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Trying To Keep Ahead of Lice: A Therapeutic Challenge

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ABSTRACT

*Pediculosis capitis, or head lice, is a world-wide public health concern affecting persons of all ages and socioeconomic backgrounds. It is caused by *Pediculus humanus capitis*, an obligate ectoparasite that lives on human hair and feeds on the blood from the skin. Upon diagnosis, treatment should be initiated, since established infestations with head lice generally do not spontaneously resolve. Chemical pediculicides are currently the standard treatment, however, issues of resistance have made it necessary to explore new alternatives. If an infestation is resistant to these drugs, then the physician should consider treating with an agent from a different class of pediculicides or, potentially, with newer nonpediculicides.*

Key Words: *pediculosis capitis, head lice, pediculicide*

In the US, the number of head lice infestations annually is estimated between 6–12 million among children 3–12 years of age.¹ The social, economic and educational impact of head lice infestations is considerable. In the US, the total direct costs for treatment and indirect costs for lost wages, educational programs, and school and nursing home monitoring programs have been estimated at more than \$1 billion annually.²

Infestation is most common in school-aged children with girls being more commonly affected than boys. African-American children are less often affected; this variation is thought to be the result of differences in the hair shaft structure, which may be oval shaped and thus more difficult for a louse to grasp.¹ Transmission of head lice most commonly occurs through close physical contact, especially head-to-head contact, but fomites, such as hats also play a role. Louse transfer has been found to be optimal when hairs are relatively stationary and parallel, suggesting that louse transmission is more likely to occur while children are at rest, than during periods of vigorous play.³

Head lice infestation is caused by the obligate ectoparasite *Pediculus humanus capitis*, a wingless, elongated, dorsoventrally flattened insect. The adult louse feeds 4–5 times/day and can normally only survive for 1–2 days away from the scalp. Eggs are glued to the hair in egg castings, or nits, close to the scalp and can survive up to 10 days away from the human host. Lice typically lay nits within 1–2mm of the scalp and for practical purposes, nits within 1cm of the scalp should be counted as a sign of active infestation.⁴

Clinical Presentation

Although some children with infestation are asymptomatic, the most common symptom is pruritus, which occurs due to sensitization to either louse salivary or fecal antigens and may be so intense that excoriations and secondary bacterial infection may occur.⁵

Many children with an active infestation will, on exam, have nits attached to their hair and some live lice on their scalp. The diagnostic gold standard for head lice is finding a live louse or nymph on the scalp or a viable egg attached to the hair.⁵ Nits alone are not proof of active infection because some of these represent hatched empty shell casings or nonviable eggs that may retain a viable appearance for weeks after death. Microscopic examination of the nit, or use of a hand lens, may aid in this determination.⁴ Since lice move rapidly, not finding a louse does not completely rule out infestation. The use of louse combs increases the diagnostic yield.³ If head lice is diagnosed, then it should be treated, since established infestations, in general, do not spontaneously resolve.

Treatment

The ideal treatment agent for lice would be free of harmful chemicals, readily available without a prescription, easy to use, and inexpensive.⁵ Chemical pediculicides are currently the standard treatment.

Prior to the emergence of resistance, the treatment of choice in North America was permethrin 1% due to its safety and efficacy. Unfortunately resistance to permethrin and lindane is common in populations where these pediculicides have been heavily used.³ To illustrate this, the insecticidal activity of pyrethroids in the mid 1980s was 100%, but by 2000 it had decreased to only 28%.⁶ Conversely Meinking, et al., in a recent study, showed 1% lindane was the slowest and least effective pediculicide with no lice eradicated after 10 minutes (the recommended application time), and killing only 17% of lice after 3 hours.⁷ Malathion (Ovide®, Taro Pharmaceuticals), which had not been used extensively in the US, has performed well in permethrin-resistant populations.³ Lice resistance to both pyrethrin and malathion has been documented in the UK (Downs, et al. showed a 64% failure rate for malathion).⁸ The pattern of resistance in an area generally follows the pattern of pediculicide use, and this geographic variation in sensitivities further reinforces the belief that lice adapt to toxins and develop resistance with ongoing exposure.

