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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 24th 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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Topical Acne Therapies: Optimizing Patient Adherence

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Background

Topical acne formulations are the most common treatments used by patients and prescribed by family physicians and dermatologists. Patients feel more comfortable using topical therapies because they have milder side-effects, can be easier to use, are generally less expensive, and are more readily available.

The vast spectrum of topical acne treatments allow for an individualized approach that can be tailored to meet the needs of each patient. However, even with a well-conceived treatment plan, when the patient leaves the office with the prescription, appropriate steps must be taken before the patient actually uses the medication as intended. Patient adherence is crucial in preventing treatment failure.

Causes of Nonadherence

Two primary reasons directly influence nonadherence[1]:

1. Difficulties encountered with the patient-physician relationship
   - Patients misunderstand the clinician's instructions.
   - The treatment strategy selected is not explained sufficiently.
   - The realistic expected rate of improvement and potential treatment outcomes are not effectively conveyed to patients.
     - Emphasize that the goal is for management and not to cure their acne.
2. Treatment-related issues
   - Patients misunderstand the side-effects of treatment.
   - Patients misinterpret the risks and benefits of treatment.
   - Treatment regimen and instructions are too difficult to follow.
   - Patients forget to apply the medication.
   - Patients find that the therapy is intolerable.
   - Patients find that the cost of therapy is prohibitive.
   - Patients have difficulties storing the medication properly.
   - The medication has an unpleasant odor.
   - The vehicle is inappropriate.

Improving Adherence

Developing a rapport with acne patients is a crucial component in realizing treatment success.[2] If a comfortable ongoing dialogue can be established, patients will tend to offer a more thorough account of their treatment experiences and feel more compelled to adhere to prescribed therapies.

Tips to Improve Adherence

- Gain the trust of your patients by being receptive to their individual needs through eliciting their input and expressing empathy surrounding their unique circumstances.
- Consider organizing a dedicated acne counseling session that is guided by experienced nurses.
- Express concern by following-up with patients who have missed appointments.
- Provide handouts that reinforce the aims of the selected therapies, explain the facts about acne and treatment expectations; such literature can serve as at-home reference material.
- Educate patients about the prevalence of acne and reassure them that they are not alone.
- Address nonadherent issues with the patient.
- If the patient is dissatisfied with the current treatment, be willing to modify the therapeutic approach.
- To improve short-term adherence, it may be necessary to increase the frequency of clinic visits.
- Long-term adherence can usually be achieved once short-term adherence has been established, which usually occurs when patients notice improvement in the signs and symptoms of their acne.
- Recommend the use of gentle non-soap cleansers to avoid compounding irritation and dryness from medication.
- Flexibility for application, i.e., switching morning and night use depending on tolerance, once daily, or prn use.
- Encourage patients to keep checklists and diaries in order to monitor adherence.
- Different topical antibiotics, benzoyl peroxide (BPO), and retinoids may be combined for less frequent usage.
- Adjust the frequency and duration of application to reduce side-effects; increase dosage as tolerated.

Adolescent Patients

- Consider seeing teenaged patients alone, without parents, to explore any sensitive issues that they may be more comfortable expressing one-to-one.
- Be aware that teenaged patients may be especially vulnerable to heightened anxiety about their appearance.
- Encourage patients' suggestions of medications that friends may have recommended.
- If a parent is present, make sure to address the teenaged patient and not the parent.
- Greet the patient first and then the parent or guardian.
- Offer after school appointments to avoid disrupting their curriculum.

Tips for an Effective Office Visit

- Avoid making the patient feel rushed through the visit.
- Allow adequate time for patients to discuss their concerns and provide feedback about the prescribed treatment.
- Suggest that all acne medication and skin care products be brought to each visit for pharmaceutical editing.
- Minimize waiting room time for patients to reduce frustration.

