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Dr. Stuart Maddin, Chairman of SkinCareGuide, is one of North America's leading dermatologists, and is the author of numerous dermatologic journal articles, monographs and textbooks. In addition to providing consultative input to a number of pharmaceutical and biotech companies, he is the director of the clinical trials unit at the Department of Dermatology and Skin Science, University of British Columbia. Dr. Maddin has also acted in an advisory capacity to a number of drug regulatory agencies, such as the Health Protection Branch (Ottawa), the AAD-FDA Liaison Committee, and WHO (Geneva). He is the founder of the Dermatology Update symposia, now in its 25th year. As well, he is Past President of the Canadian Dermatology Association and served as Secretary-General of the International Committee of Dermatology — International League of Dermatological Societies.

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Dr. Lauren Yee is a family practitioner with a special interest in general dermatology. She is particularly interested in the areas of acne and atopic dermatitis, and has been conducting numerous dermatological clinical studies since 2000. Dr. Yee is a graduate of the University of Toronto and has a thriving solo medical practice located in Windsor, Ontario, which she established in 1990.



Update on Topical Approaches for Managing Scalp Psoriasis

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Introduction

Patients suffering from scalp psoriasis frequently seek medical care because of the persistent discomfort and social embarrassment caused by the visible flakes that are shed onto clothing. However, the presence of hair makes it challenging to apply medication to the scalp. In addition, available therapies often do not facilitate ease of use and produce irritation and cosmetically unpleasant effects that can discourage patient adherence. Such therapeutic challenges often impede patients from deriving the full benefits from prescribed treatments. This article explores some of the current and new advances in the topical management of this common skin disorder and offers strategies that may improve treatment outcomes.

Diagnosis

- Psoriasis can be limited to the scalp, but it frequently involves more than one area of the body.
- Common concurrently affected sites include elbows, knees, buttocks, fingers, and nails.
- Between 50%-80% of all psoriasis patients have scalp involvement at some stage of their condition.¹
- The scalp may be the first site to show psoriasis; these lesions usually persist longer than those appearing elsewhere on the body.
- Psoriasis presents as well demarcated plaques that are characterized by scaling and erythema. Patients can experience varying degrees of itching and flaking.
 - Patches are commonly located on the occipital scalp, over the ears, and along the frontal hairline.
- Seborrheic dermatitis can mimic psoriasis, but it tends to be more diffuse, less scaly, and has a more waxy texture. It can also spread down the forehead, and involve the nasolabial folds and eyebrows.
 - Psoriatic scales are generally thicker, drier in appearance, and skin may crack and bleed.
 - Scalp psoriasis can coexist with seborrheic dermatitis, and the persistence of yeast organisms in both conditions may share similar etiologies, although a skin culture is rarely helpful.
- Tinea or fungal infections frequently involve the hair shaft, leading to hair breakage, scaling, and swollen lymph nodes in the posterior cervical chain. It is more prevalent in children.

Therapeutic Considerations

- The presence of hair and scale build-up can interfere with medications reaching the scalp.
- Initial and maintenance strategies aimed at reducing thickened scales may be required for medications to effectively penetrate the scalp.
- Certain vehicles, such as ointments and creams, can be messy to apply and adhere to the hair shaft, resulting in a greasy appearance and prompting more frequent hair-washing. In addition, it is possible that insufficient quantities of the drug actually reach the scalp, which can render the treatment ineffective.
- Poor adherence can result from issues surrounding cosmetic acceptability, which leads to loss of effect and patient dissatisfaction with the treatment.
- Convenient and/or simplified dosing can improve medication adherence.
 - A study involving psoriasis patients demonstrated substantially higher rates of adherence with once-daily dosing (83%) vs. a twice-daily regimen (44%).²
- The vehicle can be as important as the active agent in achieving efficacy, tolerability, and treatment adherence.
 - Vehicles significantly impact the penetration and potency of active ingredients - with lotions, gels and foams being superior to creams and ointments.
 - Alcohol-based solutions can cause stinging and irritation.
 - Future management may include optimized vehicles (e.g., quick-break gel or foam, or lotions).

Topical Treatment Options for Scalp Psoriasis

When compared with phototherapy and medicated shampoos, topical agents are most commonly prescribed for scalp psoriasis. Although there is a broad range of topical therapies, factors that can limit treatment options include irritation, convenience, ease of application, cosmetic acceptability, effectiveness for reducing itch and scale, and safety for prolonged use without loss of benefit. A therapeutic approach that addresses as many of these variables as possible will improve treatment outcomes.