Treatment Failures

While treatment failures may be due to drug resistance, it is important to recognize many treatment failures are

a result of reinfestation from an untreated classmate, inadequate quantity of pediculicide applied, or improper duration of product application.⁴ A recent paper suggested that a second treatment of the prescribed standard pediculicides (except permethrin) should be administered ideally 10 days after the start of treatment to kill all active stages of the louse.⁹ However, in practice many physicians retreat in 7 days instead of 10. Resistance should be suspected after the second treatment if live lice are still present 2-3 days after a product has been used correctly and no other cause for failure can be identified.¹ If lice are present after 2 correctly applied treatments, resistance is certain.¹ Resistant infestations should be treated with an agent from a different class of pediculicides or with newer nonpediculicide agents.

Since permethrin resistance may be a relative phenomenon, some clinicians will use higher concentrations and longer durations of contact in an attempt to overcome this resistance. Whether increasing the permethrin concentration from 1% to 5% and leaving it on overnight affects the cure rate is unclear. Certainly this pattern of treatment may cause a higher rate of skin irritation, but longer contact with the same products is already used with other ectoparasites, such as scabies.

‘No nit’ policies exclude children from school unnecessarily and are not recommended.⁴ The presence of nits alone should not be the basis for exclusion of children from school. The child should be allowed to return to school or child care facilities after proper treatment.⁵

Myths and Facts

Myths about head lice are abundant and belief in these myths is often why treatments are not used properly and why people believe their lice treatment has failed. (See Table 1.)

Standard Pediculicides: Neurotoxic Agents

These agents are historically considered the standard treatment and have been the most effective treatment for head lice. This category of pediculicides is not recommended for children under 2 years of age and off-label use of these products for patients in this age range is based on clinical judgment.⁵

These products should be applied to the entire scalp. Because hair conditioner may coat the hair and protect the lice and nits, it should be avoided before product application.⁷

Myth	Fact
All children with lice scratch or itch.	Initial infestation may produce no signs or symptoms for 4–6 weeks.
Lice jump or fly from head to head.	Lice can be dislodged from hair by air movements giving the appearance of flying.
Lice live in carpets, beds, clothes, and sofas	Lice can only live for 24-48 hours away from a human host.
Lice die immediately after treatment.	Lice may take several hours to die following treatment.
One treatment is enough.	Due to loss of residual activity of pediculicides, two treatments are recommended to kill newly hatched nymphs.
Permethrin based products are 100% ovicidal.	Permethrin kills 70% of eggs with one treatment.
Everyone in the family should be treated.	Only those with a proven infestation should be treated, although everyone should be checked daily to weekly.
Head lice prefer long or dirty hair.	The likelihood of infestation is not affected by hair length or cleanliness.

Table 1: Myths and facts about head lice¹⁰

Permethrin

Permethrin 1% (Nix[®]) is a poorly absorbed synthetic pyrethrin with pediculicidal and ovicidal activity. It blocks sodium channel repolarization of the louse neuron resulting in respiratory paralysis and death. By leaving a residue on the hair, it remains active for 2 weeks following application.⁵ After washing hair, rinsing with water, and towel drying, it is applied to the scalp and hair for 10 minutes and then rinsed out. To ensure a cure, many practitioners recommend a second treatment approximately 1 week later as any eggs not killed by first treatment will be hatching.

Permethrin-based Products

Permethrin-based products include over-the-counter (OTC) extracts of natural pyrethrins from chrysanthemums combined with piperonyl butoxide to increase stability and effect. These products are neurotoxic to lice but not ovicidal and even after two treatments viable lice and eggs may remain. These products are contraindicated in patients who are allergic to ragweed, chrysanthemums, or other permethrin products.⁵

Malathion

Malathion is an organophosphate cholinesterase inhibitor that causes respiratory paralysis of the louse. It is a fast acting pediculicide that presently has the highest ovicidal activity. It binds to the sulfur atoms of the hair, accounting for its residual effect. Malathion 0.5% can be applied for 10 minutes or overnight and repeated in 1 week. It has an unappealing odor and can cause stinging of the skin and eyes.⁵ This product

should be used with caution, as its base is flammable and may lead to respiratory depression if ingested (although there are no reported cases).⁴ Currently significant resistance to this agent has not been reported in the US, but may occur with ongoing use as seen in other countries.⁸

