Extensions
An Educational Newsletter for Physician Assistants and Nurse Practitioners in Dermatology

The Scientific Panel on Antibiotic Usage in Dermatology (SPAUD)

Part I: Summary Report on Usage Patterns, Management Challenges and Recommendations

By James Q. Del Rosso, D.O., F.A.O.C.D.

Oral and topical antibiotics are commonly prescribed in dermatology to treat infectious skin disorders and inflammatory dermatoses. Prescribing data from 1999 to 2003 indicate that dermatologists write approximately 9 million oral antibiotic prescriptions annually, with tetracycline agents accounting for 65% and cephalosporins 10% of the total. The widespread use of oral tetracyclines relates primarily to their use in treating acne vulgaris and rosacea.

Issues with Antibiotics in Dermatology

Several issues have arisen regarding antibiotic use in dermatology, including questions regarding recommended durations of oral antibiotic therapy for conditions such as acne vulgaris and rosacea, and overall changing antibiotic sensitivity patterns that may impact upon optimal prescribing. The emergence of both healthcare-acquired as well as community-acquired methicillin-resistant Staphylococcus aureus has created a formidable challenge for clinicians in ambulatory practice.

It is with these challenges in mind that the Scientific Panel on Antibiotic Use in Dermatology (SPAUD) was formed. This article, which is the first part of a two-part series, highlights important summation points based on the work completed by this panel.

What Is SPAUD, and Why Was It Created?

The Scientific Panel on Antibiotic Use in Dermatology (SPAUD), which focus on usage patterns, management challenges and prescribing recommendations for dermatologic use of antibiotics.

This issue’s Sound Bites gives insight into managing atopic dermatitis with a non-steroidal cream containing palmitamide monoethanolamine.

In the litSCAN column we offer a synopsis of studies that researched low-dose acitretin, the role of sentinel node biopsy for melanoma, perioperative evaluation and management of surgical patients, techniques for reducing pain caused by local anesthesia and cutaneous malignancy associated with HIV.

Lastly, we also offer an interesting Case of the Month. Turn to page 7 to try to diagnose this patient’s condition.

You are invited to submit a succinctly written summary of an interesting case accompanied by a digital photograph. Send it to: lhubbs@hmpcommunications.com.

Please forward to us any comments or suggestions you have regarding Extensions. We hope to consistently achieve our objectives of providing a publication that is enjoyable to read, educational and clinically useful.

Professionally yours,
James Q. Del Rosso, D.O., F.A.O.C.D.
Roger I. Ceilley, M.D.
Co-editors

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antibiotic use in treating acne and rosacea and in the management of skin and soft tissue infections
- impact of anterior nares Streptococcus pyogenes colonization
- surgical prophylaxis and perioperative antibiotic use
- treatment of miscellaneous infections and situations when antibiotics are not needed.

**Why Is Discussing Antibiotic Use Important?**

A historic view of bacterial resistance is helpful in understanding overall trends in resistance. In particular:

- the emergence of bacterial resistance to antibiotics began soon after the introduction of penicillin in the 1940s. Within 10 years, most hospital strains of *S. aureus* produced beta lactamase.1
- individual and total antibiotic use strongly correlated with the rise in resistance. A two-fold increase in macrolide use was associated with a six-fold increase in macrolide-resistant Streptococcus pneumoniae.2 A correlation was also noted with prolonged use or inadequate dosing.3
- “new” bacterial strains have appeared that have demonstrated significant clinical impact — e.g., the community-acquired methicillin-resistant *S. aureus* in correlation with fluoroquinolone use.4

**Changing Prescribing Patterns and Their Results**

- In the United Kingdom (UK), decreased antibiotic use has been mandated since the 1980s. Overall systemic antibiotic use from 1995 to 2000 declined by 23.1%.
- In addition, in the latter half of the 1990s, a 33% decrease in antibiotic prescriptions for acne has occurred, including a 37.5% decrease in oral tetracyclines and a 12.5% decrease in topical antibiotics. However, it was noted that in the UK, respiratory tract infections' bronchitis has declined by 25% in children ages 3 to <6 years and by 16% in the 6 to <18 years age group.9
- CDC recommendations for appropriate antibiotic use for infections include:
  - *only prescribe when likely to benefit a patient.*10,11
  - use antibiotics that target likely pathogens or organisms confirmed by culture and sensitivity.
  - use appropriate dose and duration.

