She'd just squeezed out a pea sized amount and was trying to spread it all over her arm. Can you tell us a bit more about underdosing, Sarah?

Sarah: This is a little bit like taking a quarter of a paracetamol tablet for a headache, it's not going to work. Essentially, if your patient doesn't put enough topical corticosteroids on their skin, they're not going to get better. You need to address corticosteroid phobia at the outset. Find out if they have any fears regarding the cream and address them. Tell your patient that when they go to get their script filled, that they may be advised to apply the steroid sparingly. This usually gets a smile or a laugh, and if they're not told that, then that's a bonus. Tell them that they won't get better if they don't put enough on, and tell them about fingertip units.

An alternative is to describe how many tubes you would expect them to get through in a week or in one application. So for example, to apply topical steroid to an adult's entire lower limb in one application, they would need a third of a 15 gram tube. Tell them that side effects are very unlikely to occur if they use the topical steroid correctly.

Anneliese: In general practice, I found it helpful to say what to use and where. For example, with a written plan. What are your thoughts about these?

Sarah: I think written plans are essential. Often patients don't recall what we tell them in a clinical setting, and it helps to avoid confusion, particularly if you've prescribed a different cream for the face and for the body and limbs. So an example is, I might say, apply the potent topical steroid twice a day to the upper and lower limbs for up to three weeks as needed. Then have a break using only the moisturiser, and if the rash recurs, the three week cycle can be restarted. Explain that side

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effects are usually very uncommon, except when topical steroids are used for too long. For example, weeks to months without a break, or if too potent agents are used on the wrong site.

Anneliese: And it's time for another **skin tip**. Make sure you let your patients know how much topical corticosteroid they should apply. The fingertip unit is a great way to guide patients on the right amount to apply. Written plans can also be very helpful too.

Blake: Can topical treatments be applied to areas of broken skin, and for eczema, what if there's evidence of infection? Is it still safe to use topical treatment?

Sarah: Yes, so topical treatments can be applied to broken skin. Creams are more likely to sting than ointment. Patients are often advised not to apply topical corticosteroid ointments to eczema when the skin is broken or secondarily infected, but that is actually a myth. The expert consensus is that topical steroids should be applied to infected or broken skin and atopic dermatitis. Moderate to potent topical corticosteroids are recommended for children with atopic eczema, with superimposed bacterial or viral infection, provided that the infection is also treated if needed.

Anneliese: Let's finish off with moisturisers, a topic close to my heart the older I get. So I'm standing in the chemist in front of a huge display of lots of different moisturisers. How do I decide which one to get?

Sarah: It can be overwhelming with the huge variety of moisturisers available in the market. There are several factors in the choice of what kind of moisturiser you want to buy. Generally speaking, we want to have a cream that will make the skin less dry and scaly, and that won't cause side effects like irritant or allergic contact dermatitis. We try to choose a moisturiser that is fragrance free and doesn't contain botanical ingredients like essential oils. Although they often smell amazing, fragrance is one of the most common causes for allergic contact dermatitis.

Anneliese: I suffer from atopic eczema myself, and sometimes have very dry skin. What moisturisers are a good choice for me?

Sarah: Moisturisers can be divided into light, intermediate and heavy moisturisers. So for very dry skin, a heavier moisturiser might be chosen, such as a mixture of 50% white soft paraffin and 50% liquid paraffin. There are commercial preparations available at chemists for this. For someone with skin that is only slightly dry, they might only need a light moisturiser such as aqueous cream. For someone who can't tolerate a heavy moisturiser because it's too greasy, you might choose an intermediate moisturiser such as 10% white soft paraffin, 10% glycerin in aqueous cream.

The drier the skin is, usually the oilier you want the moisturiser to be. But it also has to be acceptable for the patient to use. And most patients want their moisturizer to vanish reasonably well, so

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choosing the right moisturiser can take some trial and error as what is acceptable for one patient might not be the right one for another. Discussing what has and hasn't worked for the patient before is useful, and having samples for patients to try can sometimes help the patient make the right choice. Knowing something about the different ingredients in moisturisers can also help.

Anneliese: I know I love trying lots of different moisturiser samples.

Sarah: Don't we all?

Blake: Definitely. Okay. So, to finish up, we-we're going to have some real world scenarios which will get Dr Sarah Brennand, Consultant Dermatologist, to give us some advice on.