Lindane

Lindane (gamma benzene hexachloride) 1% lotion is pediculicidal but it has limited ovicidal activity. This organochloride kills lice by causing CNS stimulation and respiratory paralysis. Given lindane's increased side-effect potential including neurotoxicity and bone marrow suppression, it is considered a second-line treatment.⁵ Lindane remains on the market as an alternative when other treatments have failed. It is contraindicated in children under 2 years, pregnant women, and nursing mothers.

Oral Agents

Ivermectin

Ivermectin, an antihelminthic drug, has been suggested for off-label use in the treatment of head lice at a dosage of 200µg/kg, repeated in 7-10 days to kill newly hatched nymphs.¹¹ It is an effective pediculicide and the mechanism of action is thought to be on the symbiotic gram-negative bacteria that are required to digest blood. With the concern of possible neurotoxicity, the safety and efficacy of this agent for head lice remains to be established.³ No resistance has been reported to date and it may be used after failure with topical pediculicides. Treatment with this agent may benefit patients with extensive infestations or infestations with multiple types

of ectoparasites.³ Oral ivermectin should not be used in children weighing less than 15kg.⁴ Topical ivermectin holds some promise but warrants further study.³

TMP/SMX

Oral TMP/SMX has been shown to be effective in small studies of off-label use.⁵ It presumably works by destroying the gut flora of the louse, thereby interfering with its ability to synthesize vitamin B and ultimately causing death.⁵ Combination therapy with topical agents may improve its efficacy.

Non-neurotoxic Agents

Exoskeleton Integrity Dehydration Pediculicides

A new nonpesticide product containing isopropyl myristate 50% and ST-cyclomethicone 50% (Resultz™, Altana) works by dissolving the waxy exoskeleton of the louse, dehydrating them and eventually leading to

their death. The first application is applied to dry hair, the scalp, and the nape of the neck; it is left in place for 10 minutes and then rinsed. A second application, 1 week later is recommended.

Based on safety and efficacy data, Health Canada has recently approved this nonprescription behind the counter product for the treatment of lice in persons aged 4 years and older. Phase II clinical trials document a higher success rate (no live lice) when compared with traditional pediculicides (57% Resultz™ vs. 22% with RID®; 77.1% Resultz™ vs. 20% with permethrin 1%).¹⁷ Other Phase II studies have documented a 97% (28 of 29 patients) success rate.¹⁶ In studies to date, the product was well tolerated with mild local erythema or pruritus being the main side-effect (8 of 29 patients).¹⁶ Phase III clinical trials are pending. Isopropyl myristate is a water-insoluble organic ester used as an emulsifier and emollient in low concentrations in

Treatment Categories	Comments	Drug	Available Brand Names
Standard pediculicides	<ul style="list-style-type: none"> Historically considered standard treatment; however instance of resistance have made it necessary to explore new alternatives Not recommended for children <2 yrs Apply to entire scalp 	Permethrin	Nix®
		Permethrin-based products	RID®, R&C®, Pronto®, A-200®, Kwellada-P®, Clear Lice System®
		Malathion	Ovide®
		Lindane	Kildane®, Kwell®, Scabene®
Oral agents	<ul style="list-style-type: none"> Off-label use 	Ivermectin	Stromectol®
		Trimethoprim/Sulfamethoxazole (TMP/SMX)	Bactrim®, Septra®
Non-neurotoxic pediculicides	<ul style="list-style-type: none"> Exoskeleton integrity dehydration pediculicide Recently approved by Health Canada 	Isopropyl myristate 50% and ST-cyclomethicone 50%	Resultz™
	<ul style="list-style-type: none"> Dry-on suffocation-based pediculicide 	Active agent unclear	Nuvo® Method = Cetaphil® Cleanser
Mechanical removal	<ul style="list-style-type: none"> Only treatment recommended for children <2 years 	n/a	n/a
Environmental intervention	<ul style="list-style-type: none"> Important to prevent recurrence 	n/a	n/a
Alternative treatments	<ul style="list-style-type: none"> Published data is sparse Caution should be advised until more data is available. 	n/a	n/a