**Antibiotic Therapy in Acne Vulgaris**

- In addition to their ability to reduce Propionibacterium acnes populations, some antibiotics (i.e., tetracyclines) have anti-inflammatory effects in acne and rosacea.
- Mechanisms implicated in specific disease states may vary.12,13
- Decreased macrolide use has led to reductions of erythromycin-resistant *S. pyogenes* in Japan and Finland.6,7

**Government Response to the Resistance Issue**

- In 2004, the U.S. Food & Drug Administration (FDA) changed antibiotic labeling. Statistics released by the Centers for Disease Control and Prevention (CDC) reported a 48% increase in office-based antibiotic prescribing for children during 1980 to 1992. Antibiotics were prescribed in 50% of upper respiratory tract infection (URI) visits and 80% of acute bronchitis visits.
- Concern was raised regarding the use of systemic antibiotics in many cases that were likely of viral, and not bacterial, etiology.8
- From 1996 to 2000, pediatrician prescribing of antibiotics in the United States for acute otitis media and upper respiratory tract infections’ bronchitis has declined by 25% in children ages 3 to <6 years and by 16% in the 6 to <18 years age group.9
- CDC recommendations for appropriate antibiotic use for infections include:
  - *only prescribe when likely to benefit a patient.*10,11
  - use antibiotics that target likely pathogens or organisms confirmed by culture and sensitivity.
  - use appropriate dose and duration.

**Potential Ecological Effects of Antibiotic Therapy in Acne**

- One epidemiologic study has suggested that antibiotic therapy used for acne may be associated with a higher rate of upper respiratory infections (URIs).
- Results were retrospectively determined based on diagnosis coding. The cause of the URIs (bacterial vs. viral) was not confirmed. Oral antibiotic therapy was used in 93.9% of patients with or without a topical antibiotic. The clinical significance of this study remains unclear at present.9

**Suppression of Resistant P. acnes**

- There is evidence that the use of BPO alone or in combination with antibiotic therapy may help suppress emergence of *P. acnes*-resistant strains.20
- Isotretinoin may also be useful in the suppression of *P. acnes* resistance and for treatment of gram-negative acne/folliculitis.21

**Preventing Bacterial Resistance in Acne and Rosacea Therapy**

- Minimize chronic oral antibiotic exposure and avoid monotherapy with oral or topical antibiotics for acne.
- Use benzoyl peroxide if long-term therapy is required with a topical and/or oral antibiotic for treatment of acne. Topical clindamycin has remained effective for treatment of acne vulgaris based on recent clinical trials; efficacy is optimized and risk of emergence of less-sensitive *P. acnes* strains is minimized when treatment is combined with benzoyl peroxide.
Methicillin-Resistant Staphylococcus aureus (MRSA) Update

Methicillin-resistant S. aureus (MRSA) is now classified as either healthcare-associated or community-associated MRSA. The predominant cutaneous presentation of both is either single or multiple spontaneous, fluctuant, pus-containing abscesses with disproportionate pain.

Community-associated MRSA (CA-MRSA) isolates carry a methicillin-resistance gene variant that is generally not multi-resistant. However, some isolates from Taipei appear to have acquired a transmissible plasmid coding for multi-resistance (resistance to multiple antibiotics).

A population-based surveillance study in three communities found 1,647 cases of CA-MRSA from 2001 to 2002, representing 8% to 20% of all isolates. The incidence was significantly higher in those aged <2 years and in African Americans. Of these cases, 6% were invasive, and 77% involved skin and soft tissue. Resistance to prescribed antimicrobials occurred in 73% of cases.

The type of therapy the infecting strain was resistant to was not associated with poor outcomes in patients with skin or soft tissue CA-MRSA infections. Provided incision and drainage was completed.

Topical mupirocin is most commonly used to treat nasal MRSA carriage, but in a Canadian study some CA-MRSA isolates demonstrated high-level mupirocin resistance. Chronic application of topical mupirocin is discouraged.

The most important component in treating skin and soft tissue infections due to CA-MRSA is adequate incision and drainage. Abscesses should be incised, drained, irrigated and not packed.

Part II of this summary report will appear in the next issue of Extensions.