Considerations for Vehicle Selection

When deciding on suitable treatment options, a thorough assessment of individual needs in terms of acne severity, lifestyle, and preference of delivery vehicle must all be jointly considered.

- Patients with drier skin may prefer creams for their moisturizing properties.
- Patients with oilier complexions may prefer the lighter feel of gels, lotions, solutions, or foams.
- Less viscous formulations, such as lotions, gels and foams are better suited for application on larger surface areas and regions with greater hair density.
- Minimize irritation by using aqueous vehicles rather than those containing alcohol when possible.
- Product innovations, such as the new pump delivery system that is used for the BPO/ clindamycin combination make application easier and may promote patient adherence.
  - Compounded by the pharmacist for optimal efficacy and low irritation.
  - Results may be visible as early as 2 weeks.
  - Fewer ingredients may lessen the potential for irritation.

Considerations for Treatment Selection

Improved adherence may be achieved by considering the features of anti-acne therapy. Accessibility of the anatomical site for topical therapy, i.e., the face, chest, and shoulders are more accessible than the back. Other important considerations include: efficacy, tolerability, cosmetic acceptability, regimen simplicity, convenience, and ease of application.

Considerations for Treatment Selection (continued)

Drug Type	Topical Acne Agents	Overview
Antibiotics	• BPO • Clindamycin • Erythromycin • Sodium sulfacetamide	• Directed against *P. acnes.* • Formulated in creams, ointments, lotions, gels, foam. • One product is also available with SPF 15 + antibiotic. • May induce irritation and dryness.
Combination products[3]	• BPO + antibiotic • Topical retinoid + antibiotic	• Both are gel formulations that treat multiple pathogenic factors. • Combined efficacy is typically greater than either agent alone. • Reduction in regimen complexity may improve adherence because there are two active ingredients. • Combined use of a topical antibiotic with BPO can reduce the emergence of bacterial resistance.
Retinoids	• Adapalene • Tazarotene • Tretinoin	• Vehicle delivery advancements reduce irritation and enhance efficacy[4]: • formulated as an emollient cream and microsponge gel. • Known to be effective against acne vulgaris through comedolysis, which acts to reduce dyskeratosis at the pilosebaceous outlet. • They are formulated as gels, creams, and solutions, which may induce irritation and dryness.

Table 1: The spectrum of topical acne medications[5]

Suggestions for Prescribing

- Assessment and diagnosis of the patient's acne as inflammatory or noninflammatory narrows the treatment prospects.
- Limit the use of BPO on the chest and back due to its bleaching effect on clothing; recommend nighttime application and suggest wearing old t-shirts or sleepwear.
- It is important to educate patients about the expected side-effects of all prescription and over the counter products that they are currently using.
- Consider alcohol-based solutions for the chest and back.
- Consider a cotton ball application for topical medications that include dabber applicators.
- Ensure the patient has an adequate supply of medications, i.e., large quantities for larger areas.
- Prescribe multiple tubes or jars of medications for use at different locations, e.g., school, lockers, gym, home.
- As much as possible, use simplified regimens.
- Provide estimates of amounts to apply by using descriptive references that are easily understood by the patient (e.g., apply a pea-size amount of gel to each of the five facial regions: forehead, each cheek, chin, and central face).
- Missed applications and nonadherence to the prescribed regimen are often unreported to the treating physicians; bearing this in mind, the dosage may need to be increased.
- Patients should be assessed every 2-3 months to monitor therapeutic efficacy.

Conclusion

Adopting a comprehensive approach that takes into account individual preferences, properties of available treatments, and disease severity can encourage patient adherence and lead to improved treatment outcomes. However, often underestimated, but representing the key to gaining adherence, is the attention devoted by physicians to establishing effective communication with the patient through:

- patient education on acne and the aims of initial and maintenance treatment.
- patient engagement in treatment selection.
- counseling on aggravating factors, medication use, adverse events, and the importance of adherence.

