Skin Therapy Letter ©

Volume 5 • Number 6 • 2000

EDITOR: STUART MADDIN

Now indexed by the National Library of Medicine and MEDLINE!

Vitiligo Management Update

W. Westerhof, MD, PhD

Netherlands Institute for Pigmentary Disorders, Department of Dermatology, University of Amsterdam, The Netherlands

ABSTRACT

Vitiligo is an acquired skin disorder caused by the disappearance of pigment cells from the epidermis, and results in well defined white patches that are often symmetrically distributed. The lack of melanin pigment makes the lesional skin more sensitive to sunburn. Vitiligo can be cosmetically disfiguring and is a stigmatizing condition, leading to serious psychological problems in daily life. It occurs worldwide in about 1% of the population, mostly between the ages of 10-30 years, and as often in males as in females. The cause is unknown, but might involve genetic factors, autoimmunity, toxic metabolites, and/or a higher vulnerability of melanocytes. Some new treatments for this condition include corticosteroid + UVA treatment, UVB narrow wave band (311nm) irradiation, and transplantation of autologous pigment cells. In widespread vitiligo, residual pigment can be removed by depigmentation agents. Sunscreens, camouflage products and good guidance may help the patient to better cope with this disease.

KEY WORDS: *vitiligo, UVA, UVB, PUVA*

There is concern that many vitiligo patients are not offered treatment by dermatologists and that there is no reimbursement by insurance companies or government health services, because vitiligo is considered only a cosmetic problem. Yet quality of life studies indicate that the psychosocial problems are of the same magnitude as those found in patients with psoriasis[1]. When treatment is given, there seems to be a great variety in treatment choices and regimens. However, no guidelines are available based on controlled trials and evidence based medicine[2]. Based on a meta-analysis of the literature concerning medical and surgical treatments of vitiligo[3,4] some treatment recommendations are presented here.

Past and Current Therapies for Vitiligo

The best studied and therefore the most commonly used medical treatments are corticosteroids (topical, intra-lesional and oral), oral and topical psoralens + ultraviolet A (PUVA), phenylalanine + UVA, oral and topical khellin + UVA, fluticasone propionate + UVA, narrow band UVB, and broad band UVB[3,4,5,6]. Because no drugs are involved, narrow band UVB at 311nm irradiation has an advantage over classical PUVA, and is therefore suitable for women during their childbearing years and for children. There is:

- no photocontact allergenicity
- no hyperkeratosis after long-term irradiation
- less itching and xerosis
- less contrast between lesional and pigmented skin
- shorter treatment sessions and no preparation with psoralen
- less phototoxicity
- faster repigmentation
- less radiation and cumulative dosages[6].

Treatment type	Activity
Corticosteroid cream + UVA	6 months 1x/day cream, 2x/wk UVA
UVB 311nm	1 year, 2x/wk, 4 follow up visits
PUVA	1 year, 2x/wk, 4 follow up visits
UVB broadspectrum	1 year, 2x/wk, 4 follow up visits
Minigrafting	100cm^2 (2 sessions)
Split skin grafting	100cm^2 (1 session)
Depigmentation laser	1 year, 6 sessions
Depigmentation cream	12 months, 1x/d application

Table 1: Current treatment options recommended for vitiligo.

Methods of autologous transplantation of melanocytes have been developed to repigment lesions that are stable, as well as those that are refractory to medical therapies. Examples that are listed in order of technical feasibility and cost are: minigrafting, split skin thickness grafting, grafting of epidermal blisters, grafting of melanocyte containing cultured epidermal sheets, and grafts of pure melanocyte cultures. It is important to stress that a test grafting (two biopsies of 2 mm diameter) should be performed before the actual grafting method is chosen[7,8].