Table 2: Treatment categories for lice therapies

cosmetic products such as oils, creams, lotions, makeup, lipstick, deodorants, sun screens, hair products, and nail lacquer removers.¹⁸

Dry-on Suffocation-Based Pediculicide

Nuvo[®] Lotion, or dry-on suffocation-based pediculicide (DSP) (later found to be Cetaphil[®] Gentle Skin Cleanser) was reported to have success rate of 96% when applied to the scalp, dried with a hair dryer (for approximately 30 minutes), and removed during the next day's bath.¹² It was reported to work by suffocating the lice's spiracles or breathing holes, causing death by suffocation. As reviewed in *The Lancet*¹³ and other sources,^{14,15} the study did not use proper methods of diagnosing lice, was anecdotal, and was not a well-designed randomized control study. Nevertheless, the concept is novel and there may be a significant beneficial effect; therefore further studies are warranted.

Nit Agents

Further knowledge of the nit sheath, the glue by which the egg is attached to human hair, or the nit laying process may lead to the production of future treatment agents.¹⁹

Mechanical Removal

Mechanical nit removal as a treatment modality is not an appropriate method of lice eradication when used alone.²⁰ Some authors believe that mechanical removal of nits after treatment with a pediculicide remains an important adjunct.³ Application of an 8% formic acid rinse or a 1:1 mixture of white vinegar and water followed by combing with a nit comb can aid in the removal of nits. Nit combing is the only treatment recommended for children < 2 years of age. It is labor intensive and somewhat painful.²¹

Environmental Interventions

Clothing, linen and towels should be decontaminated by hot water washing (60°C) or dry-cleaned. Combs and brushes should be treated with boiling water, alcohol, bleach, or soaked in a disinfectant solution (for example 2% Lysol[®]).

All household members and close contacts should be examined and treated concurrently if infested; and the school should be notified. Bedmates should be treated prophylactically. Furniture disinfection is unnecessary since head lice generally die within 1–2 days when separated from a person.⁵

Alternative Treatments

Naturopathic products including herbal shampoos, occlusive agents (e.g., mayonnaise, margarine, and olive oil), kerosene or gasoline are largely unproven or

ineffective.²² There is no evidence that the occlusive products suffocate lice and they have no pediculicidal or ovicidal effects.²² Kerosene or gasoline should never be used due to flammability and extreme hazard. Another "natural" remedy is Chick-Chack[®], containing coconut oil, anise oil, and ylang ylang oil.³ Published data is sparse and caution should be advised until more data is available.

Conclusion

Lice have developed resistance to some pediculicides and it is expected that with ongoing use these pediculicides will probably become less effective. These products can still be used effectively to treat nonresistant lice. Resistance should be suspected if live lice are still present 2–3 days after a product has been used correctly and no other cause for treatment failure can be identified. If lice are present after 2 correctly applied treatments, resistance is almost certain. Resistant infections should be treated with an agent from a different class of pediculicides or with newer non-neurotoxic agents. New products are presently in the process of being developed and tested. Over time these products may prove to be equal to or more effective/safe than the standard neurotoxic pediculicides, while at the same time minimize the problem of treatment resistant lice.

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Treatment of Acne Scarring

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ABSTRACT

Acne scarring is common but surprisingly difficult to treat. Scars can involve textural change in the superficial and deep dermis, and can also be associated with erythema, and less often, pigmentary change. In general, treatment of acne scarring is a multistep procedure. First, examination of the patient is necessary to classify the subtypes of scarring that are present. Then, the patient's primary concerns are elicited, and the patient is offered a menu of procedures that may address the various components of the scarring process. It is important to emphasize to the patient that acne scarring can be improved but never entirely reversed.