References
17. Leyden JJ. Personal communication, 2006.
Managing Atopic Dermatitis

A palmitamide monoethanolamine (PEA)-containing non-steroidal cream (Mimyx) has been approved for treatment of atopic dermatitis in both the adult and pediatric populations. This agent contains PEA, an endogenous fatty acid deficient in patients who have atopic dermatitis, formulated in a cream vehicle containing lipids. This product formulation is designed to:

1. facilitate repair of the intercellular lamellar structure of the epidermal barrier.
2. reduce inflammation due to replenishment of atopic skin with PEA, which has been shown to bind to and stabilize mast cells.

In an observational study of 2,456 patients, including 923 patients age <12 years, PEA-containing cream was added to the therapeutic regimen in patients presenting with persistent mild to moderate atopic dermatitis despite use of one or more other conventional therapies.

At the start of the study, 24% of patients were using topical corticosteroids, 12% were using topical calcineurin inhibitors, 79% were using moisturizers and 17% were using systemic antihistamines.

A brand PEA-containing cream was added to the current regimens of all study subjects and their progress was followed. Based on individual therapeutic response over approximately 5 weeks (mean 38 days), adjustments in the use of other agents, such as topical corticosteroids, were documented for each patient.

Conclusions: In adult and pediatric patients presenting with persistent mild to moderate atopic dermatitis — despite treatment with moisturizers, topical corticosteroids, topical calcineurin inhibitors and/or systemic antihistamines — overall results indicated that the addition of a PEA-containing cream enhanced therapeutic response in many patients and reduced the need for other therapies.

By the end of the study, the percentage of patients who were able to reduce or discontinue the use of topical corticosteroids, topical calcineurin inhibitors and systemic antihistamines were 46%, 20% and 39%, respectively.

- A comparison of the weekly application rates of topical corticosteroids between the start and end of the trial demonstrated that at the start of the study (prior to use of PEA-containing cream), adult and pediatric patients utilized 7.9 and 8.05 applications per week, respectively.

By the end of the study, after the addition of PEA-containing cream, the weekly application rate of topical corticosteroids decreased to 3.0 in the adult group and 2.98 in the pediatric group, reflecting a reduction in corticosteroid application of >60%.

- By study endpoint, the addition of PEA-containing cream improved measurement of sleep quality by 60% overall, with 65% improvement noted in pediatric patients by subset analysis. In adult and pediatric subjects, 50% of the improvement occurred within the first 6 days of treatment.

- See Figure 1 (below left) for usage paradigm for PEA-containing cream in atopic dermatitis management. Note that the use of PEA-containing cream is not a substitute for daily diffuse moisturizer application.


Arch Dermatol.

Clinically Significant Abstracts from Current Medical and Surgical Dermatologic Literature.

By Roger I. Ceilley, M.D., and James Q. Del Rosso, D.O., F.A.O.C.D.

Reducing Oral Acitretin Side Effects

By James Q. Del Rosso, D.O., F.A.O.C.D.

Acitretin (Soriatane) is the only oral retinoid that is FDA approved for the treatment of psoriasis. This agent may be used for treating chronic plaque psoriasis, and it has been shown to be effective for treating erythrodermic, pustular, and palmoplantar psoriasis, including severe and refractory cases.

For the treatment of chronic plaque psoriasis, acitretin quickens and accentuates response to phototherapy, thus reducing total ultraviolet light exposure and number of necessary treatment visits.

Based on acitretin pivotal 8-week trials for psoriasis, acitretin 50 mg/day was more effective than 25 mg/day. Subsequent trials have demonstrated that longer courses of therapy are needed to observe the complete therapeutic benefit of acitretin 25 mg/day for psoriasis treatment.

Over 24 weeks of treatment, acitretin 25 mg/day has demonstrated efficacy equal to or superior to 50 mg/day.

A retrospective analysis of pooled data from two pivotal Phase III trials of oral acitretin used for treatment of psoriasis (8-week, double-blind phase followed by 16-week open phase) demonstrated a marked reduction in adverse events in the low-dose group (25 mg/day) versus the high-dose group (50 mg/day).

Common adverse effects such as xerosis and alopecia were two to three times higher in patients receiving the higher dose of acitretin.

