Skin conditions through the ages

INTRODUCTION

Advanced practice clinicians frequently are consulted by patients who have a skin condition that affects their quality of life. As one of the most visible characteristics of a person, skin quality is linked strongly to a person's confidence and perception of self-worth. Whether a skin issue is temporary or chronic, benign or life threatening, the appearance of a person's skin carries tremendous medical and psychological consequences. The advance practice clinician will have the opportunity to speak with many patients having different skin conditions and complaints. Several of the most common of these complaints can be treated effectively with over-the-counter or prescription medications. However, some skin complaints will require referral to a dermatology specialist for more comprehensive care. This CE lesson will provide guidance to the clinician concerning many of the most common skin conditions encountered in the retail setting.

ACNE AND SIMILAR SKIN CONDITIONS

Acne vulgaris

Acne is one of the most common skin problems. It is caused by blockage of the sebaceous gland in pilosebaceous units, and is characterized by blackhead/whitehead (comedones), papules and pustules. For acne, as well as the other skin conditions outlined in this lesson, DermNet.com has images that may be helpful in visualizing the various skin conditions. Acne tends to affect the face and upper chest and back, but can occur anywhere on the body. It occurs most often in adolescence in association with puberty and continues into early adulthood, often diminishing with time. However, it can last to varying degrees throughout a person's life. Although not associated with morbidity on its own, acne can negatively impact quality of life and self-esteem, especially during adolescence, which may be a time of tremendous social insecurity. For this reason, early and aggressive treatment is recommended.

Rosacea

Rosacea is classified as vascular hyperreactivity of unknown origin and primarily affects the face. It is more common in fair-skinned people of northern and western European descent and affects women to a much greater extent than men, though the severity of symptoms appears to be greater in men. Rosacea typically has an age of onset between 30 years and 60 years, in contrast to acne. Some rosacea can be easily confused with acne.

Factors inducing rosacea

There are four subtypes: erythematotelangiectatic (flushing, telangiectasia),
papulopustular (erythema, papules, pustules), phymatous (thickened, coarse skin, tissue hyperplasia) and ocular (burning, stinging, foreign body sensation, dryness). Rosacea flare-up often is preceded by exposure to a trigger, such as hot or cold temperatures, wind, exercise, alcohol, foods, niacin, cosmetics and skin products, and medications. For some individuals without rosacea, foods high in histamines, such as red wine, beer and aged cheese, can cause a persistent facial flushing due to histamine intolerance.

**Differential diagnosis**

Acne vulgaris and rosacea can be differentiated from each other and other skin conditions based on careful examination (Table 1). However, it should be noted that several conditions may coexist in a patient at any given time. The absence of comedones and presence of telangiectasia and deep erythema suggest rosacea rather than acne.

Other dermatologic conditions may appear similar to acne or rosacea. Seborrheic dermatitis affects the central face and nose, but the nasolabial folds usually are more involved. In addition, the skin often is itchy, scaly and flaky with scale around the ears and scalp, unlike acne or rosacea. Perioral dermatitis is most frequent in young women around the mouth. Papules and pustules are small, and it commonly is caused by fluorinated topical steroids, toothpastes, waxing, moisturizers, benzoyl peroxide-containing products or other irritants.

**Treatment of acne**

It is important to differentiate acne from rosacea as the treatment for these two conditions is different. In both conditions, the face should be washed gently, and while some of the topical medications are useful for both, rosacea patients should avoid the harsher cleansers, creams and astringents commonly used for acne.

For acne, the goals of treatments are to decrease follicular keratinization, sebaceous gland activity and *P. acnes* growth. It should be emphasized to the patient that acne is not caused by poor hygiene. The skin should be cleansed well, but harsh soaps should be avoided. Warm water, Cetaphil® or similar mild cleansers, or unscented Dove® or Ivory® soaps may be used by the patient. The purpose is to clean without disrupting the cutaneous barrier. After gently drying, a topical agent can be applied.

Benzoyl peroxide (2.5% to 10%) is a bacterial agent found in many different types of products. It has the side effect of drying out and irritating the skin, so a moisturizer is recommended. Further, the vehicles used for delivery (e.g., surfactants, solvents, preservatives) and the benzoyl peroxide itself can cause xerotic conditions with long-term use. Benzoyl peroxide often is used in conjunction with antibiotics and retinoic acids. Using benzoyl peroxide with topical retinoids may contribute to significant drying of the skin, which often is unpalatable for the patient.