Key Words: *acne scars, ablative resurfacing, nonablative resurfacing, skin fillers, surgical excision*

Classification of Acne Scars

There are several classifications of acne scars. A recent, comprehensive and functional scheme was proposed,¹ whereby scars are classified as rolling, ice-pick, shallow box-car, and deep box-car. Rolling scars are gently undulating, appearing like hills and valleys without sharp borders. Ice-pick scars, also known as pitted scars, appear as round, deep depressions culminating in a pinpoint base; in cross-section, they are shaped like a "v." Box-car scars have a flat, "u-shaped" base. Broader than ice-pick scars, they are round, polygonal, or linear at the skin surface. Shallow box-car scars terminate in the shallow-to mid-dermis, and deep box-car scars penetrate to the reticular dermis.

Treatment Modalities for Textural Change

Among the therapeutic tools for treatment of acne scarring are resurfacing methods, fillers, and other dermal remodeling techniques. These methods can be adapted to treat specific scar types.

Resurfacing

Resurfacing options include:

1. Ablative resurfacing with carbon dioxide or erbium:yttrium aluminum garnet (Er:YAG) laser, medium-depth to deep chemical peel, dermabrasion, or plasma
2. Nonablative and partially ablative resurfacing with fractional laser, infrared laser (1,320nm neodymium:YAG (Nd:YAG), 1,450nm diode, or 1,540nm erbium:Glass)

Ablative Resurfacing

Ablative resurfacing entails removal of the epidermis and partial thickness dermis, and is considered by most as the gold standard for pitted scars and some box-car scars. While ablative resurfacing is most effective if it is deep, thereby removing as much as possible of the depressed scar, it cannot be so deep as to destroy the base of the hair follicles; such destruction could impede skin regrowth, and induce scar formation at the treated site. Carbon dioxide resurfacing is the most effective but also most operator-dependent method for deep ablative resurfacing.² Dermabrasion is possibly even more effective, but this is another procedure that is very technique dependent. Deep phenol (Baker-Gordon) peels, also highly effective, have fallen out of favor because of the associated cardiac risk and the frequency of porcelain-white postinflammatory hypopigmentation. Definitive ablative resurfacing results in 2 weeks of patient downtime, during which period re-epithelialization occurs.³ More superficial resurfacing with the Er:YAG laser or plasma can provide recovery within 1 week, but deeper acne scars may be less improved.

Nonablative Resurfacing

Nonablative resurfacing with laser and lights warms the dermis and can provide modest improvement of acne scarring by stimulating collagen remodeling. All subtypes of acne scars can be improved by nonablative therapy. Among the lasers used for this indication are devices originally developed for other

uses, such as pulsed-dye lasers, intense pulsed light devices, and Q-switched Nd:YAG lasers. However, more recently nonablative devices have been optimized to specifically target textural irregularities. For example, a series of treatments with infrared lasers can significantly improve uneven contour associated with acne scarring.⁴ These treatments are typically uncomfortable and may require oral and/or topical analgesics.

Similarly, fractional resurfacing is quite effective in the treatment of acne scarring. Fractional resurfacing is a minimally ablative technique that creates microscopic zones of dermal injury in a grid-like pattern.⁵ Because only a small proportion of the skin surface is treated at one time, and since the stratum corneum is not perforated, recovery is quick. However, a series of treatments is needed.

Fillers

During the past 5 years, many new injectable prepackaged soft-tissue augmentation materials have become available in the US. Among these are the so-called linear fillers, which permit fine correction of individual lines and depressions: human collagen, hyaluronic acid derivatives, calcium hydroxylapatite (off-label use), and silicone (off-label use).

Injectable linear fillers can enable short-, medium-, or long-term correction of acne scars. Large-particle fillers such as calcium hydroxylapatite have a longer persistence in vivo and are appropriate for larger areas of rolling scars; thicker fillers must be injected no higher than the dermal subcutaneous junction.

Collagen or hyaluronic acid products can be injected directly beneath individual pitted or box-car scars, or be used to buttress areas of rolling scars. Patients should be advised that the duration of action varies, with collagen lasting 2-3 months, hyaluronic acid products, 4-6 months, and calcium hydroxylapatite, 1 year. Volumetric fillers, such as poly-L-lactic acid, may not be appropriate for acne scars, except for rolling scars. By definition, volumetric fillers are designed to correct skin and subcutaneous wasting over wide areas rather than individual fine textural abnormalities.