Age	Clinical Type of Vitiligo	First-Choice Therapy*	Alternative Therapies*
Children < 12 yrs	All	Class 3 corticosteroids (and UVA); course of treatment is 6-9 mo (patients aged <6 yrs, no UVA)	Local UVB (311nm); course of treatment is 6-12 mo Topical PUVA; course of treatment is 6-12 mo
Adults	Localized (≤ 2% depigmentation)	Class 3 corticosteroids (and UVA); Course of treatment is 6-9 mo	Local UVB (311nm); course of treatment is 6-12 mo Topical PUVA; course of treaetment is 6-12 mo
	Generalized (> 2%)	UVB (311nm); course of treatment is 6-24 mo	Oral PUVA; course of treatment is 6-24 mo
	Segmental or stable	Autologous transplantation, (until 100% repigmentation)	Class 3 corticosteroids (and UVA); course of treatment is 6-9 mo UVB (311nm); course of treatment is 6-24 mo
	Lip-Tip	Autologous transplantation, (until 100% repigmentation)	Micropigmentation, (until 100% repigmentation)
	Therapy-resistant and/or generalized (>80% depigmentation)	Depigmentation with bleaching creme and/or laser (until 100% depigmentation)	None

Table 2: Treatment scheme for vitiligo[11]
* The course or treatment is expressed as a range from minimum to maximum.

Mechanism of Action

The pigment cells are thought to have an inherent defect, making them vulnerable to mechanical, thermal or chemical trauma. Initiated by above mechanisms or by other unknown factors, it is also possible that autoimmune destruction of pigment cells takes place. The result is the partial or complete loss of pigment cells from the epidermis, hair shafts and roots. The treatments are aimed at stopping the pigment cell destruction (steroids, ultra violet irradiation) and stimulating pigment cell division and outgrowth (ultraviolet irradiation, grafting of pigment cells). In universal vitiligo, remaining normal pigment cells are destroyed by toxic phenolic substances such as topical 4-methoxyphenol[9] or monobenzyl ether of hydroquinone[12], or laser[10].

continued on page 5

Current Therapy in Behçet's Disease

T. Sakane, MD, PhD and Mitsuhiro Takeno MD, PhD

Departments of Immunology and Medicine, St. Marianna University School of Medicine, Kawasaki, Japan

ABSTRACT

Behçet's disease is an inflammatory disorder of unknown cause. There is often involvement of the gastrointestinal system, the central nervous system and large vessels, which can be life-threatening. As well, ocular lesions can cause blindness. Mucocutaneous symptoms are self-limiting but more frequent. Almost all the patients have recurrent oral aphthous ulcers, and more than 70% of the patients have genital ulcers and skin symptoms, which include erythema nodosum, pseudofolliculitis, papulopustular lesions, acneiform nodules and a positive pathergy test. The pathergy test is felt to reflect cutaneous hypersensitivity. In general, topical treatment using corticosteroids is satisfactory for these mucocutaneous lesions unless eye and vital organs are involved.

Key Words: *Behçet's disease, pathergy test, topical treatment, systemic treatment, cyclosporin A*

Behçet's disease (BD) is an inflammatory disorder, characterized by recurrent oral aphthous ulcers, genital ulcers, uveitis, and skin lesions[1]. BD patients cluster along the ancient Silk-Road, which extends from eastern Asia to the Mediterranean basin. The prevalence of BD in the countries along the Silk-Road ranges from 13.5 to 380 cases per 100,000, whereas the prevalence in western countries is less than one per 100,000[1]. This unique geographic distribution suggests possible genetic and environmental factors in the development of BD. It is well established that susceptibility of BD is strongly associated with the HLA-B51 allele[2]. There is also accumulating evidence that microbial infections trigger cross-reactive autoimmune responses, leading to overt BD. Thus, BD is neither a hereditary disease nor an infectious disease, but is multifactorial.

Vascular injuries, neutrophil infiltration, and hypercoagulability characterize pathological findings of BD lesions. The autoimmune responses against heat shock protein 60 (hsp60) may be involved in the pathological processes, though it remains to be determined whether the autoimmune mechanism is a primary or a secondary event in the development of BD[1,2].

There is no established standard therapeutic regimen for BD. Because this condition has a broad spectrum of clinical features, the choice of the treatment depends on the patient's clinical manifestations. This article outlines the clinical features and therapies for BD, focusing on mucocutaneous symptoms.