Retinoids (i.e., vitamin A and its derivatives) have both comedolytic and anti-inflammatory properties and are of benefit for controlling comedonal, facial and truncal papulopustular disease. Isotretinoin is reserved for severe nodulocystic disease and acne that fails to respond to other treatments. Retinoids normalize exfoliation and prevent follicular plugging, which leads to reduced *P. acnes* overgrowth. Because of their anti-inflammatory activities, retinoids are considered useful as front-line therapies for inflammatory acne and are best used in conjunction with antibiotics. Retinoids also appear to have a role in maintenance therapy due to their anti-comedone properties. Retinoids should be avoided during pregnancy, particularly tazarotene (pregnancy category X), and by lactating women.

Topical antibiotics, such as erythromycin and clindamycin, are effective on papules and pustules, though lacking comedolytic properties. The use of clindamycin may be less likely to promote the acquisition of antibiotic resistance by *P. acnes* than erythromycin. Combination antibiotic and benzoyl peroxide reduce the emergence of drug-resistant *P. acnes* and are superior to either agent alone.

Comedonal acne typically responds well to topical antibiotic therapies, but inflammatory acne often requires systemic antibiotics for adequate control. Systemic tetracyclines (tetracycline, doxycycline and minocycline), clindamycin and erythromycin penetrate the sebaceous unit well, decrease *P. acnes* growth, have anti-inflammatory properties and are well tolerated. Minocycline is a very effective tetracycline derivative, but its use is associated with a higher frequency of photosensitivity. Doxycycline is better tolerated than tetracycline, but is associated with increased photosensitivity. Erythromycin use promotes *P. acnes* drug resistance at a high frequency but, unlike the tetracyclines, is safe during pregnancy. Each of these antibiotics is associated with different side effects of varying severity and frequency. And, of course, the use of any systemic antibiotic may lead to *Clostridium difficile*-associated diarrhea and potentially life-threatening pseudomembranous colitis.

Other agents have shown utility in controlling acne. Sulfur-containing compounds (e.g., sulfooctamide, elemental sulfur) and salicylic acid reduce cohesion of keratinocytes. Azelaic acid (15%) has both comedolytic and antimicrobial properties and is useful in treating hyperpigmentation. It also is prone to eliciting itching, burning and stinging, but appears to be as effective as other treatments.

Most treatment plans may take six to eight weeks before a benefit is seen by the patient. During this time, the acne may worsen before improving. Thus, patients should be encouraged to adhere to the treatment protocol and give the treatment time to act. The advance practice clinician should book a follow-up appointment with the patient in six to eight weeks at the time a treatment plan is initiated. When a patient fails to respond to evidence-based treatment options, referral for specialty evaluation or referral for accutane prescriptions may be appropriate.

Female patients with a suspected underlying endocrine disorder (i.e., excessive facial/body hair, premenstrual acne flares, irregular menstruation or amenorrhea) may need referral to gynecology or dermatology specialists as indicated. Patients using isotretinoin (Accutane®) should be monitored closely due to teratogenicity, depression, suicidal ideations and other potentially serious side effects.

**Treatment of rosacea**

Rosacea is an ongoing, chronic condition and differs from acne in that it does not subside with time but has the potential to worsen. If possible, the triggers associated with rosacea should be identified and avoided. Although, by itself, trigger avoidance may not prevent rosacea flares. In this case, rosacea therapy should be started early to keep the symptoms under control and lessen the likelihood of disease progression and disfigurement. No cure currently is available, and all treatment remains empirical. The different types of rosacea are treated differently and may occur simultaneously in patients. In general, treatment includes gentle cleaning with mild, lipid-free cleansers (e.g., Aquanil®, CeraVe®, Cetaphil® and many others), followed by topical ointments (e.g., metronidazole, azelaic acid, sodium sulfacetamide) or antibiotics (e.g., erythromycin, clindamycin). Benzoyl peroxide and astringents should be avoided, as should topical steroids, since these may aggravate the condition. Sunscreen and creams are available for daily use on mild rosacea. These creams often contain botanicals, vitamins, minerals and other ingredients with purported anti-inflammatory properties.