In patients switched from acitretin 50 mg/day to 25 mg/day after the initial 8-week double-blind phase, the change in side effect profiles were as follows (Table 1):

- In patients initially started on acitretin 50 mg/day versus 25 mg/day, the percentage who developed cheilitis during the first 8 weeks was similar, reported as 68% versus 70%, respectively. However, over the subsequent 16 weeks, the percentage of patients from both initial study arms who were observed to exhibit cheilitis dropped to 22% and 21%, respectively, with the use of acitretin 25 mg/day.

All other side effects over the first 8 weeks were markedly lower in patients treated with low-dose acitretin (25 mg/day).

See Tables 1 and 2 for a listing of potential adverse events associated with use of oral acitretin along with dosage correlation. Table 3 outlines the use of oral acitretin for treating psoriasis and includes dosage recommendations, anticipated response durations and suggestions for combination therapy when warranted.

Due to teratogenicity, acitretin should not be used in females who are pregnant. Acitretin should be avoided in females of child-bearing potential, pregnancy must be excluded prior to initiation of therapy and two reliable forms of contraception should be utilized consistently throughout treatment and for 3 years after cessation of acitretin therapy.

### Table 1: Differentiation of Adverse Events Based on Dosing

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>50 mg/DAY (8 wks)</th>
<th>25 mg/DAY (16 wks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheilitis</td>
<td>68%</td>
<td>2%</td>
</tr>
<tr>
<td>Skin Peeling</td>
<td>64%</td>
<td>21%</td>
</tr>
<tr>
<td>Alopecia</td>
<td>46%</td>
<td>36%</td>
</tr>
<tr>
<td>Rhinitis</td>
<td>39%</td>
<td>1%</td>
</tr>
<tr>
<td>Erythema</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td>Sticky Skin</td>
<td>29%</td>
<td>14%</td>
</tr>
<tr>
<td>Dry Mouth (Xerostomia)</td>
<td>18%</td>
<td>0%</td>
</tr>
<tr>
<td>Dry Eyes (Xerophthalmia)</td>
<td>18%</td>
<td>4%</td>
</tr>
</tbody>
</table>

### Table 2: Dose-Related Adverse Events with Acitretin

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Doses &lt;75 mg/day at 1 Year</th>
<th>25 mg/day at 24 Weeks*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheilitis</td>
<td>&gt;75%</td>
<td>70%</td>
</tr>
<tr>
<td>Alopecia</td>
<td>50%-75%</td>
<td>13%</td>
</tr>
<tr>
<td>Skin Peeling</td>
<td>50%-75%</td>
<td>30%</td>
</tr>
<tr>
<td>Pruritus</td>
<td>25%-50%</td>
<td>26%</td>
</tr>
<tr>
<td>Dry Skin</td>
<td>25%-50%</td>
<td>4%</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>10%-25%</td>
<td>4%</td>
</tr>
<tr>
<td>Nail Disorder</td>
<td>1%-10%</td>
<td>0%</td>
</tr>
<tr>
<td>Headache</td>
<td>1%-10%</td>
<td>13%</td>
</tr>
<tr>
<td>Myalgia</td>
<td>1%-10%</td>
<td>0%</td>
</tr>
</tbody>
</table>

### Table 3: Oral Acitretin Dosing Overview

<table>
<thead>
<tr>
<th>Psoriasis Type</th>
<th>Starting Daily Dose</th>
<th>Usual Time to Response</th>
<th>Other Options for Combination Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plaque-type</td>
<td>10-25 mg</td>
<td>3-6 months</td>
<td>• Phototherapy</td>
</tr>
<tr>
<td>Erythrodermic</td>
<td>25-50 mg</td>
<td>4 weeks</td>
<td>• Methotrexate</td>
</tr>
<tr>
<td>Pustular</td>
<td>25 mg</td>
<td>1-2 weeks</td>
<td>• Cyclosporin</td>
</tr>
<tr>
<td>Guttate</td>
<td>25 mg</td>
<td>1-3 weeks</td>
<td>• Methotrexate</td>
</tr>
<tr>
<td>Palmoplantar</td>
<td>10-25 mg</td>
<td>2-3 months</td>
<td>• Phototherapy</td>
</tr>
</tbody>
</table>

• Oral acitretin, including the use of low-dose therapy, has been shown to be effective in reducing the number and frequency of squamous cell carcinomas (SCC) in immunosuppressed organ transplant recipients who demonstrate frequent and rapid development of SCCs.