Injectable silicone is a controversial product gaining new acceptance as a filler for correction of acne scars, especially pitted and box-car scars.⁶ Now approved by the US FDA for intraocular tamponade, medical-grade silicone is used off-label for permanent correction of acne scars. To avoid delayed hypersensitivity and immune reactivity, very small aliquots of 0.01ml,

known as “microdroplets”, are used, and placement is sparse. Repeat treatments with small quantities enable gradual complete correction. The inconvenience of numerous treatments, as well as the theoretical risks of adverse events are mitigated by the promise of permanence.

Excision and Subcision

Ice-pick and box-car scars may also be removed by surgical excision. This technique may entail punch excision of a given small acne scar with a punch biopsy instrument of equal or slightly greater diameter. Then one or two 5.0 or 6.0 simple interrupted sutures are used to close the resulting defect, with the attendant transformation of a round, indented scar into a flat slit-like scar. Larger linear box-car scars can be excised by elliptical excision and repaired by bilayered closure. Sufficient eversion is necessary to avoid recurrence of an indented groove.

Alternatively, after punch excision of a small scar, the defect may be filled by a punch graft. Harvested from another area, commonly the postauricular sulcus, a punch graft is pressed into the created defect and either sutured or glued in place. Punch grafting creates a secondary defect and risks poor color and texture match between donor and recipient sites. However, by filling the deadspace at the excision site, punch grafting may reduce the likelihood that scar excision and closure will fail because of excessive tension in the closure.

Subcision treats rolling scars by separating the fibrous bands securing them to the deep dermis.⁷ A sharp device, often an 18-gauge Nokor[®] needle with a spear-like tip, is inserted at an angle into the dermis at a distance of 1–2cm from the scar. The needle tip is aimed upward, tenting but not puncturing the skin, and is advanced to a point under the scar. Backward and forward rasping of the underside of the dermis beneath the scar is used to sever fibrous bands while initiating a reactive fibrosis that gradually, over several weeks, propels the depressed scar upwards. Bruising following subcision can last 1–2 weeks, but the procedure is well-tolerated with local infiltration of anesthetic. A benefit of subcision is the absence of any epidermal injury, except for minute needle insertion points.

Treatment Modalities for Color Change

Laser and light sources can be used to improve acne-associated color change, especially erythema. Difficult-to-correct textural abnormalities associated with acne scarring can be camouflaged by reducing the ring of redness around such scars. The redness accentuates the

depth of the scar and focuses the observer's attention, but removal of the redness can make the scar seem less deep and noticeable, even if the depth and size are objectively unchanged. Pulsed-dye laser,⁸ KTP laser, and intense pulsed light devices can be used for treatment of peripheral redness around acne scars. Usually, 3–4 or more treatments are required, at approximately 1 month intervals.

Brown discoloration around acne scars tends to occur in darker-skinned patients and is usually postinflammatory. As with all postinflammatory hyperpigmentation, the treatment of choice is the passage of time. Managing any residual active acne is also crucial, as further acne lesions will give rise to additional pigmentation. In some cases, a topical bleaching agent, such as 4% hydroquinone, may be appropriate adjuvant therapy.

Caveats and Cautions

Before commencing treatment of acne scars, in-depth discussion with the patient is necessary. It is crucial to communicate the fact that acne scars are seldom completely or almost completely removed, and that several procedures may be required to collectively provide the optimal correction. The patient's willingness to incur downtime must also be clarified since some procedures, like ablative resurfacing, may require post-treatment resting at home for up to 2 weeks.

Patients with active acne should not be treated for acne scarring. Many acne scarring treatments, like resurfacing, excision, and subcision, can exacerbate acne, even stimulating the production of nodulocystic lesions. Those with active acne should be reassured that the physician is not abandoning them, and remains interested in treating their acne scarring. First, however, they must undergo treatment for their acne, which should be quiescent for at least 6 months to 1 year before therapy for the scarring is begun.