Tar

- Tar compounds slow the proliferation of skin cells and reduce inflammation, itching, and scaling.
- Following treatment, the agent should be removed using any mild, unmedicated shampoo.
- Acceptance by patients is limited due to irritation, staining, and tar's odiferous quality.
- These compounds can cause folliculitis.
- There is concern that tar may be carcinogenic.

Corticosteroids

- Potent and ultrapotent corticosteroids (e.g., betamethasone dipropionate, clobetasol propionate) are widely used for their anti-inflammatory, immunosuppressive, and antiproliferative properties.
- They are commonly available as solutions, lotions, gels, and shampoos in a range of potencies.
- Corticosteroids can include keratolytic agents like salicylic acid.
- Prolonged use can result in tachyphylaxis.

Vitamin D3 Analogues (Calcipotriol/Calcipotriene)

- Calcipotriol promotes normal keratinization, suppresses inflammatory responses, and modulates both epidermal proliferation and differentiation.
- They are available as solution or gel formulations.
- There is no loss of effect with prolonged use.
- They are helpful for reducing scaling, but their usefulness for controlling erythema and itch is limited.

- To avoid the potential effects on calcium metabolism, limit use to 15g daily, or 100g weekly.³
- Due to the degradation of corticosteroids by vitamin D3 analogues, concurrent application should be avoided.

Calcipotriol + Corticosteroid in Combination

- Stable commercial preparations of calcipotriol + betamethasone dipropionate have the dual benefit of controlling scalp psoriasis symptoms with a low risk of skin atrophy and without tachyphylaxis.^{1,4}
- Randomized, double-blind, controlled studies showed that the two agents in combination have a more rapid onset of action and greater efficacy than monotherapy with either agent.^{5,6}
- A two-compound formulation of betamethasone dipropionate 0.5mg/g + calcipotriol 50µg/g in a novel gel vehicle received Health Canada approval in November 2008 for the treatment of scalp psoriasis.
 - This new gel formulation achieved marked improvement to clearance in 92% of scalp psoriasis patients following once-daily use for up to 8 weeks.⁷
 - The gel vehicle improves cosmetic acceptability, minimizes irritation, facilitates ease of use, is odourless, and offers once-daily dosing.
 - Investigations reporting benefits of the new formulation did not use pretreatment or concomitant therapy with a descaling agent.^{4,5,6,7}
 - Optimal effects may be achieved if the agent remains on the scalp overnight or during the day.
 - After the treatment period, the agent should be removed by applying any mild, unmedicated shampoo to dry hair. Gently rub the shampoo into hair (in the treated area) to emulsify the gel medication, then wet hair, lather, and rinse.
 - Recently published findings support the new agent's safety, tolerability, and efficacy when used once-daily, as needed, for up to 52 weeks.⁴

Topical Treatment Options for Scalp Psoriasis (continued)

- Studies report very similar rates of side-effects for all treatment groups, including placebo; the most common adverse event was pruritus.³
- To avoid the potential effects on calcium metabolism, limit use to 15g daily, or 100g weekly.³
- Safety for use in pregnant and nursing women, as well as in patients aged ≤18 years, has not been established. It is not recommended for these patient populations.

Counseling of Patients with Scalp Psoriasis

- Patients consider scalp psoriasis to be the most difficult aspect of their disease, which can lead to loss of self-esteem, social stigmatization, and even depression.
 - A study showed that 1 in 3 patients are self-conscious of their scalp psoriasis, and 1 in 5 report depressive symptoms.⁸
 - As part of routine clinic assessments, evaluate psychosocial aspects and quality of life.
- Scratching and picking at scales can aggravate lesions and lead to spreading of the psoriatic plaques over a larger surface area (Koebner phenomenon).
- Reinforce management strategies during clinic visits (e.g., proper medication use, side-effects, antipruritic measures, cleansing, and grooming techniques).
- Practitioners can explain to patients that the major goals of treatment are to relieve the itching and reduce the scaling. Antihistamines are not effective in controlling the itch.
- Wearing light-coloured clothing can minimize the visibility of flakes.
- Patients can use OTC shampoos containing salicylic acid or tar to help soften and release the scales.
 - Inform patients of the potential for tar shampoos to stain light-coloured hair.
- Suggest patient participation in national organizations or web-based social networks. Psoriasis virtual communities can provide education, as well as psychological and social support.