Diagnosis of Behçet's Disease

Because BD does not have any specific symptoms and laboratory findings, the diagnosis is made on the basis of the criteria proposed by the International Study Group for Behçet's Disease in 1990. These criteria require recurrent oral ulceration as an essential symptom, plus any two or more of the following symptoms: genital ulceration, eye lesions, skin lesions, and a positive pathergy test. The pathergy test is performed by piercing a sterile needle subcutaneously into the forearm. It is judged as positive when the puncture leaves an aseptic erythematous nodule or pustule of more than 2mm in diameter after 24-48 hours. The differential diagnosis includes chronic oral aphthosis, herpes simplex virus infection, Sweet's syndrome and HLA-B27-related syndromes such as ankylosing spondylitis. Analysis of HLA-phenotypes and the measurement of serum IgD levels may help to make a diagnosis (patients with active BD often have elevated levels of serum IgD)[1].

Clinical Manifestations

Oral ulceration is usually an initial symptom that is seen in all patients during the course of the disease. This symptom may be a genetic predisposition, because it frequently precedes other manifestations and is often seen in some of the patient's family members. Painful oral ulcers appear in the gingiva, tongue, buccal, and labial mucosal membranes. The typical lesion is round, with a sharp, erythematous border and the surface is covered with a yellowish pseudomembrane. The lesions heal within 10 days and do not leave scars.

Genital ulcers preferentially recur on the scrotum and penis in men and on the vulva in women. They are painful and morphologically similar to oral ulcers, but they are usually larger and deeper and have an irregular margin. The lesions recur and usually leave scars.

Erythema nodosum is common in female patients and usually occurs on the front of the legs. The lesions are painful. They resolve spontaneously, leaving deeply pigmented areas, and sometimes ulcerations. Pseudofolliculitis and acneiform nodules are common in male patients and are distributed on the back, face, and neck, especially along the hairline. The presence of acneiform nodules in adolescents or in patients who are receiving corticosteroids cannot be used in the diagnosis. Superficial migratory thrombophlebitis of the arms and legs is more common in male patients than in female patients. Because of the irritability of the skin of BD patients, shaving often causes pseudofolliculitis, and intravenous punctures can lead to local thrombophlebitis.

Ocular lesions occur in the uvea and retina. Patients present with sudden attacks of visual loss, blurred vision, floaters, and associated eye pain. Hypopyon, a visible layer of pus in the anterior ocular chamber, is easily recognized, even by nonophthamalogical physicians. The most serious ocular problem in BD is retinal disease, which can cause blindness.

Arthritis is seen in about half of the patients. Epididymitis is seen in some of the patients. Involvement of the gastrointestinal system, the central nervous system and large vessels can lead to serious clinical problems.

Current Treatments

Therapeutic priority is given to the treatment of vital organ lesions, which requires high dose corticosteroids and/or immunosuppressants, and sometimes needs surgical intervention. Treatment of ocular lesions requires more careful consideration than that of the mucocutaneous symptoms.

Topical Treatment

Mucocutaneous lesions, especially genital ulcers, must be kept clean to avoid contaminated secondary infection. Oral and genital ulcers are treated with topical corticosteroids (i.e., triamcinalone acetonide, and corticosteroids in combination with antibiotics). Another topical approach would be the use of a tetracycline solution, which is made by dissolving in the contents of a 250mg capsule in 5ml of water, for aphthous lesions.

Systemic Treatment

Colchicine 1-1.5mg/day has beneficial effects for the mucocutaneous symptoms, presumably by inhibiting neutrophil functions. Systemic corticosteroids are prescribed for erythema nodosum refractory to colchicine. Furthermore, the following drugs have been documented to be effective for treating mucocutaneous lesions: thalidomide[1,3], dapsone[1], pentoxifylline[1], azathioprine[1], interferon-alpha[1,4], and rebamipide[5]. However, the mucocutaneous symptoms of BD are self-limiting, and overtreatment should be avoided.

Ocular Lesions

Colchicine is first prescribed to prevent both anterior and posterior uveitis. Topical mydriatics and corticosteroid drops are given for the treatment of anterior uveitis. Topical injection, in some cases with systemic administration, of corticosteroids is used for the acute attacks of posterior uveitis. Cyclosporin A becomes the first line therapy for uveitis[1,6], while conventional cytotoxic agents such as azathioprine, chlorambucil and cyclophosphamide are other alternatives[1]. Recent trials using interferon-alpha (IFN-alpha) to treat BD have produced encouraging results[1,4].