Finally, darker-skinned patients with Fitzpatrick skin types IV-VI are at risk for procedure-related hyperpigmentation. Asian, Mediterranean, and African-American patients can have diffuse, widespread hyperpigmentation lasting a year or more after laser resurfacing. Excision procedures can induce a similar problem. In susceptible patients, nonablative resurfacing, fillers, and subcision may be preferred, unless the patient is otherwise a candidate for ablative resurfacing, and also indicates a willingness to endure protracted hyperpigmentation.

Conclusions

Acne scarring is a complex problem that is not amenable to a simple, definitive solution. Depending on specific

patient features and preferences, a combination of several treatment procedures may be appropriate. A therapeutic alliance with the patient is necessary to ensure patience and compliance during the often long, and occasionally frustrating, treatment course.

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During 2006, the reviewers noted below gave generously of their time and talents and completed manuscript reviews for the *Skin Therapy Letter*. On behalf of the Editorial Advisory Board and our readership, we thank them for their efforts.

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Class	Name/Company	Approval Dates and Comments
<i>Oncologic Agent</i>	Vorinostat <i>Zolinza™</i> Merck	The US FDA approved this histone deacetylase inhibitor in October 2006 for the treatment of cutaneous manifestations in patients with cutaneous T-cell lymphoma who have tried and failed other therapies.
<i>Antipruritic Agent</i>	Fexofenadine hydrochloride <i>Allegra® Oral Suspension</i> sanofi-aventis	The US FDA approved this twice daily treatment in October 2006 for the treatment of symptoms associated with seasonal allergies in pediatric patients 2–11 years of age and for the treatment of chronic idiopathic urticaria in children 6 mos–11 years of age.
<i>Immunomodulatory Agent</i>	Imiquimod <i>Aldara®</i> Laboratoires 3M Santé	The European Union's Committee for Medicinal Products for Human Use gave a positive opinion for this immunomodulatory agent in October 2006 to include a new indication for the topical treatment of clinically typical, nonhyperkeratotic, nonhypertrophic actinic keratosis in adults.
<i>Antiaging Agent</i>	Polymethylmethacrylate/ Bovine Collagen <i>ArteFill®</i> Artes Medical	The US FDA approved this esthetic injectable implant in October 2006 for the correction of facial wrinkles known as nasolabial folds, or smile lines. It is a nonresorbable dermal filler containing homogeneous precision-filtered microspheres suspended in a solution of purified collagen gel and 0.3% lidocaine to alleviate discomfort during injection, and provides a permanent support structure for enduring wrinkle correction.
<i>Antiviral Agent</i>	<i>Polyphenon® E Ointment 15%</i> MediGene AG/ Bradley Pharmaceuticals	The US FDA approved this topical therapy in October 2006 for the treatment of external genital and perianal warts. The active ingredient is a defined mixture of catechins extracted from green tea and proven effective for these indications caused by certain strains of the human papilloma virus.

Drug News

<i>Melanoma</i>	<p>Researchers from Dana-Farber Cancer Institute have identified a novel gene that facilitates the spread of malignant melanoma. In the June 30 issue of <i>Cell*</i>, these scientists reported that the gene, NEDD9 is abnormally abundant in more than a third of melanomas that have metastasized, but not in primary melanomas that have not spread. While the protein made by this gene does not lend itself to targeting by cancer drugs, the investigators believe that insights gained in this study suggest that disrupting genes and proteins associated with this gene maybe fruitful in halting the spread of melanoma.</p> <p>*Kim M, et al. <i>Cell</i> 125(7):1269-81 (2006 Jun 30).</p>
<i>Vaccines</i>	<p>The US Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices voted unanimously to recommend that adults 60 years of age and older be vaccinated with this live, attenuated varicella zoster vaccine (ZOSTAVAX®, Oka/Merck) to help prevent shingles (herpes zoster). This vaccine is given by injection as a single dose. This painful disease can occur at any time without warning in people who have had chickenpox. Approximately 40%–50% of shingles cases in the US occur in people aged 60 and older.</p>

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