Topical Retinoids in Acne: 
Emerging Strategies for Tolerance, Maintenance, and Skin of Color

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Topical retinoids are a mainstay for the treatment of acne vulgaris, and several agents are currently available. However, key issues remain: concerns regarding the use of these agents. These issues include tolerability, optimal regimens for maintenance treatment, and use in skin of color. In addition, employment of antimicrobials for the management of acne has come under fire for increasing rates of bacterial resistance. Each of these considerations will be discussed in this Supplement through a review of the literature, and practical tips to enhance patient outcomes will be provided.

ACCReditATION
This activity has been planned and implemented in accordance with the Joint Accreditation System (JES) for the Accreditation of Continuing Education Programs. This activity is accredited by the Accreditation Council for Continuing Medical Education (ACCME) for a maximum of 1 AMA PRA Category 1 Credit™. Physicians should claim only those credits commensurate with the extent of their participation in the activity.

CME CREDIT STATEMENT
The SEEIE is accredited by the ACCME to provide continuing medical education for physicians. The SEEIE designates this educational activity for a maximum of 1 AMA PRA Category 1 Credit™. Physicians should claim only those credits commensurate with the extent of their participation in the activity. The SEEIE is committed to providing current and pertinent scientific information of benefit to healthcare practitioners in the dermatology and related fields.

TARGET AUDIENCE
This activity has been developed for dermatologists who are involved in the diagnosis and management of acne.

EDUCATIONAL INCLUSIONS
Although topical retinoids have a margin in the treatment of acne, the strategies for their utilization continue to evolve. Emerging knowledge of the mechanisms of action and adverse effects of topical retinoids, as well as the potential for increasing tolerability, continues to challenge dermatologists, and approaches to manage these challenges are evolving. This article is intended to provide an up-to-date review of the current state of the art and management of acne vulgaris. The article reviews the current evidence for the treatment of acne with topical retinoids, including the mechanisms of action, clinical efficacy, and adverse effects. The article also discusses the role of combination therapy in the management of acne, with a focus on the evidence supporting the use of retinoids in combination with other classes of topical medications.

LEARNING OBJECTIVES
By reading and reviewing this supplement, participants should be able to:

- Identify practical and effective ways to improve tolerability of retinoids for the treatment of acne
- Develop skill in implementing strategies to minimize adverse effects of retinoid use

Emil A. Tengfeldt, MD
Center for Dermatology and Laser Surgery
San Antonio, California

The tolerability and thus efficacy of topical retinoids affect their clinical utility in acne vulgaris. The efficacy of topical retinoids is best achieved in treating acne vulgaris. In this review, we discuss the current evidence for the treatment of acne, including the mechanisms of action, clinical efficacy, and adverse effects. The article also reviews the role of combination therapy in the management of acne, with a focus on the evidence supporting the use of retinoids in combination with other classes of topical medications.

Improving Tolerability While Maintaining Efficacy: Practical Tips

Skincare products that are combined with topical retinoids can help improve tolerability and enhance the efficacy of these treatments. These products can include moisturizers, oils, and other skin care products that are designed to reduce dryness and irritation. It is important to choose products that are free from fragrances, dyes, and other irritants that can exacerbate skin irritation.

Epidermal Barrier Integrity and Skin Tolerance

The skin barrier plays a crucial role in maintaining skin health and protecting against external insults. The skin barrier is composed of the stratum corneum, which is composed of角化细胞, and the underlying epidermis, which is composed of viable keratinocytes. The skin barrier is maintained by a balance between the synthesis and degradation of ceramides, cholesterol, and glycerol. This balance is regulated by the skin microbiome, which produces ceramides and other lipids that are essential for barrier function.

In dermatological conditions such as atopic dermatitis, psoriasis, and acne, the skin barrier integrity is often compromised, leading to increased skin permeability and increased sensitivity to environmental factors. This is particularly true in patients with acne, who are often prone to developing skin infections and inflammation due to the high number of acne-causing bacteria present on the skin.

To improve skin barrier function, it is important to use products that are designed to moisturize and soothe the skin, while also providing protection against external insults. This can be achieved by using products that contain ceramides, cholesterol, and glycerol, as well as other skin care actives that are designed to promote barrier repair and function.

In conclusion, improving skin barrier function is a key strategy for improving tolerability and efficacy of topical retinoids in the treatment of acne. By maintaining healthy skin barrier function, it is possible to improve skin tolerability and efficacy of these treatments, leading to better patient outcomes and increased satisfaction with treatment.
There are some racial differences in acne severity. A study of 1,656 intoxicated adults showed the incidence of acne-like reactions to be lower in African Americans (3.7%) than in white (9%) and Latinas (6%). (J Am Acad Dermatol. 1982;7:533-34.) (No results were drawn from the study regarding Asians or African Americans.) Histological differences in acne have also been found between African Americans, with biopsies of popular and pustular lesions demonstrating more intense inflammatory infiltrates. (J Am Acad Dermatol. 1976;10:49-53.) An increased number of follicular keratinocytes is present in acne-prone individuals, which is thought to increase the stratum corneum and contribute to the formation of comedones. (J Am Acad Dermatol. 1998;38:755-64.) Patients with acne should be encouraged to wash their skin with soap and water and to avoid excessive use of exfoliants and comedogenic cosmetic products. (J Am Acad Dermatol. 1989;21:1119-27.) (J Am Acad Dermatol. 1991;25:957-63.) Other acne treatments include oral antibiotics and topical retinoids. (J Am Acad Dermatol. 1998;38:755-64.) Azelaic acid, a natural component of skin, is thought to inhibit keratinocyte proliferation and reduce inflammation. (J Am Acad Dermatol. 1999;40:131-37.) The effectiveness of oral retinoids in the treatment of acne has been demonstrated in several randomized controlled trials. (J Am Acad Dermatol. 1997;37:1245-52.) The management of acne includes the use of acne products, such as salicylic acid, benzoyl peroxide, and tretinoin, as well as the use of oral antibiotics, isotretinoin, and systemic retinoids. (J Am Acad Dermatol. 1998;38:755-64.) Improving Tolerability While Maintaining Efficacy: Practical Tips

**Table 1: Strategies for Maximizing Barrier Epidermal Integrity**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact</th>
<th>Solution</th>
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<tbody>
<tr>
<td>Soap</td>
<td>Dry skin, erythema, and products with soap to enhance barrier function.</td>
<td>Use non-soap cleansers.</td>
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<tr>
<td>Water temperature</td>
<td>Sensitive barrier function.</td>
<td>Warm water (90°F) for washing.</td>
</tr>
<tr>
<td>Bathing</td>
<td>Dry skin, erythema, and products with soap to enhance barrier function.</td>
<td>Moisturize immediately after bathing.</td>
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**Table 2: Strategies for Minimizing Irritation During Retinization**

- Use a moisturizer daily to enhance barrier function and reduce irritation. (J Am Acad Dermatol. 1999;40:131-37.)
- Use a sunscreen with a high SPF to protect the skin from further irritation. (J Am Acad Dermatol. 1999;40:131-37.)
- Use a retinoid at night and wash face in the morning with a mild cleanser. (J Am Acad Dermatol. 1999;40:131-37.)
- Use a moisturizer daily to enhance barrier function and reduce irritation. (J Am Acad Dermatol. 1999;40:131-37.)

**References**