Treatment	Dose	Indication
Topical Treatment		
• Triamcinolone acetonide ointment	3 times/day	Oral ulcers
• Betamethasone ointment	3 times/day	Genital ulcers
• Tetracycline	250mg in water solution, once/day	Oral ulcers
Systemic Treatment		
• Colchicine	0.5-1.5mg/day orally	Oral ulcers, genital ulcers, pseudofolliculitis, erythema nodosum
• Prednisone	5-20mg/day orally	Erythema nodosum
• Thalidomide	100-300mg/day orally	Oral ulcers, genital ulcers, pseudofolliculitis
• Dapsone	100mg/day orally	Oral ulcers, genital ulcers, pseudofolliculitis, erythema nodosum
• Pentoxifylline	300mg/day orally	Oral ulcers, genital ulcers, pseudofolliculitis, erythema nodosum
• Azathioprine	100mg/day orally	Oral ulcers, genital ulcers, pseudofolliculitis, erythema nodosum
• Interferon-alpha	Remission induction: $6x10^6$ IU/day SC for one month; Maintenance: $3x10^6$IU/day SC	Oral ulcers, genital ulcers, pseudofolliculitis, erythema nodosum

Table 1: Current therapies for mucocutaneous lesions.

Involvement of Vital Organs

The treatments for inflammatory bowel diseases are also applicable for the gastrointestinal lesions found in BD. Sulfasalazine and corticosteroids are the principal drugs. High doses of corticosteroids with cytotoxic immunosuppressants are administered for neurological involvement. A combination therapy of corticosteroids and cytotoxic agents, supplemented with anticoagulants and antiplatelet agents is used for vascular lesions.

Surgical approaches should be considered for gastrointestinal perforation, uncontrollable intestinal bleeding, or rupture of an aneurysm.

Conclusion

Local treatment with corticosteroids is satisfactory in most of the mucocutaneous lesions. Colchicine is useful to prevent the attacks of individual symptoms. Overtreatment should be avoided for mucocutaneous lesions unless they are complicated by more serious symptoms.

References

1. Sakane T, Takeno M, Suzuki N, Inaba G. Behçet's disease. *N Engl J Med* 341(17):1284-91 (1999 Oct).
2. Sakane T. New perspective on Behçet's disease. *Int Rev Immunol* 14(1):89-96 (1997).
3. Hamuryudan V, Mat C, Saip S, et al. Thalidomide in the treatment of the mucocutaneous lesions of the Behçet syndrome: a randomized, double-blind, placebo-controlled trial. *Ann Intern Med* 128(6):443-50 (1998 Mar).
4. Zouboulis CC, Orfanos CE. Treatment of Adamantiades-Behçet disease with systemic interferon-alpha. *Arch Dermatol* 134(8):1010-6 (1998 Aug).
5. Kaklamani VG, Vaiopoulos G, Kaklamanis PG. Behçet's disease. *Semin Arthritis Rheum* 27(4):197-217 (1998 Feb).
6. Masuda K, Nakajima A, Urayama A, Nakae K, Kogure M, Inaba G. Double-masked trial of cyclosporin versus colchicine and long-term open study of cyclosporin in Behçet's disease. *Lancet* 1(8647):1093-6 (1989 May)

continued from page 2

Treatment	Adverse effects
UV radiation modalities	Sunburn, solar elastosis, carcinogenesis?
Corticosteroid	Systemic: Adrenal suppression
	Topical: atrophy, striae, acne
Minigrafting	Infection, cobblestoning, pitted scars (donorsite)
Split skin grafting	Infection, epidermal cysts, atrophy (donorsite)
Monobenzone	Irritation

Table 3: Adverse effects to the various treatment schemes used to treat vitiligo[3,4,9].