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Topical Treatment Adherence for Psoriasis

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Background

For many years, clinicians have expressed ongoing concerns about treatment adherence by patients, especially pertaining to those with chronic skin disorders. Although crucial to effective therapeutic outcomes, the issue of patient adherence has been largely ignored in dermatologic disease management until recently. Two types of nonadherence have been defined:

- Unintentional nonadherence, i.e., a patient's intention to use medication is defeated by barriers, such as forgetfulness.
- Deliberate nonadherence, i.e., a patient arrives at a decision (usually planned) not to use the treatment as directed.[1]
  - More common in chronic diseases, such as psoriasis, when the treatment regimen interferes with daily routines.

Studies have demonstrated that up to 40% of patients with psoriasis do not comply with the recommended treatment regimen. Moreover, experts have suggested that many psoriatic patients do not seek help because they believe that no suitable treatment exists for their condition.[1] Furthermore, in a study by Krueger, et al., more than half of the psoriasis patients who were surveyed were unhappy with their treatment.[2]

Contributing Factors

Although numerous variables affecting patient adherence have been identified, some important factors that engender nonadherence include:

- sociodemographic factors such as gender, marital status and employment status.
- treatment-related factors, i.e.,
  - the type of treatment, i.e., systemic, light, or topical:
    - A survey of psoriasis patients reported a greater preference for systemic treatments over topical or light therapies.[3]
    - In a later study, patients using topical therapy were more compliant than those on systemic or phototherapy, despite having less favorable perceptions of the medical care received and treatment outcomes.[4]
    - In another study, patients receiving topical treatments adhered to their therapy in 51% of cases due to the frequency of application and in 71% of cases because of the duration of treatment.[5]
  - the duration of the treatment:
    - Adherence with a treatment decreases if the duration of a treatment is long.[6]
  - the time point, e.g., starting a new treatment
  - the delivery mechanism, i.e., cream, ointment, foam, gel
  - the frequency of the treatment:
    - Treatment adherence rates for a once daily regimen were significantly higher than twice daily dosing (82% vs. 44%, respectively).[7]
    - Once daily treatments include fluticasone propionate or betamethasone dipropionate plus calcipotriol.
  - the side-effects:
    - Adherence is significantly higher for treatment regimens without adverse-effects.[7]
  - the time taken to use treatments
- disease distribution factors, e.g., age of onset, severity.
- the patient's perceptions of the care provided, i.e.,
  - satisfaction with the consultation
  - opinion about the clinician's interpersonal skills
  - optimism about the treatment process
  - knowledge about psoriasis and the adopted therapeutic approach
  - beliefs about the safety of their treatment, which may conflict with the clinician's views.
  - recognition that the patient's active participation is essential to treatment success.

Adherence has also been reported to be higher for patients who are being treated for the first time[7] and for those who are facing a shorter treatment duration.[8,9] It appears that initiating a new therapy may present a unique opportunity to establish an effective working relationship and improve patient adherence.

Strategies for Improvement

A number of strategies have been suggested to address the issue of nonadherence:

- Simplify the regimen, i.e., minimize the number of medications and frequency of use.
- Devote time to patient education. Patients armed with adequate and accurate information will enable them to understand the objectives of the therapy and the impact of nonadherence.
- Ensure that patients understand both written and verbal instructions for using the medications.
- Provide clarity regarding patients' concerns on the safety and efficacy of long-term therapy.
- Encourage behavioral methods, such as reminders and environmental cues (e.g., apply immediately after showering).