Tips for Improving Treatment Adherence

- Nonadherence to treatment occurs in up to 40% of patients with psoriasis.⁹ Fears about treatment side-effects, the nuisance of using prescribed therapies, and dissatisfaction with the clinic consultation can discourage adherence.
- Devote time to patient education. When patients are given accurate information about their psoriasis and the selected treatment, their understanding of the therapeutic objectives and the negative impacts of nonadherence improves.
- Clinical strategies that can promote adherence include individualizing the treatment approach, encouraging patient input when making therapeutic decisions, choosing fast-acting topical agents, selecting treatments that facilitate ease of use (i.e., simple and convenient dosing), and regular monitoring of progress while undergoing therapy.

Conclusion

With the potential for escalating morbidity, diminished quality of life, and significant financial burden, it is essential for physicians to establish an ongoing rapport with psoriasis patients in order to successfully manage both the physical and emotional aspects of this chronic disease. Continuing efforts aimed at addressing unmet therapeutic needs have led to the development of new topical antipsoriatic therapies that are safer and more effective. The advent of two-compound agents that can target multiple pathogenic factors are proving to be particularly useful. The investigation of novel treatment combinations and new compounds for scalp psoriasis are ongoing in the quest to provide further enhancements in efficacy that will lead to improved patient adherence and treatment outcomes.

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Non-Pharmacologic Management of Atopic Dermatitis

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Background

Atopic dermatitis (AD) or eczema is a chronic, relapsing skin condition that can lead to xerosis, pruritus, and patches of dermatitis. Coping with the physical and emotional aspects of AD can significantly impact the quality of life. It is most common in childhood, as many patients seem to outgrow the condition by adulthood. The etiology of AD is complex and not fully understood, but contributing factors include a dysfunctional skin barrier that allows moisture to escape and irritants to enter, as well as inflammatory mediators. There is increasing interest in exploring the feasibility and efficacy of using non-drug alternatives as adjuncts to conventional pharmacologic approaches. Lifestyle modifications that can aid AD management will also be reviewed.

Diagnostic Features

- Chronic or chronically relapsing dermatitis
- Typical morphology and distribution (e.g., flexural erythema, excoriations, lichenification, xerosis)
 - Facial and extensor involvement in infants and children; flexural dermatitis and lichenification in adults
- Early age of onset – AD affects up to 20% of children¹
- Intensive itching that can cause disruptive sleep or difficulties in concentration
 - Breaks in the skin from scratching can lead to secondary infection
- Personal or family history of atopy (i.e., asthma, allergic rhinitis, AD)
- Hyperreactivity to environmental triggers

Defects in the Skin Barrier

There is growing data to support the longstanding theory that AD may be caused by a genetic defect in the epidermis, permitting environmental irritants, microbes, and allergens to penetrate, which in turn elicit inflammatory responses.²

- The filaggrin gene contributes to the formation and function of the skin.
- Deviations in the gene coding for filaggrin can cause skin barrier defects that contribute to AD.
- Defects in skin barrier development prevent adequate levels of antimicrobial peptides to form in the epidermis. Consequently, bacterial and viral infections may occur in affected lesions.

Treatment Options

- | | |
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| <ul style="list-style-type: none"> • Avoidance of triggers • Emollients/moisturizers <ul style="list-style-type: none"> • Standard adjunct for prevention and maintenance • Topical corticosteroids <ul style="list-style-type: none"> • The cornerstone of AD therapy • Potential for tachyphylaxis, skin atrophy, and systemic side-effects, especially in long-term use • Topical calcineurin inhibitors (TCIs) <ul style="list-style-type: none"> • Useful when conventional therapies fail or are unsuitable • In 2006, an FDA boxed warning was issued for TCIs over concerns of immunosuppression and the potential risk of malignancy following long-term or continuous use. | <ul style="list-style-type: none"> • Antimicrobials for infection <ul style="list-style-type: none"> • Topical or oral antibiotics may be prescribed to treat infected lesions • Overuse or prolonged treatment increase the risk for developing antibiotic resistance • Oral antivirals can be used for cases of eczema herpeticum (eczema infected with herpes virus) • Oral antihistamines for pruritus <ul style="list-style-type: none"> • Often tried for intractable itch, but little evidence exists to support their antipruritic effect • Systemic corticosteroids, systemic immunosuppressants and phototherapy <ul style="list-style-type: none"> • Reserved for severe disease |
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Moisturizing and Bathing