Antibiotics can be helpful with papulopustular rosacea. Metronidazole is an anti-inflammatory and immunosuppressive antibacterial agent.
Topically, 0.75% to 1% metronidazole is active against papules and pustules, and reduces erythema but not telangiectasia. Metronidazole has been shown to be useful in maintenance therapy of rosacea. As with acne, 15% azelaic acid is effective and demonstrated similar efficacy as compared with metronidazole. Sodium sulfacetamide (10%) and sulfur (5%) emollient foam also is a useful topical agent.

Rosacea is difficult to treat, and severe cases should be referred for a dermatology evaluation. This would be true for patients that might need stronger therapies, such as isotretinoin, and patients with ocular rosacea. Cases with telangiectasia or phymatous changes are best referred out for electrosurgery, laser surgery or dermabrasion treatment.

**Follicular keratosis**

Follicular keratosis (keratosis pilaris) most often appears on the back and outer sides of the upper arms, though all body parts except glabrous skin may be affected (Figure 1). It occurs as a result of excess keratin, which entrapsthe hair follicle causing the formation of a hard plug, giving the appearance of “chicken skin.” It is very common, affecting 50% to 80% of all adolescents and approximately 40% of adults. It runs in families, affects females more frequently than males and, though cosmetically displeasing, has no long-term health implications.

**Figure 1  Follicular keratosis**

Source: DermatologyInfo.net/english/chapters/chapter43.htm#362

**Treatment of follicular keratosis**

Mild follicular keratosis is best treated with a regular skin care program, which includes washing with nondrying cleansers and over-the-counter moisturizing lotions. For moderately involved cases, advance practice clinicians may prescribe lotions and creams with lactic acid, alpha-hydroxy acid lotions, glycolic acid, urea, salicylic acid, topical steroids and/or retinoic acid. These creams generally are applied two to three times daily. For severe cases, a medium potency steroid cream may be needed for a week to 10 days to reduce inflammation, followed by reestablishment of a maintenance program. Retinoids, while useful in acne, are well tolerated in follicular keratosis patients but achieve only partial responses. Hyperpigmentation can be treated with fading creams, such as 4% hydroquinone or 15% to 20% azelaic acid. For resistant follicular keratosis, such minor surgical procedures as gentle acne surgery, microdermabrasion and chemical peels may be used.

**DERMATIC AND ECZEMA**

Dermatitis is an allergic response to an environmental factor, though genetics appear to play a role in some forms. For many types of dermatitis, the triggering irritant is unknown. Dermatitis can be differentiated from each other by additional characteristics, such as severity, body part(s) affected and other symptoms. Although each type of dermatitis is treated differently, most treatments utilize corticosteroid creams, wet compresses and allergen avoidance. The most common types of dermatitis are atopic dermatitis, contact dermatitis, xerotic eczema and seborrheic dermatitis.

**Dermatitis treatment plans**

**Atopic dermatitis treatment**

Atopic dermatitis often runs in families with a history of asthma, and so it is believed to contain a genetic component. It typically is a childhood disease and is characterized by an itchy rash commonly on the face, scalp and neck; inside of elbows and knees; and on the buttocks. It affects 15% to 20% of children and 1% to 3% of adults, and rates appear to be rising. The “hygiene hypothesis” was proposed by Strachan to explain this increased occurrence. The hypothesis states that asthma and atopic dermatitis might be prevented by early childhood infections, which now are uncommon due to improved hygiene practices. Adults with atopic dermatitis may have been coping with the disease most of their lives. Infection of the skin — by over colonization with Staphylococcus aureus (S. aureus), fungi and viruses — has been implicated in acute flares of atopic dermatitis. Clinicians should examine the patient closely for any signs of impetigo or other deeper forms of skin infection. Impetigo is easily mistaken for contact dermatitis, and diagnosis criteria have been established.