Conclusion

Vitiligo is still not acknowledged by most dermatologists as a true skin disease, and active treatment is usually not prescribed. In cases where treatment is undertaken there is no consistency in treatment choices and regimens. A systematic review of the literature shows that the treatments listed here are the most effective and safest vitiligo therapies (evidence-based medicine). The patient's quality of life should be the main measure of the treatment outcome.

References

1. Porter J, Hill-Beuf A, Lerner A, Nordlund J. Response to cosmetic disfigurement: patients with vitiligo. *Cutis* 39(6):493-4 (1987 Jun).
2. Evidence-based Medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group. *JAMA* 268(17):2420-5 (1992 Nov).
3. Njoo MD, Spuls PI, Bos JD, Westerhof W, Bossuyt PM. Nonsurgical repigmentation therapies in vitiligo. Meta-analysis of the literature. *Arch Dermatol* 134(12):1532-40 (1998 Dec).
4. Njoo MD, Westerhof W, Bos JD, Bossuyt PM. A systematic review of autologous transplantation methods in vitiligo. *Arch Dermatol* 134(12):1543-9 (1998 Dec).
5. Westerhof W, Nieuweboer-Krobotova L, Mulder PG, Glazenburg EJ. Left-right comparison study of the combination of fluticasone propionate and UV-A vs. either fluticasone propionate or UV-A alone for the long-term treatment of vitiligo. *Arch Dermatol* 135(9):1061-6 (1999 Sep).
6. Westerhof W, Nieuweboer-Krobotova L. Treatment of vitiligo with UV-B radiation vs topical psoralen plus UV-A. *Arch Dermatol* 133(12):1525-8 (1997 Dec).
7. Falabella R, Arrunategui A, Barona MI, Alzate A. The minigrafting test for vitiligo: detection of stable lesions for melanocyte transplantation. *J Am Acad Dermatol* 32(2 Pt 1):228-32 (1995 Feb).
8. Westerhof W, Boersma B. The minigrafting test for vitiligo: detection of stable lesions for melanocyte transplantation. *J Am Acad Dermatol* 33(6):1061-2 (1995 Dec).
9. Njoo MD, Bos JD, Westerhof W. Depigmentation therapy in vitiligo universalis using topical 4-methoxyphenol and the Q-switched ruby laser. *J Am Acad Dermatol*. In press 2000.
10. Thissen M, Westerhof W. Laser treatment for further depigmentation in vitiligo. *Int J Dermatol* 36(5):386-8 (1997 May).
11. Njoo MD, Westerhof W, Bos JD, Bossuyt PM. The development of guidelines for the treatment of vitiligo. *Arch Dermatol*. In press 1999.
12 Ellison JM, Griffiths WAD. Vitiligo treated with monobenzyl ether of hydroquinone. *Retinoids & Lipid-Soluble Vitamins in Clinical Practice* 16(1):10-2 (2000).