• Ingestion of alcohol should be avoided during acitretin therapy to reduce the risk of alcohol-associated hepatotoxicity and to reduce the conversion of acitretin (relatively short elimination half-life) to etretinate (retinoid with a markedly prolonged elimination half-life).

**EGFR Inhibitors Used in Cancer Therapy**

A Discussion of Skin Reactions


The use of epidermal growth factor receptor (EGFR) inhibitors used for the treatment of solid tumors is progressively increasing. Some of these agents function as a monoclonal antibody against the EGFR, such as cetuximab. Others inhibit the tyrosine kinase activity of the EGFR, such as gefitinib.

• Human EGFR is dysregulated in many solid tumors (i.e. lung, etc.) and serves as an important therapeutic target for cancer treatment. As EGFRs are normally found in skin keratinocytes of the basal layer and in the outer root sheath of the hair follicle, cutaneous reactions commonly occur in patients treated with EGFR inhibitors.

• The most common cutaneous side effect of EGFR inhibitors, seen in 40% to 70% of treated patients, is a brisk acniform eruption, characterized by multiple erythematous papules and sterile pustules. Fortunately, the eruption is self-limited. Affected sites include the face, scalp, upper chest and upper back.

• Although the eruption is described clinically as “acniform”, histology is not consistent with acne. Conventional topical agents and oral antibiotics used for acne treatment have not been shown to be predictably effective.

• Acniform reactions to EGFR inhibitors usually occur within the first few weeks of treatment, reaching maximal intensity within 2 to 3 weeks. Interestingly, these reactions have been reported to be predictive of a favorable therapeutic response against the solid tumor.

• Diagnostic testing should include bacterial and viral (HSV, HZV) culture to assure the pustules are sterile. Consider other potential causes of diffuse multiple inflammatory papules and pustules such as bacterial folliculitis, acute generalized exanthematous pustulosis (AGEP) and disseminated herpetic infection. A Tzanck smear may be helpful in excluding herpetic disease such as eczema herpeticum, diffuse herpes zoster or severe varicella.

**SURGICAL DERMATOLOGY**

By Roger I. Ceilley, M.D.

**Sentinel Node Biopsy for Melanoma**

An Evidence Assessment


• Sentinel lymph node biopsy (SLNB) was introduced in the 1990s as a minimally invasive procedure to stage the entire nodal basin and identify those patients who might benefit from complete lymph node dissection (CLND). Generally applied to patients with intermediate-depth (~1.5 to 4 mm) melanomas, SLNB remains a controversial issue with highly disparate opinions in the field of dermatology.

• The authors reviewed 1,198 articles to assess the evidence for SLNB and concluded:
  - SLNB is the most powerful independent predictor of survival in melanoma and enables accurate disease staging.
  - No conclusive evidence is available that SLNB followed by CLND improves survival. In a trial of 240 patients with melanoma >1.5 mm: Patients with positive nodes treated with CLND had a 48% 5-year survival; those with positive nodes who did not have CLND had a 27% 5-year survival.
  - Morbidity (including infection, hematoma, lymphedema and poor healing) for CLND is 35% to 50%, but is about 5% for SLNB.
  - Current evidence supports the use of SLNB in managing intermediate-depth melanomas.

**Dermatologic Surgery Patients**

Assessing Perioperative Evaluation and Management


• Thorough peri-operative evaluation is essential to ensure patient safety, build rapport, and optimize outcomes.

• Antibiotic prophylaxis to prevent endocarditis and prosthetic infection is recommended prior to excisions or Mohs surgery in patients at “high risk” (including those with prosthetic valves, cardiac malformations, orthopedic prostheses, or central nervous system shunts).

• Amoxicillin 2 g PO (or if penicillin allergic: clindamycin 600 mg, cephalaxin 2 g, or azithromycin/clarithromycin 500 mg) 30 to 60 minutes before the procedure is recommended.

• If an implanted cardiac device is present, consult the cardiologist. Avoid electro-surgery or use at low power in short bursts and grounded away from the device, or use “hot pen” electrocauter.

• Reduce the maximal dose of lidocaine in patients with liver disease; reduce the dose of narcotics and cephalosporins in patients with renal disease.