Atopic dermatitis is a hyperirritability disorder, in other words, a state of increased reactivity to a variety of what otherwise would be minor stimuli. Thus, traditionally, patients have been encouraged to avoid irritants known to trigger flares, adopt good bathing and skin care habits, and use hypoallergenic creams and lotions. Irritants can include skin care ingredients and foods. Children are most likely to suffer from food-induced dermatitis flares. Keeping a detailed diary of diet and skin condition can help identify potential foods that contribute to the dermatitis. Irritant avoidance and moisturizer use work reasonably well in mild disease (Table 2), but moderate to severe disease will require additional agents to control flares. In this regard, topical corticosteroids have been the mainstay for several decades. Corticosteroids, when used topically, have significant side effects on skin, including atrophy telangectasia and perioral dermatitis. Thus, corticosteroids should be used for short-term relief (i.e., less than two weeks) and should not be used on the face. It is not clear if chronic topical use can lead to some of the systemic side effects chronicled for these agents, including bone loss, vision changes and suppression of the hypothalamic-pituitary axis. Closely monitoring patients is recommended.

Calcineurin inhibitors are approved for treating atopic dermatitis. Tacrolimus and pimecrolimus inhibit the T-cell response. Compared with corticosteroids, 0.03% (in children) and 0.1% (in adults) tacrolimus was equal to or superior in several studies. Tacrolimus appears to be superior to pimecrolimus. Calcineurin inhibitors carry a black-box warning for lymphoproliferative disorders, including cancer. However, it is questionable whether the systemic levels needed to achieve an increased risk of cancer can be achieved through topical application. Another relatively new product, called Atopiclair, has entered the marketplace. It is a steroid-free cream containing hyaluronic acid, telmesteine, Vitis vinifera and glycyrrhethinic acid. It is similar to a cream that has utility in the management of radiation-induced dermatitis.

Antihistamines are commonly used to treat atopic dermatitis. There is no evidence to support the use of non-sedating antihistamines, but sedating antihistamines may improve symptoms through enhanced sleep, which reduces nocturnal itching and scratching. Lastly, ultraviolet light can improve atopic dermatitis symptoms, though some forms of this therapy can increase the risk of skin cancer.

**Contact dermatitis treatment**

Contact dermatitis can be initiated by an irritant or an allergen. Irritant contact dermatitis is more frequently encountered, resulting from contact with a number of environmental agents, such as detergents, and is more likely encountered in the work place than the home environment. Allergen contact dermatitis is a delayed hypersensitivity reaction to an allergen. The rash from exposure to poison ivy, sumac or oak is the most well-known contact dermatitis of this type and results from contact with urushiol (Figure 2). However, allergens can be found in almost any product that may directly or incidentally touch the skin, including preservatives and fragrances found in cosmetics and such common household products as laundry detergents. The best therapy for
contact dermatitis is avoidance of the irritant or allergen. This may require referral to an allergy specialist for patch testing in order to identify the irritant or allergen. 29

In most cases, contact dermatitis can be treated effectively at home. Washing with soap and water immediately after exposure can reduce symptoms significantly. Several poison ivy washes are available that purport to be especially effective at removing urushiol, including Zanfel and Technu. Symptoms can be further lessened by applying cold, wet compresses three times daily for 30 minutes each, using calamine lotion or nonprescription hydrocortisone cream (not on the face) and oral antihistamines. Scratching worsens the inflammation and should be discouraged. For infants and very young children, socks or cotton mittens over the hands will reduce the impact of scratching while asleep. Sedating antihistamines in older children and adults might be of benefit at night, as they reduce scratching while asleep.

For more severe contact dermatitis, prescription corticosteroids and antihistamines are available. 30 These medications may be required for only a few days to several weeks, depending on the severity of the dermatitis. Once the offending allergen is removed from a patient’s environment, the rash typically resolves on its own in a matter of days to weeks. As the old adage goes, “an ounce of prevention is worth a pound of cure.”

Xerotic dermatitis treatment
Xerotic eczema frequently is encountered in the winter months and in older populations. 31 It is a result of dry skin that has become cracked, itchy and tender. Patients should be encouraged to use anti-itch or moisturizing lotion (e.g., Aquaphor®, Lac-Hydrin®) frequently. Otherwise, damage to the skin will allow bacterial/fungal invasion of the dermis.

Seborrheic dermatitis treatment
Seborrheic dermatitis results in a greasy scale or peeling around the scalp and face. It can occur with or without reddened skin. Seborrheic dermatitis is believed to result from a combination of skin oil overproduction and infection by the yeast Malassezia (formerly Pityrosporum). Many factors increase the risk of occurrence, including a family history, stress, fatigue, oily skin, infrequent hair washing and skin cleaning, alcohol-containing lotions and acne.