Update on Drugs

Class	Name/Company	Approval Dates and Comments
Oncologic Agent	**Paclitaxel** *Paxene* IVAX/Bristol-Myers Squibb	HPB – Ottawa approved this anti-cancer drug in April 2000, for the treatment of AIDS-related Kaposi's sarcoma in patients who have failed prior liposomal anthracycline therapy.
Hormonal Preparations	**Testosterone Gel** *AndroGel 1%* Unimed Pharmaceuticals	The US FDA approved this once-daily topical gel in April 2000, for the treatment of low testosterone levels linked with decreased sex drive, impotence, reduced lean body mass, decreased bone density, and lowered mood and energy levels. This gel has not been evaluated in women, and should not be used in men with breast or prostate cancer.
Wound Care	**"Intelligent" Dressing** *Acemannan Hydrogel* Carrington Laboratories	The US FDA granted marketing clearance in March 2000, for this wound care product for the management of postsurgical incisions, first- and second-degree burns, arterial and venous stasis ulcers, pressure ulcers, and foot ulcers.
Oncologic Agent	**Cyclophosphamide 25mg and 50mg tablets** Roxane Laboratories	The US FDA approved this generic form of oncologic drug in April 2000, to be used in combination with other antineoplastic therapies to treat certain forms of cancer.
Antifungal Agent	**Ketoconazole 2% Cream** Teva Pharmaceuticals	The US FDA approved this generic form of antifungal cream in April 2000, for the treatment of fungal infections.
Dermatosclerosis Agent	**Halofuginone** Collgard Biopharmaceuticals	The US FDA granted orphan drug designation for this drug in March 2000, for the treatment of scleroderma.
OTC Vaginal Preparations	**Clotrimazole 2%** *Clotrimazole 2% Three Day Vaginal Cream* Taro Pharmaceuticals	The US FDA approved this OTC vaginal preparation in April 2000, for the treatment of vaginal yeast infections.
Anti-psoriatic	**Cyclosporine** *Gengraf* Abbott Laboratories	The US FDA approved this drug in May 2000, for the prevention of organ rejection in the kidney, liver and heart transplants. *Gengraf* is the bioequivalent to Novartis Pharmaceutical's *Neoral*.
Wound Care	**Apligraf** *Graftskin* Organogenesis	The US FDA's General and Plastic Surgery Devices Panel recommended approval in May 2000, of this treatment for diabetic foot ulcers of >2 weeks' duration. It is currently indicated for the treatment of venous leg ulcers of >1 month duration that have not adequately responded to conventional therapy.
	Drug News	
Wound Care *Re: Dapsone Topical Gel*	Atrix Laboratories filed an Investigational New Drug application with the US FDA in April 2000, for a trial of Dapsone topical gel *(Atricaine)* for the treatment of chronic itch associated with healed and healing burn wounds. Atrix utilizes its Solvent Micropartical System *(SMP)* drug delivery technology to permit topical administration of the normally insoluble drug.	
Oncologic Agent *Re: G3139*	Genta announced in May 2000, that their bcl-2 antisense compound, G3139, has recently entered Phase III trials in patients with advanced melanoma. Genta received "Fast Track" designation from the US FDA in October 1999.	
Atopic Dermatitis Agents *Re: Tacrolimus Ointment*	Phase III clinical trials for Tacrolimus Ointment (*Protopic*, Fujisawa Healthcare) has produced significant improvement for patients with atopic dermatitis. This is the first medication being developed in the US in the new topical immunomodulator (TIMs) class. It is not a steroid and works in the skin to stop the immune reaction that leads to red, itchy, inflamed rashes frequently seen in this condition.	
Anesthetics, Topical	Endo Pharmaceuticals, Inc. and Elan Pharmaceuticals will co-promote Endo's *Lidoderm* (lidocaine patch 5%) for pain associated with post-herpetic neuralgia.	

Skin Therapy Letter®. (ISSN 1201–5989) Printed on acid-free paper effective with Volume 1, Issue 1, 1995.
Published six times yearly by International Skin Therapy Newsletter Inc., 835 West Tenth Avenue, Vancouver, British Columbia, Canada V5Z 4E8. Tel: (604) 874-6112. Fax: (604) 873-9919.
Annual subscription: Canadian $85 individual; $155 institutional (GST included). US $60 individual; $110 institutional. Outside North America: US$80 individual; $130 institutional. Quotes on multiple subscriptions and student rates supplied upon request.

Printed in Canada

Skin Therapy Letter®
Editor: Stuart Maddin

Index to Volume 5, Issues 1–6

Articles are indexed by drug names, trade-names (italicized), and disease terms.