Moisturizers

- Daily moisturization is essential for managing AD, both during and between flare-ups.
- A randomized controlled study demonstrated that moisturizers can improve the barrier function of skin; however, the effects are determined by individual product composition.³
- Basic essential components of moisturizers include emollients and humectants.
 - Emollients provide a protective film by filling-in spaces between cells and restoring lost lipids to prevent transepidermal water loss (TEWL).
 - Commonly used emollients include animal oils, butyl stearate, cocoa butter, lanolin, lipids, mineral oil, petrolatum, and shea butter.
 - Petrolatum is the gold standard emollient; its non-sensitizing and highly occlusive properties are effective against TEWL.
 - Ceramides are lipid molecules that are important components of skin structure; they improve the skin barrier by limiting TEWL and preventing the entry of irritants.
 - AD patients have significantly fewer ceramides in their stratum corneum.
 - Lipids can be replaced topically with a ceramide-dominant emollient.
 - A new class of emollients, now available in the US, aims to replenish certain molecules that are deficient in the skin of AD patients. These nonsteroidal moisturizers are very expensive, but study findings indicate their efficacy and safety for mild to moderate AD.⁴

- Humectants aid in the absorption and retention of moisture, and soften thickened skin.
 - Commonly used humectants include glycerin, hyaluronic acid, lactic acid, propylene glycol, panthenol, silicones, and urea.
 - Glycerin's high affinity to attract moisture to the skin makes it the most widely used.
 - Panthenol (vitamin B5) functions as a humectant, emollient, and moisturizer. Studies examining adjuvant care with panthenol showed improved hydration and reduced dryness, itching, and inflammation.⁵

Choosing a Moisturizer

- Generally, the greasier the better. Bland ointments, such as petrolatum, are non-irritating and provide an excellent barrier, but they can be perceived by patients as being too thick.
- Less greasy creams and lotions may be more irritating.
- Some acids (e.g., salicylic acid and lactic acid) and humectants (e.g., urea) can be poorly tolerated by eczematous skin. Avoid their use in infants and small children due to the risk of systemic absorption.

Bathing

- Bathing first, and then applying a moisturizer while the skin is still damp, will help trap moisture in the skin. Medicated treatments should be applied to any dermatitis and moisturizers to unaffected skin.
- Bathing more than once daily is not always practical. Although, during flare-ups, several short baths followed by daytime applications of a moisturizer can be helpful.
- Baths (or showers) should be taken with warm (not hot) water and limited in duration.

Advancements in the Use of Natural Anti-inflammatories

Increasingly, patients prefer to supplement medical treatments with over-the-counter skin care products that incorporate natural ingredients. Plant-derived extracts are one of the largest categories of additives found in moisturizers. A few notable compounds have emerged following scientific evaluation, which supports their therapeutic benefits for alleviating symptoms associated with AD and other inflammatory skin conditions.⁶

Aloe Vera

- Applications include its use as an anti-inflammatory, analgesic, antipruritic, antioxidant, and wound healing agent.

Chamomile (*Matricaria recutita*)

- Topical use can relieve skin irritation. The active components (α -bisabolol, α -bisabolol oxide A and B, matricin) inhibit enzymes that mediate inflammation and suppress histamine release.

- Its anti-inflammatory effect is approximately 60% of that elicited by hydrocortisone 0.25%.⁷

Colloidal Oatmeal

- It has multiple active components that include enzymes, flavonoids, lipids, proteins, polyphenols (avenanthramides), polysaccharides, and vitamins.
- Avenanthramides are potent phytochemicals that inhibit the release of proinflammatory cytokines, resulting in reduced contact hypersensitivity and inflammation.⁸
- It also has antioxidant, anti-irritant, antihistaminic, and immunomodulatory effects.
- Colloidal oatmeal is one of few natural ingredients approved as a skin protectant by the US FDA.

Feverfew (*Tanacetum parthenium*)

- Its broad spectrum of clinical applications is attributable to its potent anti-inflammatory, antioxidant and anti-irritant properties.

Advancements in the Use of Natural Anti-inflammatories (continued)

- Parthenolides are compounds in feverfew that can produce skin sensitivities. Development of a purified extract that is free of parthenolides has been shown to have strong anti-inflammatory activity through inhibition of proinflammatory cytokine release.⁹

Licorice Extracts (*Glycyrrhiza glabra*, *Glycyrrhiza inflata*)

- *Glycyrrhiza glabra* (contains glabridin) reduces irritation, inflammation, and melanin production.

- *Glycyrrhiza inflata* (contains licochalcone A) decreases irritation and inflammation.
- Twice daily application of a licochalcone A-containing lotion for 8 weeks by patients with mild to moderate red facial skin produced statistically significant improvements in erythema scores.¹⁰

Avoidance of Triggers

Avoidance of triggers is a key AD management strategy. Each patient and his or her physician need to identify and eliminate relevant triggers.