Treatment at home is feasible for mild cases of adult seborrheic dermatitis. 22 Over-the-counter medicated (dandruff) shampoos should be used daily and medicated lotions are available for other body parts. Active ingredients typically include salicylic acid, ketoconazole, selenium, zinc and/or resorcin. Medicated shampoos should be left on the scalp for five minutes to 20 minutes at a time. More severe cases may require stronger prescription-strength medicated lotions.

In infants, seborrheic dermatitis is known as cradle cap. Cradle cap is not a result of poor hygiene and often resolves spontaneously. For those wishing to treat cradle cap, daily gentle shampoos are recommended until scales are absent, then shampooing can be reduced to two to four times per week.

Adult seborrheic dermatitis is a lifelong condition, and flares are expected periodically. A dermatology specialist should be consulted if the symptoms do not respond to self-care, patches of dermatitis drain fluid or pus, or the skin becomes very painful. Seborrheic dermatitis also can coexist with scalp psoriasis (sebopsoriasis).

Table 2
Selected nonprescription atopic dermatitis products

<table>
<thead>
<tr>
<th>TOPICAL MEDICATION</th>
<th>SELECTED INGREDIENTS</th>
<th>INDICATION</th>
<th>DIRECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquaphor® healing ointment</td>
<td>Petrolatum</td>
<td>Dry, cracked or irritated skin</td>
<td>Apply as needed</td>
</tr>
<tr>
<td>Cortizone-10®, Lanacort®</td>
<td>Hydrocortisone</td>
<td>Itchy, dry, inflamed skin</td>
<td>Apply no more than 3 to 4 times daily</td>
</tr>
<tr>
<td>Elta® tar</td>
<td>Coal tar</td>
<td>Itchy, dry, inflamed skin</td>
<td>Apply 1 to 4 times daily</td>
</tr>
<tr>
<td>Eucerin® creme</td>
<td>Petrolatum, mineral oil, ceresin</td>
<td>Dry, cracked or irritated skin</td>
<td>Apply as needed</td>
</tr>
<tr>
<td>Lubriderm®</td>
<td>Mineral oil, dimethicone, triglycerides</td>
<td>Daily moisturizing</td>
<td>Apply as needed</td>
</tr>
<tr>
<td>Moisturin® therapeutic lotion</td>
<td>Dimethicone</td>
<td>Daily moisturizing</td>
<td>Apply as needed</td>
</tr>
</tbody>
</table>

Table 2
Selected nonprescription atopic dermatitis products

or to eczema, which often is found in the popliteal and antecubital fossae. Psoriasis typically appears as red, nonpustular, sharply defined plaques with adherent silvery white scale that bleeds upon removal (i.e., Koebner sign). Pustular forms also are known. Psoriasis carries a high quality of life burden centered on poor self-image and embarrassment. Further, in people with psoriasis, up to 30% also will develop psoriatic arthritis, a chronic inflammatory condition that can result in pain, stiffness and swelling in and around the joints. 33

Psoriasis treatment plans
Mild to moderate psoriasis treatment
For the treatment of mild to moderate psoriasis (i.e., < 5% to 10% body surface area), such over-the-counter topicals as bath solutions (e.g., dead seas salts), moisturizers (e.g., Vanicream®, shea butter), salicylic acid (e.g., Neutrogena®, Stridex®), coal tar preparations (e.g., Oxipor® VHC psoriasis lotion, MG217) and petroleum jelly may help to relieve some of the symptoms and dryness of the skin. 34 If these treatments are ineffective, the clinician should utilize the next level of topical agents, including corticosteroids, anthralin, vitamin D3 (calcipotriol) and retinoids.

Topical steroids are the mainstay of treatment. 34 Ultrapotent steroids (i.e., potency level 4) should be used only on thick lesions — such as elbows and knees — and on acute, painful lesions on hands and feet. If used on other parts of the body, use should be limited to two weeks on and two weeks off to prevent skin atrophy. Steroid-induced skin atrophy is a major concern in long-term treatment plans. Atrophied skin rips and tears easily. Thinner plaques on adults and any plaques on children should be treated with lower potency steroids, such as triamcinolone 0.1% (potency level 4). A steroid stronger than hydrocortisone or desonide should never be applied on the face or intertriginous areas to prevent atrophy or striae.