Topical Therapies

Treatment	Comments
Anthralin	• Reduces the rapid acceleration of skin growth. • Effective for mild-to-moderate disease, however, patients are slow to respond. • Skin irritation and staining are common side-effects. • Limited availability; rarely used by outpatients.
Calcineurin Inhibitors	• Immunosuppressive agents interfere with T-cell signaling, which affect inflammatory responses. • Studies indicate therapeutic benefits for psoriasis, especially on the face and intertriginous areas.
Calcipotriol	• A vitamin D analogue that acts to modulate both epidermal proliferation and differentiation. • Twice daily application of calcipotriol has been shown to be more effective than tar, short contact anthralin, and some corticosteroids. • Use in combination with steroids enhances efficacy. • Ad hoc mixtures of calcipotriol plus steroids (including betamethasone dipropionate and betamethasone valerate) have been shown to be unstable; compounding is not recommended.
Calcipotriol plus Betamethasone Dipropionate	• Available as a stable commercial preparation. • This combination therapy can increase the rate and degree of improvement for patients undergoing treatment with UVB, PUVA, methotrexate, cyclosporine, retinoids, or biologic agents. • Combined use may be synergistic and exert a dose sparing effect that can reduce some of the side-effects produced by many antipsoriatic treatments. • Can be considered as first-line topical therapy due to once daily application, quick onset of action, and favorable safety and efficacy profiles over 52 weeks of "as needed" use.[10]
Corticosteroids	• Potent compounds used for their anti-inflammatory, immunosuppressive, and antiproliferative effects. • Confirmed efficacy and safety for monotherapy in short-term courses and for intermittent longer-term use.
Tar	• Slows the proliferation of skin cells and reduces inflammation, itching and scaling. • Effective for treating scalp psoriasis. • Limitations include being odiferous, and having the potential to cause irritation and staining. • Can cause folliculitis; may be carcinogenic.
Tazarotene	• A retinoid with the ability to mediate skin cell proliferation and differentiation; mostly used in acne. • Can cause irritation to psoriatic lesions. • Efficacy is enhanced when used in combination with topical corticosteroids, calcipotriol or phototherapy.

Table 1: Common topical treatment options[11]

Conclusion

Maintaining a partnership with patients should involve[3]:

- a continuous assessment of their quality of life.
- a continuous assessment of their implicit standards of regimen acceptability.
- a move toward a more collaborative model of self-management behavior.

Planning the treatment together with the patient, and allowing him or her to play a central role in its establishment, will likely foster treatment adherence.

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Update on Broad-Spectrum Sunscreens

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Sun and UV Exposure

The primary environmental cause of aging of the skin and most skin cancers is ultraviolet (UV) light from the sun. Its damaging effects are cumulative, so daily protection throughout life is important. In the US, most people will get <25% of their lifetime UV dose by 18 years of age. By the age of 60, they have absorbed 80% of their lifetime dose.[1] The predominant acute biologic damage, as well as chronic damage risks, such as elastosis and squamous cell carcinoma, are associated with the UVB portion of the solar spectrum over UVA in a ratio of 4:1.[2]

Chronic UVA exposure can occur by several scenarios:
- Tanning beds (some promote UVA-only radiation)
- Exposure to the sun using a UVB-absorbing sunscreen
- UVA exposure through windows (only UVB rays are blocked)

People may be unaware that they are unprotected from the damaging effects of UVA under these circumstances.

Sun Protection

A 2003 survey by the American Academy of Dermatology reported regular sunscreen use by 47% of women and 33% of men.[3] There is general consensus among experts that daily, year-round, broad-spectrum photoprotection of at least sun protection factor (SPF) 15 is a key component of a sun-safe strategy to reduce cumulative lifetime exposure to UV light.

Sun Protection Factor

- The SPF number indicates how much longer one can stay out in the sun before burning compared with no protection.
- An SPF of 15 means that theoretically one can stay out without burning, 15 times longer than with no protection. However, this should not be used to encourage prolonged sun exposure.
- The level of UV filtration is not proportional to the SPF. The amount of UV transmission is 1/SPF so with an SPF of 2, 50% of UVB light is transmitted. An SPF of 30, will block out 97% of UVB light (1/30 transmitted).
- SPF relates to UVB protection only. However, higher SPF sunscreens tend to provide more UVA protection.
  - While UVA rays don't cause sunburn, they penetrate deeper into skin and cause photoaging, cutaneous immunosuppression, and can cause some skin cancers.
- There is no universally accepted rating to determine how good a sunscreen is at blocking UVA rays, although several measures have been proposed.[4]