Food

- While AD patients are more prone to food allergies (type 1 hypersensitivity), it is unclear if certain foods can cause a flare-up, which is more of a type 4 hypersensitivity reaction.
- If there appears to be a food trigger, parents or patients should keep a diary to track foods eaten and flare-ups. Food elimination diets should be physician supervised.
- If type 1 allergic symptoms develop in response to a particular food, avoid ingestion until testing can be undertaken. If a food source is unclear, it may be useful to involve an allergist.

Aeroallergens

- Certain aeroallergens (e.g., dust mites or seasonal allergens) can trigger AD flares.^{11,12}
- Confirmatory testing may be useful in refractory patients. If results are positive, deploy dust mite prevention strategies (e.g., frequently laundering mattress covers and avoid stuffed toys, feather pillows, duvets, and carpets).

Humidity/Sweating

- Sweating can aggravate itching and humid conditions that increase perspiration can induce flares. Frequently cooling off, changing clothes, and adjusting activities in humid weather can help.
- Heat and sweating can promote nighttime scratching. Recommend one layer each of sleepwear and covering. The bedroom should also be kept cool (but not cold).

Low Humidity/Dry Weather

- Due to the dry weather, most patients have worse flares in the winter. Moisturizing several times per day is crucial. Use of a cool mist humidifier in the bedroom can be helpful.

Infection

- AD patients are commonly colonized with *Staphylococcus aureus* (*S. aureus*) and have problems with *S. aureus* killing mechanisms.¹³ This frequently presents as a worsening of AD that is not responsive to therapy. Infected areas can appear as wet, oozing, or crusted lesions that require topical or oral antibiotics.
- *S. aureus* may drive AD flares through superantigen mechanisms, even in the absence of an actual clinical infection.¹⁴ Therefore, patients who have frequent flare-ups may need strategies to reduce *S. aureus* colonization and inflammation.

Environmental Irritants

- AD patients can be especially sensitive to dry grass, perfumes or fragrances in skin care products, and certain fabrics (wool and synthetics).
- Wearing cotton clothing can be helpful. Some evidence suggests that specially treated silk or silver-coated fabrics may also be beneficial.^{15,16}

Chlorine

- Swimming can be a good sport for AD patients, because sweating is not a concern. However, to avoid irritation, they should rinse off thoroughly afterwards and apply a moisturizer.
- There is a lack of data to confirm if salt water or chlorinated pools are better for AD patients.

Normal Routines

School

- Children with severe eczema may engage in school-avoidance behaviours that are caused by fatigue due to nocturnal pruritus, or anxiety from being teased. These issues must be addressed promptly to re-establish a normal school routine.

Sunscreen

- Many sunscreen products contain irritating ingredients. If regular sunscreens are unsuitable, suggest using sensitive skin formulations or physical sunblocks (e.g., titanium dioxide or zinc oxide).
- A comprehensive sun protection strategy combines regular sunscreen use, avoidance of peak sun exposure times, and wearing hats and protective clothing.

Normal Routines (continued)

Sleep

- Sleep disturbance from pruritus can be a major problem for many patients and their families, particularly if parents sleep with their AD-afflicted child and help to scratch or restrain their child's hand to prevent scratching.¹⁷ Both practices should be discouraged and may indicate a need to increase antipruritic therapy and the use of emollients.
- Poor sleep can lead to patient and/or parental difficulties in concentration, irritability, and fatigue.

Additional Tips

- Keep nails short to minimize tissue damage from scratching.
- Keep moisturizing creams in the refrigerator, as the cold sensation is soothing to itchy skin.
- For topical medical therapy, ointments are usually better tolerated than creams or lotions.
- Ask families if sleep routines are satisfactory and if sleep is disturbed. Many families do not volunteer this information to physicians.
- Patients should be steered toward good sources of information (e.g., <http://www.eczemahelp.ca>).

Conclusion

Successful AD management is best undertaken with a step-wise approach that considers multiple factors including disease severity, therapeutic side-effects, patient preferences, itch intensity, and sleep quality. As well, psychosocial impacts from AD cannot be overlooked. The regimented use of moisturizers can improve the skin barrier and significantly reduce xerosis and itch. As such, it can serve as useful adjunctive care for maintenance and flares. The new research realm directed at the epidermal barrier and the important immune factors carries the hope that innovative therapeutic approaches will lead to reduced infections and improved management of AD patients.

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