Vitamin D3 analogs (i.e., calcipotriol) can be effective, but have a slow onset of efficacy. These often are combined with corticosteroids, starting with high-potency steroids and then...
stepping down through lower-potency steroids and less frequent application. Calcipotriol can worsen pre-existing hypercalcemia. The combination of calcipotriol plus betamethasone dipropionate has shown to be effective in a number of clinical trials.34

Topical retinoids also are useful in psoriasis management. Tazarotene cream (0.05% and 0.1%) is available. It often is used in conjunction with steroids and usually is effective within two months.

Nontraditional approaches have been utilized by some people to manage their psoriasis, such as traditional Chinese medicine, acupuncture and ayurvedic medicine, though these have not been evaluated for efficacy by the U.S. Food and Drug Administration.

Severe psoriasis treatment

For more severe cases and cases that are not controlled using the topical agents, more effective agents are used.34 Phototherapy has been found to be useful in treating moderate psoriasis. Psoralen and ultraviolet A light, or PUVA, is effective at reducing skin cell proliferation. PUVA is associated with nausea, headache, fatigue and itching, and a statistical increase in squamous cell carcinoma with long-term use.

Psoriasis that still is not adequately controlled with topical creams or phototherapy is treated with systemic medications. The agents traditionally used are cyclosporine, methotrexate and acitretin (retinoid). The first two act primarily as immunosuppressants, while the retinoid acts as an anti-inflammatory agent.

Cyclosporine has a long history in preventing transplant rejection. In psoriasis, it can be used for up to a year at a time. It may take three to four months to reach maximum effect and control. The risk of kidney damage increases with length of time and amount of cyclosporine taken. Lastly, cyclosporine is metabolized by the cytochrome P450 system, so there is significant potential for interactions with specific drugs and food.

Methotrexate was developed as an anticancer drug, which has found use in several autoimmune chronic conditions, including psoriasis. It may be associated with liver toxicity, and liver function must be monitored during use. Alcohol consumption must be avoided, and it also is metabolized by the cytochrome P450 system.

Acitretin is the only oral retinoid approved for psoriasis in the United States.34 It tends to work slowly for psoriasis vulgaris and may take up to six months to reach maximal effect. The efficacy can be enhanced using phototherapy in conjunction with acitretin. Women of childbearing potential should not consume alcohol during use and for two months after cessation of acitretin because this will enhance conversion of acitretin to a slowly eliminated product, which increases the risk of birth defects if the woman becomes pregnant.

In addition, three monoclonal antibodies against tumor necrosis factor a, or TNFas — infliximab, etanercept and adalimumab — recently have been approved for use on psoriasis.35 As anti-TNFas, these are immunosuppressants and carry the risk of infection and cancer, among other risks. Ustekinumab, another monoclonal antibody, targets interleukin 12 and 23, or IL-12 and IL-23, signaling pathways, and offers efficacy and safety profiles similar to the anti-TNFas agents.

Patients sometimes will have difficulty in maintaining a new treatment regimen, whether it is because of the smell or messiness of creams and lotions; traveling to receive therapy on a regular basis, for instance with phototherapy; undesirable side effects; or a worsening of their condition. However, if possible, patients should be encouraged to stay with a treatment because new treatments may take up to two to three months to begin improving patients’ condition, during which time their condition may worsen. Terminating their treatment can cause flares and potentially life threatening. Abrupt withdrawal of systemic steroid treatment can result in a dangerous rebound flare-up of the disorder, psoriatic erythroderma, wherein there is widespread inflammation and exfoliation over most of the body surface accompanied by severe itching, swelling and pain. This can be fatal if severe enough.36

SCARS

Scars are a normal response of skin to injury. As the skin heals from a wound (e.g., accident, disease, surgery) the collagen fibers that make up the matrix are not organized as they were in the original tissue, leaving behind visible defects in the skin.

Types of scars

Hypertrophic scars are those that rise above the surrounding skin as a result of collagen overproduction. Figure 3 includes a picture of a hypertropic scar, as well as two other types of scarring outlined below. A special form of hypertrophic scar is the keloid scar. Unlike typical hypertrophic scars, keloid scars can continue growing past their original site of injury, akin to benign tumors. They are more common in people of African descent.

