



## **Indiana Medicaid Therapeutics Committee** **Therapeutic Class Review Summary**

### **Therapeutic Class:**

Antipsoriatic Agents

### **Overview:**

Psoriasis is a chronic inflammatory skin disorder characterized by a fluctuating course of exacerbations and remissions. Psoriasis is also recognized as a T-cell-mediated immune disorder in which CD4<sup>+</sup> and CD8<sup>+</sup> memory T cells stimulate the hyperproliferation of keratinocytes. Normally, T cells help protect the body against infection and disease; however, in psoriasis, T cells become active in the skin and stimulate inflammation and excessive skin cell reproduction. Additionally, tumor necrosis factor (TNF), a naturally occurring cytokine involved in normal inflammatory and immune responses, plays a role in the inflammatory process of plaque psoriasis. Elevated TNF levels have been found in involved tissues and fluids of patients with psoriatic arthritis and plaque psoriasis.

There are several different types of psoriasis. Each type has distinguishable shapes and patterns of the scales, severity, duration, and location. The most typical form of psoriasis results in patches of thick, red skin covered with silvery scales. The patches, usually referred to as plaques, may itch and burn. In addition, the skin at the joints may crack. Psoriasis most often occurs on the elbows, knees, scalp, lower back, face, palms, and soles of the feet, but can affect any skin site. Fingernails, toenails, the soft tissue inside the mouth, and genitalia may also be affected.

Psoriasis has no cure, but effective treatment may provide partial or full remission for substantial periods of time. The goal of treatment is to reduce inflammation and control shedding of the skin. Several therapeutic options have been approved for the treatment and prevention of psoriasis. Topical agents, photochemotherapy, and systemic agents are discussed in this review.

Topical agents (i.e., anthralin, calcitriol, calcipotriene, and tazarotene) are frequently used alone in mild-to-moderate cases of psoriasis. Anthralin is a synthesized chemical that is believed to act on psoriatic lesions by normalizing DNA activity in skin cells (keratinocytes) and reducing inflammation. Calcipotriene is a synthetic analog of vitamin D<sub>3</sub> that causes inhibition of cell proliferation and induction of cell differentiation in psoriatic skin. Tazarotene is a synthetic, acetylenic retinoid that modulates differentiation and proliferation of epithelial tissue and exerts some degree of anti-inflammatory and immunological activity. The mechanism of action of calcitriol in the treatment of psoriasis is unknown. Clinical data suggest that calcipotriene used alone is not as efficacious in the treatment of psoriasis as the combination of calcipotriene or tazarotene with a steroid. Taclonex<sup>®</sup>, a combination of both calcipotriene and betamethasone, is available as an ointment and scalp suspension.

Methoxsalen is a naturally occurring photosensitivity agent (psoralen). It is used in combination with ultraviolet light A (UVA) to treat psoriasis. This combination is referred to as

photochemotherapy or psoralen + UVA (PUVA). UVA slows the rapid growth of skin cells and kills T cells in the skin. Psoralen bonds covalently to pyrimidine bases in DNA, inhibiting the synthesis of DNA and suppressing cell division, and makes the skin more sensitive to UVA rays. Patients ingest methoxsalen before being exposed to UVA rays. PUVA is an option for psoriasis that does not respond to topical medications alone or for lesions that are too extensive for topical treatment.

Systemic agents are reserved for moderate to severe psoriasis. They are often combined with topical agents for better clearance of lesions. Acitretin, a retinoic acid analog, modulates the cellular differentiation of the epidermis. Acitretin must not be used in females who are pregnant or those who intend to become pregnant during therapy or any time for at least 3 years following discontinuation of therapy. Most patients will experience relapse of psoriasis after discontinuing therapy with acitretin.

Biologics (i.e., adalimumab, alefacept, etanercept, infliximab, and ustekinumab) pinpoint precise immune responses involved with psoriasis. Alefacept interferes with the migration, activation, and proliferation of T cells resulting in relief from signs and symptoms. It is given by intramuscular injection once weekly for 12 weeks. CD4<sup>+</sup> cell counts must be monitored as circulating T cells are decreased with therapy. Ustekinumab, the newest biologic available, is given by subcutaneous injection every 12 weeks. Ustekinumab is an interleukin antagonist with a novel mechanism of action compared to alternative agents. Efalizumab was discontinued in June of 2009 due to its association with the development of progressive multifocal leukoencephalopathy (PML), a viral infection of the central nervous system. Common side effects of the biologics include headache, flu-like symptoms, and muscle aches with the first few injections.

Adalimumab, etanercept, and infliximab inhibit tumor necrosis factor (TNF) and have been used to treat several conditions including psoriatic arthritis and plaque psoriasis. Adalimumab and etanercept are administered by subcutaneous injection; however, they differ in dosing. Adalimumab is given every other week, while etanercept is administered twice weekly for three months followed by a once weekly maintenance dose thereafter. