



Atopic dermatitis and topical steroids

Prepared and presented by Pharmacist Eman Elayeh

Atopic dermatitis

Dermatitis is a nonspecific term describing numerous dermatologic conditions that are generally characterized by erythema (redness). The terms *eczema* and *dermatitis* are used interchangeably to describe a group of inflammatory skin disorders of unknown etiology. When the cause of a particular skin condition is elucidated, the disorder is given a specific name. Known causes of dermatitis include allergens, irritants, and infections; however, several distinct forms of dermatitis exist for which the causes remain unclear.

Atopic dermatitis

Atopy is a genetically predisposed tendency to exaggerated skin and mucosal reactivity in response to environmental stimuli. The atopic triad is asthma, allergic rhinitis (hay fever), and atopic dermatitis (AD). AD is a chronic, relapsing skin disorder that typically begins during infancy or early childhood and often lasts into adulthood. Over time it moves through three age-related phases (infancy, childhood, and adult).⁵ The incidence of AD may be increasing (from 3% of children after World War II to 10%–15% today) possibly, in part, from increased exposure to pollutants, irritants, indoor allergens (particularly house dust mites), and a decline in breast-feeding.⁶


Atopic dermatitis

and urban areas.⁶ Allergic rhinitis (hay fever) and asthma occur in 30% to 80% of cases of AD. Areas commonly affected (e.g., face, flexural areas on the inside of the knees and elbows, and collar area of the neck) depend on the patient's age. Two-thirds to three-quarters of patients with AD do not seek medical care and therefore are likely to look for advice regarding self-care of this condition.⁶

TABLE 33-1 Diagnostic Criteria for Atopic Dermatitis


An itchy skin condition, plus three or more of the following criteria:

- Onset at <2 years of age
- History of skin crease involvement (including cheeks in children < 10 years of age)
- History of generally dry skin
- Personal history of other atopic disease (or history of any atopic disease in first-degree relative in children < 4 years of age)
- Visible flexural dermatitis (or dermatitis of cheeks/forehead and other outer limbs in children < 4 years of age)



Common exacerbating factors include foods, soaps, detergents, fragrances, chemicals, temperature changes, dust, pollens, certain bacteria, and emotional changes. Clinically relevant food allergy in AD is estimated to range up to 33% to the age of 24 months. Patients with AD may be more sensitive to irritants than the general population; therefore, it is important for affected patients to minimize exposure to known irritants, allergens, plus any other factor known to exacerbate the condition.⁸

Irritants (e.g., solvents, industrial chemicals, fragrances, soaps, fumes, paints, bleach, wool, and astringents) may cause burning, itching, or redness. Patients with AD may be especially sensitive to low concentrations of irritants that would not generally cause a reaction on normal skin.⁹




Patients with AD are often intolerant of sudden and extreme changes in temperature and humidity. High temperature may enhance perspiration, leading to increased itching. Low humidity, often found in heated buildings during the winter, dries the skin and increases itching. Use of humidifiers in dry environments will provide some benefit. As with asthma, emotional stress is an exacerbating factor in some patients.

TABLE 33-2 Characteristics of Atopic Dermatitis by Age


Age	Location	Signs
2 months	Chest, face	Red, raised vesicles; dry skin; oozing
2 years	Scalp, neck, and extensor surface of extremities	Less acute lesions; edema; erythema
2–4 years	Neck, wrist, elbow, knee	Dry, thickened plaques; hyperpigmentation
12–20 years	Flexors, hands	Dry, thickened plaques; hyperpigmentation





A classic case of infantile or childhood AD involves the cheeks and extensor surfaces of the forearms and legs (see Color Plates, photographs 14A, B, and C). Later manifestations of AD typically present on flexor surfaces. Lesions are typically symmetric in patients with AD.

The primary sign of AD is intense pruritic papules (solid, circumscribed, elevated lesions less than 1 cm in diameter) and vesicles (sharply circumscribed, elevated lesions containing fluid). Pruritus is common and causes significant morbidity in AD. Patients with AD react more readily and more persistently to pruritic-inducing stimuli. Scratching and lichenification (increased epidermal markings) can produce a vicious cycle and lead to excoriation (abrasion of the epidermis by trauma).¹¹



Secondary or associated cutaneous infections, especially bacterial, can be common, difficult to prevent, and typically aggravate AD. More than 90% of the skin lesions in patients with AD (in contrast to 5% of unaffected individuals) harbor *Staphylococcus aureus*.⁶ Although *S. aureus* is the most common cause, streptococci may also be found alone or in association with *S. aureus*. Infections present as yellowish crusting of the eczematous lesions. Patients should be counseled to seek medical attention promptly when signs of bacterial or viral skin infection such as pustules (circumscribed, elevated lesions less than 1 cm in diameter containing pus), vesicles (especially exudate or pus-filled), and crusting (dried exudate) are noticed.



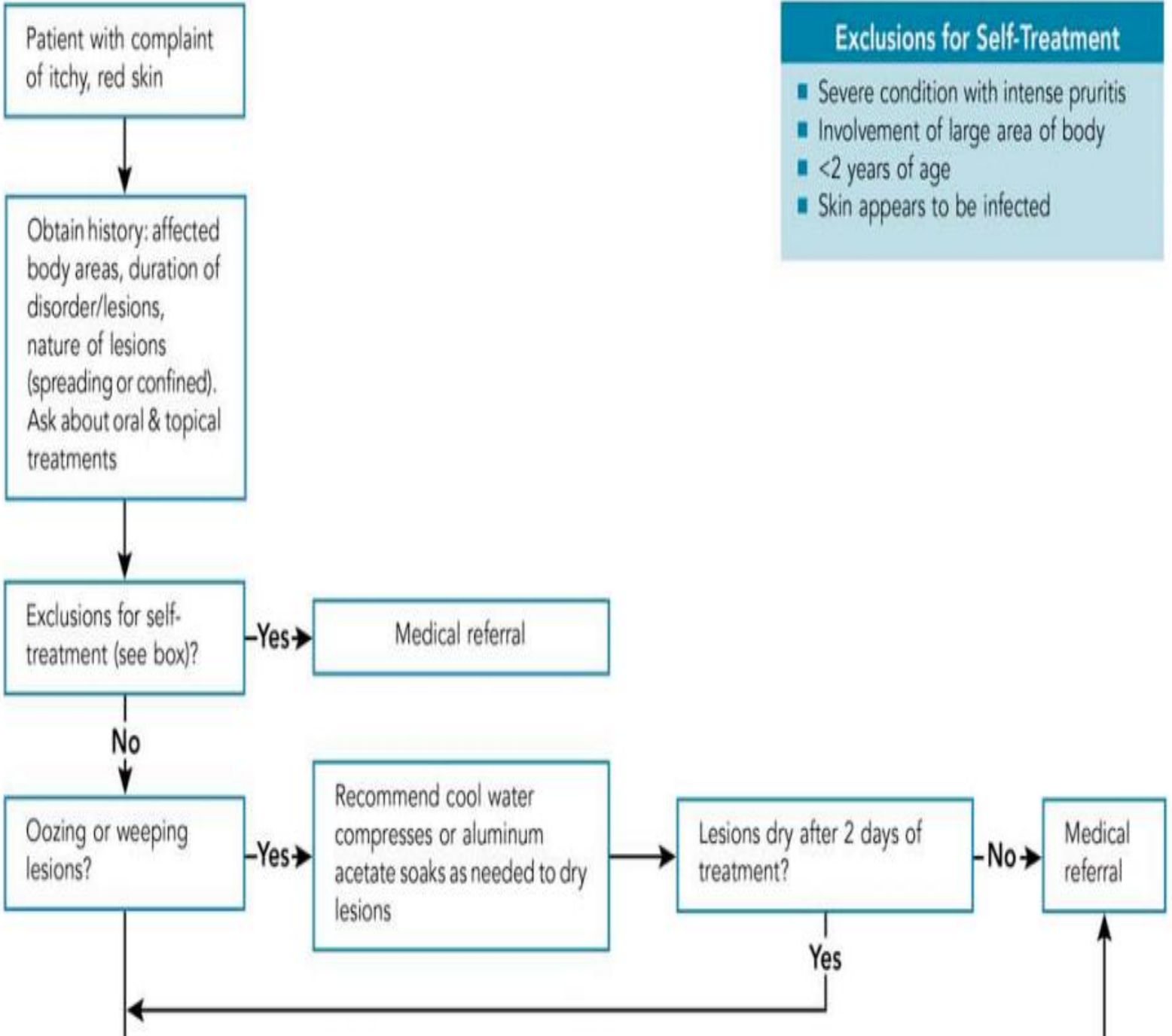
Treatment of Atopic Dermatitis

Treatment Goals

The goals of self-treatment of AD are to (1) stop the itch–scratch cycle, (2) maintain skin hydration, (3) avoid or minimize factors that trigger or aggravate the disorder, and (4) prevent secondary infections.

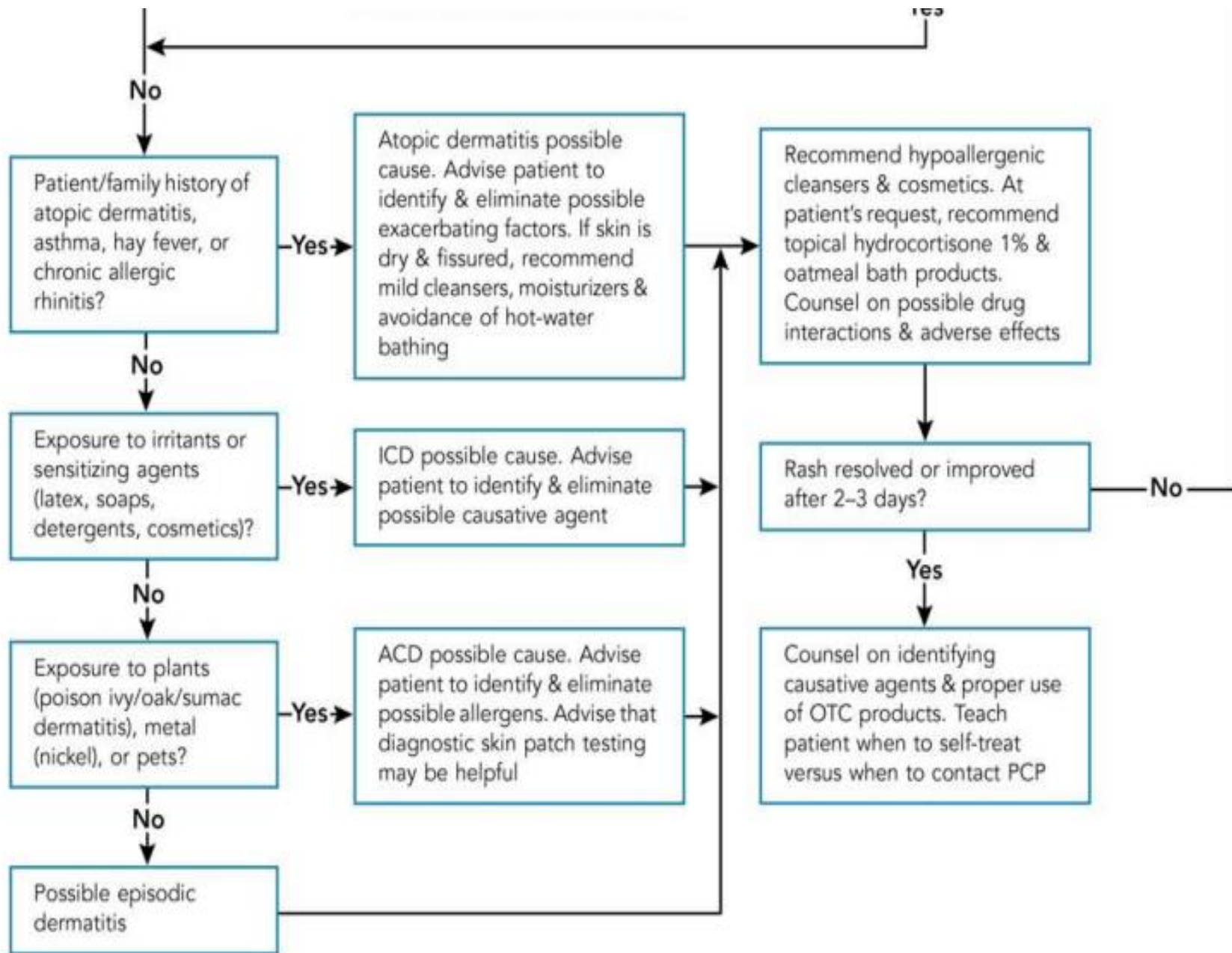
Treatment

- See figure 33-2 for treatment algorithm
- Successful treatment of atopic dermatitis require
 - 1) Skin hydration
 - 2) Identification and elimination of flare factors such as irritants, allergens, infectious agents and emotional stress
 - 3) Use of topical and systemic therapy



Exclusions for Self-Treatment

- Severe condition with intense pruritis
- Involvement of large area of body
- <2 years of age
- Skin appears to be infected



Atopic dermatitis

Exclusions for Self-Treatment

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Non-pharmacological treatment

Patients with AD may be more susceptible to irritants than normal individuals are. Reducing or eliminating exposure to or contact with trigger factors (soaps, cigarette smoke, animal dander, molds, pollens, etc.) is crucial. Laundering and thoroughly rinsing new clothing, wearing nonirritating fabrics such as cotton, and avoiding sunburn by using nonirritating sunscreens are all encouraged practices.

Treatment of acute weeping or oozing lesions is directed toward drying the lesions. Wet compresses using tap water should be applied for 20 minutes, four to six times daily. Bathing with tepid water containing colloidal oatmeal may also be soothing.

For itching, simply telling a patient not to scratch is gener-

Non-pharmacological treatment

the effects of moisturizers and topical steroids.¹² The answer to the apparent paradox is that bathing hydrates the skin as long as an effective moisturizer is applied within 3 minutes to prevent evaporation from the stratum corneum. When evaporation occurs, this barrier dries and cracks. Patients should bathe for only 3 to 5 minutes using fragrance-free bath oils to soothe the skin, or dehydration of the skin occurs. Common bar soaps are often too drying and irritating for some AD patients.¹³ Preferred frequency of bathing is every other day (to minimize removal of natural oils), with tepid rather than hot water. Because of the significant drying effect of most soaps, mild nonsoap cleansers (e.g., Cetaphil) are often recommended. After bathing, moisturizers can be applied and excessively dry areas of skin covered with a lubricating ointment.

Non-pharmacological treatment

For itching, simply telling a patient not to scratch is generally ineffective. Therefore, adjunctive measures may be used to minimize scratching and the damage it produces. Fingernails should be kept short, smooth, and clean. Because scratching may increase at night, even while the patient is sleeping, wearing cotton gloves or socks on the hands at night may lessen scratching. Excessive scratching can result in open sores that may need to be treated with a topical antibiotic preparation. Use of bacitracin/polymyxin B ointment (Polysporin) may be preferred over bacitracin/polymyxin B/neomycin ointment, given that some patients may be sensitized to neomycin. Patients should avoid occlusive, tight clothing. If possible, patients should remain in moderate temperature settings and moderate relative humidity conditions.

Dry skin treatment

TABLE 33-3 Dry Skin Therapy

- Take tub baths two to three times per week, using bath oil, for brief periods (3–5 minutes). Take sponge baths on other days.
- The water should be tepid, not more than 3°F above body temperature.
- Stay in the bath water only 3–5 minutes.
- Within 3 minutes of getting out of the tub, pat the body dry, leaving beads of moisture, and generously apply body lotion to trap the moisture.
- Apply the body lotion at least three more times during the day to (preferably) the whole body or at least the most affected areas.
- Additional measures include:
 - Use corticosteroid ointments rather than creams.
 - Keep room humidity higher.

Bath products

Bath Oils

Bath oils generally consist of a mineral or vegetable oil, plus a surfactant. Mineral oil products are adsorbed better than vegetable oil products. Adsorption onto and absorption into the skin increase as temperature and oil concentration increase. Bath oils are minimally effective in improving a dry skin condition because they are greatly diluted in water. Their major effect is the slip or lubricity they impart to the skin, which may be important to the patient. When applied as wet compresses, however, bath oils (1 teaspoon in one-fourth cup of warm water) help lubricate dry skin and may allow a decrease in the frequency of full-body bathing.^{5,18} Bath oils make the tub and floor slippery, creating a safety hazard, especially for patients of advanced age or children. They also make cleansing the skin with soaps more difficult.

Bath products

Cleansers

Typical bath soaps generally contain salts of long-chain fatty acids (commonly oleic, palmitic, or stearic acid) and alkali metals (e.g., sodium or potassium). Combined with water, such products act as surfactants that will remove many substances from the skin, including the lipids that normally keep the skin soft and pliable. Some authorities recommend special soaps that contain extra oils to minimize the drying effect of washing. However, these soaps usually lather and clean poorly.

Glycerin soaps, which are transparent and more water soluble, have a higher oil content than standard toilet soaps because of the addition of castor oil. They are closer to a neutral pH and are, therefore, regarded as less drying than soaps, which are alkaline. Although little objective proof exists to prove their superiority, glycerin soaps are advertised for, and well accepted by, people with skin conditions.

Bath products

Clinicians may choose to recommend mild cleansers such as Cetaphil or pHisoDerm, if soap is to be avoided. Most of these products consist primarily of surfactants and may contain oil. Although these products claim to have a low potential for irritation, clear evidence of their superiority over soaps is lacking. On application, they foam mildly, and on gentle wiping, they leave a thin layer of lipid material on the skin, which helps retain water in the stratum corneum. Leave-on, no-rinse skin cleansers are a useful tool to minimize the skin barrier disruption seen with traditional soaps and body bathing.

Emollients and moisturizers

Frequency of application depends on the severity of the dry skin condition, as well as the hydration efficiency of the occlusive agent. Generally, moisturizers must be applied three to four times daily to achieve maximum benefit. For dry hands, the patient may need to apply the occlusive agent after each hand washing, as well as at numerous other times during the day.

Emollient products are available as petrolatum-containing ointments that are typically very greasy and generally lack consumer appeal because of their texture, difficulty of spreading and removing, and staining properties. To avoid a greasy feel, patients should be advised to gently warm the product in the hands, apply a very thin layer, and massage it gently, but thoroughly, into the skin. Ointments are inappropriate for an oozing AD, because they do not allow the lesions to dry and ultimately heal.

Alpha-Hydroxy Acid

Lactic acid is an alpha-hydroxy acid that has been useful in concentrations of 2% to 5% for treating dry skin conditions. Lactic acid increases the hydration of human skin and may act as a modulator of epidermal keratinization, rather than a keratolytic agent at low concentrations. Lactic acid may be added to urea preparations for both its stabilizing and its hydrating effects.

Other alpha-hydroxy acids, derived from fruits, are used for a number of common skin conditions such as dry skin, acne,

Urea

Urea in concentrations of 10% to 30% is mildly keratolytic and increases water uptake in the stratum corneum, giving it a high water-binding capacity. Urea has a direct effect on stratum corneum elasticity because of its ability to bind to skin protein. It is considered safe and has been recommended for use on crusted, necrotic tissue. Concentrations of 10% have been used on simple dry skin; 20% to 30% formulations have been used for treating more resistant dry skin conditions. Lotion and cream formulations containing urea may be better at helping to remove scales and crusts, whereas urea in emollient ointments (e.g., urea in a hydrophilic ointment base) may be better at rehydrating the skin. However, urea preparations can cause stinging, burning, and irritation, particularly on broken skin.¹⁹

Topical hydrocortisone

Hydrocortisone is currently the only corticosteroid available without a prescription for the topical treatment of dermatitis. Although its exact mechanism is unknown, hydrocortisone most likely suppresses cytokines associated with the development of inflammation and itching associated with various dermatoses. FDA monograph indications for its use include temporary relief of itching associated with minor skin irritations, inflammation, and rashes caused by dermatitis, seborrheic dermatitis, insect bites, poison ivy/oak/sumac dermatitis, soaps, detergents, cosmetics, and jewelry. Concentrations of 0.5% to 1% are regarded as appropriate for treating localized dermatitis (Table 33-5).

Antipruritics

Itching may also be mediated by various endogenous substances, including histamine. Accordingly, topical antihistamines such as diphenhydramine are effective in alleviating this symptom. Their activity stems from an ability to compete with histamine at H₁-receptor sites and to exert a topical anesthetic effect. Local anesthesia may be the more important mechanism of action, given that the cause of itching in many conditions (e.g., atopic dermatitis) is most likely due to cytokine release and may not be related to histamine release at all. Antihistamines are considered safe and effective for use as nonprescription external analgesics.

However, because of their significant sensitizing potential, FDA does not recommend the topical use of such agents for more than 7 consecutive days, except under the advice and supervision of a primary care provider.²²

Product selection guideline

The type of vehicle (e.g., ointment, cream, lotion, gel, solution, or aerosol) may have a significant effect on dermatitis. The following guidelines may be used to choose an appropriate vehicle:

1. “*If it’s wet, dry it.*” If a drying effect is desired, the practitioner may recommend solutions, gels, and occasionally creams. However, components of these systems may quickly diffuse into the underlying tissue and possibly cause irritation.
2. “*If it’s dry, wet it.*” If slight lubrication is needed, creams and lotions are preferable. If the lesion is very dry and fissured, an ointment is the vehicle of choice. However, avoid use in intertriginous areas because of the potential for maceration. Also, in an acute process, the occlusive effects of an ointment may cause further irritation.

Product selection guideline

TABLE 33-6 Amount of Topical Medication Needed for Three Times Daily Application for 1 Week

Part of Body	Cream or Ointment (g)	Lotion, Solution, or Gel (mL)
Face	5–10	100–120
Both hands	25–50	200–240
Scalp	50–100	200–240
Both arms or both legs	100–200	240–360
Trunk	200	360–480
Groin and genitalia	15–25	120–180

Source: Adapted from Bingham EA. Topical dermatologic therapy. In: Rook A, Parish LC, Beare JM, eds. *Practical Management of the Dermatologic Patient*. Philadelphia: JB Lippincott; 1986: 2278.

- See case based approach



KEY POINTS FOR ATOPIC DERMATITIS AND DRY SKIN

- Note that most patients with mild-to-moderate atopic dermatitis or dry skin are candidates for self-treatment with a combination of nonprescription and nonpharmacologic therapies.
- Refer patients with yellow, crusting, eczematous atopic dermatitis lesions and all children younger than 2 years with atopic dermatitis to a primary care provider or dermatologist for evaluation and treatment.
- Question patients presenting with dry or eczematous skin lesions about exposure to soaps, detergents, fragrances, chemicals, irritants, changes in temperature, allergens, and bathing.

Key points for atopic dermatitis

- Counsel patients with dry skin conditions to take brief baths, using tepid water, and apply moisturizers within 3 minutes of completing the bath or shower.
- Advise patients to use mild skin cleansers, to avoid products with fragrances or other potential irritants, and to apply copious quantities of moisturizers three to four times daily.
- Educate the patient with chronic dry skin conditions about the importance of stopping the itch–scratch cycle, maintaining adequate hydration, and avoiding triggers of the condition.
- Advise patients to use cream-based products, whenever possible, to maximize the hydrating properties of the product and compliance. Ointment-based products should be recommended for patients not responding adequately to creams.
- Instruct patients how to properly apply topical emollients, and anti-inflammatory and antipruritic agents.
- Advise patients with self-treatable symptoms to contact their primary care provider if symptoms worsen or do not improve within 7 days.

Patient counseling

Atopic Dermatitis

Nondrug Measures

- Avoid factors that trigger allergic reactions. Do not wear occlusive, tight clothing. Remain in areas with a moderate temperature and low humidity.
- Bathe or shower every other day, if possible. Take short showers or baths, using warm (tepid) water and a nonsoap cleanser.
- If possible, substitute sponge baths with tepid water for full-body bathing.
- To dry weeping lesions, apply cool tap water compresses for 5–20 minutes, four to six times daily.
- To prevent injury to the affected area caused by scratching, keep your fingernails short, smooth, and clean. At night, wear cotton gloves or socks on your hands to lessen scratching.

Patient counseling

Nonprescription Medications

- To decrease itching, bathe in tepid water that contains colloidal oatmeal, or add a water-miscible bath oil to the water near the end of the bath.
- Gently wash the affected areas with a nonsoap cleanser prior to applying any emollient or medication. Gently pat your skin dry, and apply an emollient within 3 minutes after washing while your skin is still damp.
- Wash hands before and after applying any medication.
- Apply a thin layer of medication over the affected areas.
- Apply hydrocortisone three to four times daily to dry weeping lesions and relieve itching. Do not use this medication for longer than 7 days.
- With proper use of medications and nondrug measures, noticeable improvement can be observed in 24–48 hours.
- Although complete eradication of the rash and itching is possible, it is likely that exacerbation may occasionally recur, especially during the winter and summer months.
- Atrophy of the skin while using hydrocortisone should be reported to a primary care provider.

Choosing topical corticosteroids

- Topical corticosteroids are one of the oldest and most useful treatments for dermatologic conditions. There are many topical steroids available, and they differ in potency and formulation.
- Successful treatment depends on an accurate diagnosis and consideration of the steroid's delivery vehicle, potency, frequency of application, duration of treatment, and side effects.
- Although use of topical steroids is common, evidence of effectiveness exists only for select conditions, such as psoriasis, vitiligo, eczema, atopic dermatitis, phimosis, acute radiation dermatitis, and lichen sclerosus.
- Evidence is limited for use in melasma, chronic idiopathic urticaria, and alopecia areata

Choosing topical corticosteroids

Table 1. Conditions Treatable with Topical Steroids

High-potency steroids (groups I to III)

Alopecia areata
Atopic dermatitis (resistant)
Discoid lupus
Hyperkeratotic eczema
Lichen planus
Lichen sclerosus (skin)
Lichen simplex chronicus
Nummular eczema
Poison ivy (severe)
Psoriasis
Severe hand eczema

**Medium-potency steroids
(groups IV and V)**

Anal inflammation (severe)
Asteatotic eczema

Atopic dermatitis
Lichen sclerosus (vulva)
Nummular eczema
Scabies (after scabicide)
Seborrheic dermatitis
Severe dermatitis
Severe intertrigo (short-term)
Stasis dermatitis

**Low-potency steroids
(groups VI and VII)**

Dermatitis (diaper)
Dermatitis (eyelids)
Dermatitis (face)
Intertrigo
Perianal inflammation

SORT: KEY RECOMMENDATIONS FOR PRACTICE

<i>Clinical recommendation</i>	<i>Evidence rating</i>	<i>References</i>
Topical steroids can be used to treat psoriasis, vitiligo, lichen sclerosus, atopic dermatitis, eczema, and acute radiation dermatitis.	C	1, 2, 4, 9-13
Ultra-high-potency topical steroids should not be used continuously for longer than three weeks.	C	21
Low- to high-potency topical steroids should not be used continuously for longer than three months to avoid side effects.	C	21
Combinations of topical steroids and antifungal agents generally should be avoided to reduce the risk of tinea infections.	C	31

A = consistent, good-quality patient-oriented evidence; B = inconsistent or limited-quality patient-oriented evidence; C = consensus, disease-oriented evidence, usual practice, expert opinion, or case series. For information about the SORT evidence rating system, go to <http://www.aafp.org/afpsort.xml>.

Steroid vehicles

Steroids may differ in potency based on the vehicle in which they are formulated. Some vehicles should be used only on certain parts of the body. Ointments provide more lubrication and occlusion than other preparations, and are the most useful for treating dry or thick, hyperkeratotic lesions. Their occlusive nature also improves steroid absorption. Ointments should not be used on hairy areas, and may cause maceration and folliculitis if used on intertriginous areas (e.g., groin, gluteal cleft, axilla). Their greasy nature may result in poor patient satisfaction and compliance.

Steroid vehicles

Creams are mixes of water suspended in oil. They have good lubricating qualities, and their ability to vanish into the skin makes them cosmetically appealing. Creams are generally less potent than ointments of the same medication, and they often contain preservatives, which can cause irritation, stinging, and allergic reaction. Acute exudative inflammation responds well to creams because of their drying effects. Creams are also useful in intertriginous areas where ointments may not be used. However, creams do not provide the occlusive effects that ointments provide.

Steroid vehicles

Lotions and gels are the least greasy and occlusive of all topical steroid vehicles. Lotions contain alcohol, which has a drying effect on an oozing lesion. Lotions are useful for hairy areas because they penetrate easily and leave little residue. Gels have a jelly-like consistency and are beneficial for exudative inflammation, such as poison ivy. Gels dry quickly and can be applied on the scalp or other hairy areas and do not cause matting.

Steroid vehicles

Because hydration generally promotes steroid penetration, applying a topical steroid after a shower or bath improves effectiveness.²⁰ Occlusion increases steroid penetration and can be used in combination with all vehicles. Simple plastic dressings (e.g., plastic wrap) result in a several-fold increase in steroid penetration compared with dry skin.²¹ Occlusive dressings are often used overnight and should not be applied to the face or intertriginous areas. Irritation, folliculitis, and infection can develop rapidly from occlusive dressings, and patients should be counseled to monitor the treatment site closely. Flurandrenolide (Cordran) 4 mcg per m² impregnated dressing is formulated to provide occlusion. It is beneficial for treating limited areas of inflammation in otherwise difficult-to-treat locations, such as fingertips.

Frequency of administration and duration of treatment

Once- or twice-daily application is recommended for most preparations.²¹ More frequent administration does not provide better results.²⁷ The optimal dosing schedule can be determined by trial and error, titrating to the minimum frequency of application that still provides relief.

Chronic application of topical steroids can induce tolerance and tachyphylaxis. Ultra-high-potency steroids should not be used for more than three weeks continuously.²¹ If a longer duration is needed, the steroid should be gradually tapered to avoid rebound symptoms, and treatment should be resumed after a steroid-free period of at least one week. This intermittent schedule can be repeated chronically or until the condition resolves. Side effects are rare when low- to high-potency steroids are used for three months or less, except in intertriginous areas, on the face and neck, and under occlusion.²¹

Table 2. Potency Ratings of Topical Corticosteroids

<i>Potency (group)</i>	<i>Medication</i>			
	<i>Generic</i>	<i>Brand</i>	<i>Dosage vehicle</i>	<i>Available sizes</i>
Ultra high (I)	Augmented betamethasone dipropionate 0.05%	Diprolene*	G,† O	15, 45, 50 g
	Clobetasol propionate 0.05%	Clobex	L, Sh	59, 118 mL (L); 118 mL (Sh)
		Olux*	F	50, 100 g
		Temovate*	C, G, O	15, 30, 45 g (C, O); 15, 30, 60 g (G)
		Temovate E*	C	15, 30, 60 g
	Diflorasone diacetate 0.05%	Apexicon*	O	15, 30, 60 g
	Fluocinonide 0.1%	Vanos	C	30, 60 g
	Flurandrenolide 4 mcg per m ²	Cordran	T	24" × 3" and 80" × 3" rolls
	Halobetasol propionate 0.05%	Ultravate*	C, O	15, 50 g
	High (II)	Amcinonide 0.1%	—	O
Augmented betamethasone dipropionate 0.05%		Diprolene*	L	30, 60 mL
		Diprolene AF*	C	15, 50 g
Betamethasone dipropionate 0.05%		Diprosone*‡	O	15, 45 g
Desoximetasone		Topicort 0.25%*	C, O	15, 60 g
		Topicort 0.05%*	G	15, 60 g
Diflorasone diacetate 0.05%		Apexicon E*	C	15, 30, 60 g
Fluocinonide 0.05%		Lidex*	C,† G,† O	15, 30, 60 g
Halcinonide 0.1%		Halog	C, O, So	15, 30, 60, 240 g (C, O); 30, 60 mL (So)
Medium to high (III)		Amcinonide 0.1%	Cyclocort‡	C
	Betamethasone dipropionate 0.05%	Betanate*	C	15, 45 g
	Fluticasone propionate 0.005%	Cutivate*	O	15, 30, 60 g
	Triamcinolone acetonide 0.5%	Cinalog*‡	C, O	15 g

Table 2. Potency Ratings of Topical Corticosteroids (continued)

Potency (group)	Medication				
	Generic	Brand	Dosage vehicle	Available sizes	
Medium (IV and V)	Betamethasone valerate	Beta-Val 0.1%*	C, L	14, 45 g (C); 60 mL (L)	
		Luxiq 0.12%	F	100 g	
		Desoximetasone 0.05%	Topicort LP*	C	15, 60 g
		Fluocinolone acetonide 0.025%	Synalar*‡	C, O	15, 60 g
		Fluticasone propionate 0.05%	Cutivate*	C	15, 30, 60 g
		Hydrocortisone butyrate 0.1%	Locoid*	O	5, 10, 15, 30, 45 g
		Hydrocortisone probutate 0.1%	Pandel	C	15, 45, 80 g
		Hydrocortisone valerate 0.2%	Westcort*	C, O	14, 45, 60 g (C, O); 120 g (C)
		Mometasone furoate 0.1%	Elocon*	C, L, O	15, 45 g (C, O); 30, 60 mL (L)
		Triamcinolone acetonide 0.025%	Kenalog*‡	C, L, O	15, 80, 454 g (C, O); 60 mL (L)
	Triamcinolone acetonide 0.1%	Triderm*	C, L,† O†	15, 80, 454 g (C, O); 15, 60 mL (L)	
Low (VI)	Alclometasone dipropionate 0.05%	Aclovene*	C, O	15, 45, 60 g	
	Desonide 0.05%	Desonate	G	15, 30, 60 g	
		Desowen*	C, O	15, 60 g	
		Lokara	L	60, 120 mL	
		Verdeso	F	100 g	
		Fluocinolone 0.01%	—	C	15, 60 g
	Hydrocortisone butyrate 0.1%	Locoid*	C	5, 10, 15, 30, 45 g	
Least potent (VII)	Hydrocortisone 1%, 2.5%	—	C, L, O	20, 30, 120 g (C, O); 60, 120 mL (L)	

Table 3. Quantity of Ointment Based on Fingertip Units*

<i>Area of the body</i>	<i>Fingertip unit required for one application</i>	<i>Weight of ointment required for one application (g)</i>	<i>Weight of ointment required for an adult male to treat twice daily for one week (g)</i>
Face and neck	2.5	1.25	17.5
Trunk (front or back)	7	3.5	49
One arm	3	1.5	21
One hand (one side)	0.5	0.25	3.5
One leg	6	3	42
One foot	2	1	14

*—One fingertip unit = approximately 0.5 g.

Information from reference 28.

Table 4. Potential Side Effects of Topical Corticosteroids

Cutaneous/local effects

Atrophic changes

- Easy bruising
- Increased fragility
- Purpura
- Stellate pseudoscars
- Steroid atrophy
- Striae
- Telangiectasis
- Ulceration

Infections

- Aggravation of cutaneous infection
- Granuloma gluteale infantum
- Masked infection (tinea incognito)
- Secondary infections

Miscellaneous

- Contact dermatitis
- Delayed wound healing
- Hyperpigmentation
- Hypertrichosis (hirsutism)
- Hypopigmentation
- Perioral dermatitis
- Photosensitization

Cutaneous/local effects

Miscellaneous (continued)

- Reactivation of Kaposi sarcoma
- Rebound flare
- Steroid-induced acne
- Steroid-induced rosacea

Ocular changes

- Cataracts
- Glaucoma
- Ocular hypertension

Systemic effects

Endocrine

- Cushing disease
- Hypothalamic-pituitary-adrenal suppression

Metabolic

- Aseptic necrosis of the femoral head
- Decreased growth rate
- Hyperglycemia

Renal/electrolyte

- Hypertension
- Hypocalcemia
- Peripheral edema

Potential side effects of topical steroids

The most common side effect of topical corticosteroid use is skin atrophy. All topical steroids can induce atrophy, but higher potency steroids, occlusion, thinner skin, and older patient age increase the risk. The face, the backs of the hands, and intertriginous areas are particularly susceptible. Resolution often occurs after discontinuing use of these agents, but it may take months. Concurrent use of topical tretinoin (Retin-A) 0.1% may reduce the incidence of atrophy from chronic steroid applications.³⁰ Other side effects from topical steroids include permanent dermal atrophy, telangiectasia, and striae.

Potential side effects of topical steroids

Topical applications of corticosteroids can also result in hypopigmentation. This is more apparent with darker skin tones, but can happen in all skin types. Repigmentation often occurs after discontinuing steroid use.²⁹

Topically applied high- and ultra-high-potency corticosteroids can be absorbed well enough to cause systemic side effects. Hypothalamic-pituitary-adrenal suppression, glaucoma, septic necrosis of the femoral head, hyperglycemia, hypertension, and other systemic side effects have been reported.²⁹ It is difficult to quantify the inci-

Potential side effects of topical steroids



Rosacea

Potential side effects of topical steroids



Steroid atrophy

Potential side effects of topical steroids



Striae

Potential side effects of topical steroids



Telangiectasis