Atrophic scars result when underlying skin structures (e.g., fat, muscle) are lost after injury, giving the skin a sunken appearance. They are associated with acne, chickenpox, MRSA, surgery and accidents.

Rapid stretching of the skin can result in striae (i.e., stretch marks). The most common causes of this are pregnancy, rapid weight gain (e.g., through the use of anabolic steroids by young athletes) or growth spurts. Striae typically fade substantially after a few years. However, striae also can be a result of ongoing infection. For instance, Bartonella is transmitted via ticks, fleas and lice between humans and other mammals.

Scar treatment plans

There are only a few types of scars, but many different treatments for pre-existing scars.37 Chemical peels, dermabrasion and ablative laser therapy remove the outer layer(s) of skin, leading to exfoliation. Caution should be exercised in people prone to keloid forma-

Figure 3

Scars: Hypertrophic, atrophic (acne), stretch marks
tion since these treatments work through causing injury to the skin. Nonablative laser therapy and steroids injected into the scar tissue can be used to flatten and soften hypertrophic scars. Topical steroids are ineffective for hypertrophic scars. Atrophic scars can be filled in with collagen injections, though with some risk of disfigurement, allergic reaction and lack of permanence. Silicone products and pressure dressings are used to enhance wound healing and reduce scarring after injury or surgery. Although these treatments generally are accepted to be of benefit, there is little supporting evidence. It is believed that they work by applying gentle pressure to the wound, causing the scars to become flatter and softer.

In general, nonprescription products approved for the management of scars are indicated to help new and existing scars resolve from surgery, injury, burns, acne and stretch marks appear softer and smoother (Table 3). Common ingredients that may be found in these products include cocoa butter, essential oils, onion extract, vitamin E and sunscreens. Indications for products with a focus on improving the appearance of striae include restoring vital moisture and tone to the skin and smoothing marks to the skin.

**Rashes Secondary to Infection**

There are many skin rashes that result from an acute infection of which the advance practice clinician should be aware. Children and young adults particularly are prone to a number of skin infections that lead to rashes. Most of these rashes are viral in origin and resolve without aggressive intervention. Others, due to such causes as bacterial and parasitic infections and cancer, should be referred for additional evaluation and therapy.

**Erythema Infectiosum**

Fifth disease (erythema infectiosum) is caused by the human parvovirus B19. It typically appears two to three weeks after infection, beginning with flu-like symptoms and followed a week later by a “slapped cheek” rash, possibly on the chin or forehead, which resolves in two to five days. A lacy, sometimes itchy rash then appears on the torso and may last for one to three weeks. It may be associated with arthralgias. It is not a serious disease for the majority of individuals. However, if a pregnant woman contracts this infection, it may be associated with hydrops fetalis, leading to spontaneous miscarriage. Treatment is aimed at symptom management. Patients should be encouraged to drink liquids to prevent dehydration and use acetaminophen (no aspirin) for fever, if necessary. The itch may be lessened with oatmeal baths, calamine lotion and over-the-counter antihistamines.

**Hand, foot and mouth disease**

Coxsackie A and B viruses and enteroviruses produce hand, foot and mouth disease. It is most common in children, but can present at any age. It starts with flu-like symptoms for one to two days followed by the development of oral lesions having the appearance of canker sores (i.e., yellowish ulcers with red halo). Within 24 hours, lesions arise on the hands and feet. These are 3 mm to 7 mm red, macular lesions that rapidly become pale, white and oval with a red halo. The patient is very contagious from two days before to two days after lesions appear. The disease usually resolves in two to seven days. Treatment is aimed at symptom relief. Acetaminophen, warm baths, oral pain relievers and topical antihistamines can be used to comfort the patient.