First up, we have a seven-year-old boy with worsening atopic eczema. He has dry, itchy and scaly skin affecting his face, trunk and limbs. And he is miserable. His parents are worried about using topical corticosteroids. So they have been applying a moisturiser daily, and a minuscule amount of 1% hydrocortisone to the worst affected areas. Dr Sarah Brennand, what would you do?

Sarah: Okay, so we need to address any fears that the parents have regarding topical corticosteroids. Ask them what their concerns are, explain that topical corticosteroids are safe when used correctly, and as long as it's ceased when the skin condition has improved. Explain that their child's skin won't get better if they don't use enough of the topical corticosteroid, and if the corticosteroid isn't strong enough for the body area we're treating. Atopic eczema can seriously affect quality of life, so it's important to treat it.

I would recommend using Pimecrolimus, otherwise known as Elidel cream on the face one to two times per day for up to three to four weeks, and a potent topical corticosteroid ointment, one to two times per day on the body and limbs for up to three weeks. I would make sure that they're using the right moisturiser. I would give them a written plan and discuss how much topical corticosteroid would be required using fingertip units as examples.

I would also recommend using some cool compresses over the top of the creams to the worst affected areas, for one to three days. I would arrange a review to check progress and to ensure they're not treating post inflammatory changes.

Anneliese: Time for another question. A 35-year-old-man has known psoriasis and has itchy plaques in his scalp, and scaly red plaques on his elbows and lower limbs. What topical treatments can be used here?

Sarah: So he could start with a potent topical steroid lotion for the scalp, such as Mometasone Furoate lotion, otherwise known as Novasone, Zatamil or Elocon, at night for up to four weeks as

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needed. If there's been an insufficient response to topical corticosteroids on the scalp previously, he could use Daivobet gel daily for four weeks. Daivobet contains calcipotriol, which is a vitamin D analog and betamethasone dipropionate.

For the plaques on the elbows and lower limbs, he could start with a potent topical steroid ointment or cream daily for three to four weeks as needed. Again, if there's been previously been an insufficient response to potent topical corticosteroids, consideration could be given to prescribing Daivobet ointment or Enstilar foam, which both contain calcipotriol and betamethasone dipropionate.

Blake: All right. That brings us to our final and most challenging scenario for Dr Sarah Brennand. An 18-year-old woman has eczema on her face and has been using Mometasone Furoate cream for her rash on and off for nearly six months. However, when she stopped using it, the rash flares and looks like red dots around her mouth and eyes. She is horrified. Dr Sarah Brennand, what do you think is happening, and what should we do?

Sarah: I never thought periorificial dermatitis could be so dramatic.

Anneliese: Oh, I'm a GP.

Sarah: [laughs].

Anneliese: It can be, I have patients coming in all the time saying look at this.

Sarah: No, but the way Blake tells it i'm on the edge of my seat.

Anneliese: I know.

Sarah: [laughs]

Blake: It's an important issue. Right?

Sarah: Well, Blake. This scenario is quite common, and it's consistent with periorificial dermatitis. This is an acneiform eruption that occurs on the face, often triggered by the use of moderate to potent topical corticosteroids on the face. It's important to ask the patient to stop using the Mometasone Furoate cream and advise them not to restart. It can be treated with a six-week course of systemic antibiotics, such as oral erythromycin or doxycycline. When patients are predisposed to periorificial dermatitis, it's often best to manage their ongoing atopic dermatitis with Pimecrolimus 1% cream and a light moisturiser.

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Blake: That concludes our episode on topical therapies. We hope we have touched on some topical issues without laying it on too thick.

Anneliese: Thank you, Sarah, for your time and sharing your expertise with us.

Sarah: Thanks, Anneliese. It was a pleasure.

Blake: We would also like to thank Associate Professor Alvin Chong at the Skin Health Institute for overseeing the podcast production, as well as Jo Coughlin.

Anneliese: We hope you have enjoyed this episode of *Spot Diagnosis*. Remember, these podcasts are not meant to replace medical advice. If you have a skin condition that requires attention, we strongly encourage you to see your medical practitioner. And a reminder that GPs can get CPD points through RACGP and ACRRM. Just go on to spotdiagnosis.org.au.

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

Anneliese: And please share *Spot Diagnosis* with your friends and colleagues. Rate and review us. Let us know what you think. We look forward to hearing your feedback and any suggestions.

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