• Warfarin or medically-indicated aspirin should be continued prior to the procedure unless directed otherwise by the prescribing physician. Patients taking aspirin or NSAIDs electrolytically should stop aspirin 10 days prior and NSAIDs 3 days prior to the procedure.

**Pain Management**

Decreasing the Pain of Local Anesthesia


In this prospective, double-blind comparison of buffered, premixed 1% lidocaine with epinephrine versus 1% lidocaine freshly mixed with epinephrine, researchers concluded the following:

• Local anesthetics are acidic and cause pain during cutaneous infiltration, and lidocaine premixed with epinephrine (1:100,000) is particularly acidic. Buffering the lidocaine to a physiological pH may decrease the pain.

• Injection of 1% lidocaine with epinephrine buffered with sodium bicarbonate (“buffered”) and 1% lidocaine freshly mixed with epinephrine (“fresh”) were compared.

• Sixty volunteers had 0.5 cc of study solution injected with a 30-gauge needle in either forearm, then rated pain on a 100-mm visual analog scale.

• The buffered solution was associated with less pain (18.3) versus the fresh solution (23.5) and was rated less painful by 65% of subjects. The results did not reach statistical significance.

**Cutaneous Malignancies and HIV**

Common Types Reviewed

Case of the Month

Tinea Faciei

By Roger I. Ceilley, M.D., and Allison L. Engelbrecht, R.N.

Case Study

A 76-year-old male presented for a routine skin cancer follow-up without any significant complaints. He appeared to be in good health despite a positive medical history of hypertension and congestive heart failure.

On examination, an erythematous, maculopapular lesion with a serpiginous border was observed on the left cheek (Figures 1 and 2). On further assessment, it was noted that bilateral plantar surfaces were scaly and erythematous (Figure 3) with thickening, discoloration and subungual debris of the first and fifth toenails. Inguinal folds were normal. A potassium hydroxide preparation obtained from the lesion of the left cheek was positive for fungal elements.

Diagnosis and Discussion

Tinea faciei is an uncommon dermatophyte infection that is often initially misdiagnosed both clinically and histologically. It is generally seen in pediatric patients as well as adults over age 40. It may present as a scaly patch with an arcuate or annular border, erythema and pruritus. The condition is seen superficially in the glabrous skin of the face and is frequently the result of either Trichophyton rubrum or Trichophyton mentagrophytes infection. It may resemble polymorphous light eruption, rosacea, contact dermatitis and cutaneous lupus erythematosus. Patients may be treated for months for these conditions without improvement until the correct diagnosis is made. In fact, several lesions have progressed for 12 months or more before definitive diagnosis.1 The histopathology of tinea faciei can vary from mild focal spongiosis to chronic spongoid psoriasiform dermatitis with a mixed dermal inflammatory infiltrate and fungi in the cornified layer.2

Treatment

Treatment for this condition is the same as for most other fungal infections. This includes a topical antifungal such as clotrimazole (Lotrimin), econazole (Spectazole) or terbinafine (Lamisil). This patient was treated with econazole (Spectazole) cream applied twice daily to the facial lesion and the feet. Systemic antifungal medications such as Lamisil, itraconazole (Sporanox) or fluconazole (Diflucan) may be needed for some cases. In patients who have nail involvement, a systemic antifungal medication would be used to treat the source of the infection. Follow-up with the patient 1 month later showed resolution of the facial lesion.

References

Yesterday… Stiefel Laboratories was founded in Europe in 1847 as a family business with a global mission. The founders were determined to provide quality skin care products and promote healthy skin throughout the world. The popularity of Stiefel Laboratories in Europe prompted August Stiefel’s move to the United States in 1910 to make Stiefel products equally successful on both sides of the Atlantic.

Today… Stiefel Laboratories is the world’s largest privately owned pharmaceutical company specializing in dermatology. Our products are marketed in over 100 countries with the support of over 30 subsidiaries, including manufacturing plants in six countries and research and development facilities on three continents. Our commitment extends to our philanthropic support of organizations and institutions dedicated to the advancement of dermatology.

Tomorrow… Stiefel Laboratories will continue to partner with dermatologists and patients worldwide to create innovative, therapeutic and aesthetic skin care products for a lifetime of healthy skin.