**Bacterial Infections**

Impetigo results from a contagious superficial skin infection, usually caused by staphylococci or sometimes streptococci. These microorganisms are a natural part of the flora of skin and nasopharynx. The infection results from the organisms gaining access to the lower layers of the skin. It will resolve on its own, but may take weeks to months to fully clear. It begins as a rash that will not go away, initially in a small area, then growing in size. The lesions are yellow and crusted. Topical antibiotics will assist in eliminating the outbreak. However, methicillin-resistant Staphylococcus aureus, or MRSA, infection is a major concern with impetigo. MRSA starts as small red bumps, resembling pimplies, spider bites or boils that grow into painful, deep, pus-filled boils. MRSA, and all forms of impetigo, may be more difficult to treat as it descends into the soft tissue, where it can cause systemic infection (sepsis), toxic shock syndrome and necrotizing fasciitis. Because it is resistant to the beta-lactam and cephalosporin antibiotics, the first-line treatment for MRSA is trimethoprim/sulfamethoxazole. If unable to take trimethoprim/sulfamethoxazole, doxycycline is an effective option for individuals older than 8 years of age. MRSA also is very contagious. For these reasons, patients with impetigo should be referred immediately for a bacterial culture and treatment as indicated.

**CONCLUSION**

The advance practice clinician should be aware of the common dermatological conditions and know how to treat them effectively. It also is important for the clinician to recognize when it is necessary to refer patients to a dermatology specialist for further evaluation.

**Table 3**

<table>
<thead>
<tr>
<th>Selected nonprescription scar and stretch mark products</th>
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<tbody>
<tr>
<td><strong>Topical Medication</strong></td>
</tr>
<tr>
<td>Bio-Oil®</td>
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<tr>
<td>Kelo-cote® scar gel</td>
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<td>Mederma® stretch marks therapy advanced cream formula</td>
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<td>Palmer’s® cocoa butter for stretch marks</td>
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<td>Scarguard®</td>
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**Practice Points**

- Emphasize to patients that acne is not caused by poor hygiene.
- Although each type of dermatitis is treated differently, most treatments utilize corticosteroid creams, wet compresses and allergen avoidance.
- Atopic dermatitis is a hyperirritability disorder, in other words, a state of increased reactivity to a variety of what otherwise would be minor stimuli.
- In most cases, contact dermatitis can be treated effectively at home.
Learning Assessment

Successful completion of “Skin conditions through the ages” is accredited for 1.25 hours of continuing education credit, of which 0.75 hour is considered pharmacology credit. To obtain credit, answer the following questions and complete the evaluation online at DSNCollaborativeCare.com.

1. Which of the following is characterized by comedones, papules and pustules; tends to affect the face, upper chest and back; but can occur anywhere on the body?
   - a. Acne
   - b. Atopic dermatitis
   - c. Eczema
   - d. Rosacea

2. Atopic dermatitis typically is characterized by an itchy rash commonly found on which of the following locations?
   - a. Face, scalp and neck
   - b. Inside of elbows and knees
   - c. Buttocks
   - d. All of the above

3. Which of the following results in a greasy scale or peeling around the scalp and face, and can occur with or without reddened skin?
   - a. Contact dermatitis
   - b. Seborrheic dermatitis
   - c. Xerotic dermatitis
   - d. All of the above

4. Female patients with acne and a suspected underlying endocrine disorder — such as excessive facial/body hair, premenstrual acne flares, irregular menstruation or amenorrhea — may need which of the following?
   - a. Clindamycin
   - b. Isotretinoin
   - c. Tetracycline
   - d. Referral to gynecology or dermatology specialist

5. The best therapy for ________ is avoidance of the irritant or allergen, which may require referral to an allergy specialist for patch testing in order to identify the irritant or allergen.
   - a. Contact dermatitis
   - b. Erythema infectiosum
   - c. Psoriasis
   - d. All of the above

6. Which of the following typically appears as red, nonpustular, sharply defined plaques on the face, neck, back, upper arms or forehead as well?
   - a. Acne
   - b. Eczema
   - c. Rosacea
   - d. None of the above

7. Isotretinoin is the only oral retinoid approved for psoriasis in the United States.
   - a. True
   - b. False

8. Which type of rash typically begins with flu-like symptoms, followed a week later by a “slapped cheek” rash, possibly on the chin or forehead as well?
   - a. Hand, foot and mouth disease
   - b. Erythema infectiosum
   - c. Methylcellulose-resistant Staphylococcus aureus
   - d. None of the above

9. Although each type of dermatitis is treated differently, most treatments utilize corticosteroid creams, wet compresses and allergen avoidance.
   - a. True
   - b. False

10. Most treatment plans for acne may take how long before a benefit is seen by the patient?
    - a. Seven to 10 days
    - b. Two to three weeks
    - c. Four weeks
    - d. Six to eight weeks