Drug name **Issue #: Page #**

Long-Pulsed Ruby	3:2
Loratidine	4:2
Luxiq 0.12% Foam	3:3
Maculopapular eruptions	1:8
Malathion	1:1-3;3:4,
Male-pattern hair loss	3:4,6
Mectizan	1:2
Melacine Therapeutic Vaccine	3:4
Melanoma Lysate	3:4
Melanoma	2:6;3:4;5:6;6:6
Mequinol 2%/ Tretinoin 0.01%	5:6
Methotrexate	2:4;4:6
Methoxsalen	3:4
Micanol 1% Cream	2:2
Miconazole	4:2
Minoxidil 2% Solution	3:4
Miralex Cream	3:6;5:4
Morphea	**2:3-5**
Mouth Wounds	3:6
Moxifloxacin HCl	2:6;3:3,6
Mupirocin	3:3
MuTong	4:6
Mycophenolate mofetil	4:2
Nalmefene	5:2,5
Naloxone	5:2,5
Naltrexone	5:2,5
Nitroglycerin ointment	2:6
Nix	1:2
Oak bark	4:4
Oasis Wound Dressing	3:6
Ondansetron	5:2,5
Ontak	3:4
Onychomycosis	2:6
OraDisc	3:6
Oral-facial herpes	1:8;4:6
Orap	3:6
Orion	3:2
Osteoporosis	3:4
Ovide Lotion	1:2;3:4
Paclitaxel	6:6
Panoxyl	1:4
Panretin	5:6
Pathergy test	6:3-5
Paxene	6:6
Penlac Nail Laquer 8%	2:6;3:3
Pentoxifylline	6:4
Permethrin	1:1-3
Photodynamic therapy	1:7;2:6;3:4;4:6
Pimozide	3:6
Postherpetic neuralgia	3:4
Prednisone	6:4
Prilocaine	3:4;4:6
Proleukin	3:4
Propecia 1mg tablets	3:4,6
Protopic Ointment	1:8;6:6
Pruritus	**5:1-2,5**
Psoriasis	**2:1-2,5**;3:3
PUVA	2:1-5;6:1-2,5
Pyretherins/Piperonyl butoxide	1:8;3:4;4:6
Q-switched Nd:YAG	3:2
Quinupristin/Dalfopristin	1:8;3:3
Regranex gel	1:8;3:3
Retin-A	1:4
Retisol-A	1:4
Rid Aerosol Foam Mousse	1:8;3:4;4:6
Rid Lice Egg Loosener Gel	1:8
Rifampicin	5:5
Roferon-A	3:4
Roxithromycin	3:3
Rulid	3:3
Sans-Acne	1:4
Scabene	1:2
Scabies	**1:1-3**
Scleroderma	**2:3-5;**6:6
Silver salts	2:6
Skin-Cap Spray	5:4
Skin grafting	6:2
Skin structure infections	1:8;2:6;3:3,6;4:6;5:6
SoftLight	3:2
Solage	5:6
Solarase	5:6
Solar lentigines	5:6
Solex	2:6
Solugel	1:4
Sporanox	3:3;5:6
Squaric acid dibutyl ester	5:4
Staticin	1:4
Stevens-Johnson Syndrome	3:6
Stieva-A	1:4
Stievamycin	1:4
Stromectol	1:2
Synercid IV	1:8;3:3
Tacrolimus	1:8;5:2;6:6
Tar	2:1-2,5
Targretin capsules	3:4;5:6
Targretin Gel	3:6
Tazarotene	1:4-7;2:1-2,5
Tazorac	1:4;2:2
Temodal	5:6
Temoporfin	4:6
Temozolomide	5:6
Tequin	3:3
Terbinafine HCl	3:3;4:2;5:6
Testosterone Gel	6:6
Tetracycline	6:4
Thalidomide	6:4
Tinea pedis	3:3;5:6
Tinea cruris	3:3;5:6
Tinea corporis	3:3;5:6
Tissue engineered collagen matrix	3:6
Tourette's Syndrome	3:6
Toxic epidermal necrolysis	3:6
Tretinoin	1:4-7
Triamcinolone acetonide	6:4
Tricyclic antidepressants	5:2
Trovofloxacin	4:2
T-stat	1:4
Turmeric	4:3
Ursodesoxycholic acid	5:5
Urticaria	1:8;4:6
UVA	2:3-5;6:1-2,5
UVB	6:1-2,5
Uvadex	3:4
Vagifem	3:3
Vaginal atrophy	4:6
Vaginal yeast infections	6:6
Vaginosis, bacterial	3:3
Vaniqa Cream 15%	3:6
Varicella vaccine	3:3
Varivax	3:3
Vasculight	3:2
Vitamin A Acid	1:4
Vitiligo	**6:1-2,5**
Vitinoin	1:4
Vulvar/vaginal atrophy	3:4
Warts	3:3
Willow bark	4:3
Witch hazel	4:3
Yarrow	4:4
Ziagen	3:4
Zyvox	5:6