Sunscreens

Sunscreens are divided into two broad categories:

1. Inorganic or physical blockers, which:
   - reflect back and scatter the UV and visible light.
   - are regarded as nontoxic and stable and do not penetrate below the stratum corneum.
   - are esthetically less acceptable.
2. Organic or chemical agents, which:
   - work through electron excitation and grounding, thus changing light energy into heat energy.
   - are divided into UVA, UVB, and broadband absorbers.

The ideal sunscreen would:
- provide superior efficacy with broad-spectrum coverage, photostability, and high substantivity.
- have an appealing feel and smell and apply easily, uniformly coating the skin surface.
- not cause irritant or allergic contact dermatitis.
- be sold at a reasonable cost.[5]

New Generation Sunscreens

- Newer sunscreens combine ingredients that will protect the skin from both UVA and UVB rays and are available in creams, gels, lotions, sprays, and sticks.
- New generation sunscreens are more esthetically pleasing.
- The need for broad-spectrum, photostable filters has led to the development of new agents, including ecamsule and drometrizole trisiloxane, which provide both UVB and UVA protection.
- Degradation of some UVA filters by sunlight requires chemical stabilization to prevent loss of efficacy.
- An advanced formulation that incorporates the photolabile filter avobenzone, provides protection throughout the UVA range, and is combined with diethylhexyl 2,6-naphthalate (DEHN) and oxybenzone to achieve a photostable product. DEHN is a non-UV filter that stabilizes avobenzone by accepting energy absorbed by avobenzone during UVA exposure, while oxybenzone both enhances photostability and provides additional UVA protection.
  - This technology yields protection that is reported to be comparable to that of drometrizole trisiloxane, which provides efficient UVA coverage and photostability.[6]

Sunscreen Application

- Experts recommend that sunscreen be applied 15-30 minutes before going outdoors and reapplied every 2 hours or after swimming/ heavy exertion.
- The recommended dose is 2mg/cm^2 of skin, or 30ml (2 tablespoons) for the whole body. However, the actual dose being used is believed to be much lower.
- Application of an adequate amount of sunscreen is by far the most important factor influencing efficacy.

Sunscreens and Cancer

- Sunscreens, at sufficient SPF levels, are effective in protecting the skin from actinic keratoses and squamous cell carcinomas.[7]
- They have not been shown to reduce the incidence of a first basal cell carcinoma, but they may prolong the time to develop a second lesion.
- Dennis, et al., looked at sunscreen use and the risk for melanomas, and found no association between these two factors.[8]

The Vitamin D Controversy

- The UV action spectra for DNA damage leading to skin cancer and for vitamin D photosynthesis are virtually identical.[9]
- Nash, et al., analyzed the risks/ benefits of sunscreens on vitamin D by estimating its production, based on measures of sunlight exposure and determining the impact of an SPF 15 sunscreen on vitamin D levels in humans. The study found that the combination of diet and sunlight, even with daily use of an SPF 15 sunscreen, provides adequate intake of vitamin D.[10]

Tanning Alternatives

- Avoid tanning beds. Like the sun, UV radiation from tanning beds can cause skin cancer and photodamage.
- Self-tanning lotions and sprays offer a safe alternative.
  - A chemical reaction with the main ingredient, dihydroxyacetone hygroscopic, causes colour to develop on the skin's surface.
  - Most are not highly protective, having an SPF of 3-4.[11]
  - A sunscreen with an SPF of ≥15 should be used with self-tanning agents.

Conclusion

The new generation of sunscreens serve an important role in overall skin protection from the sun. However, they should be used in conjunction with other sun protection measures such as sun protective clothing, hats, and sunglasses.

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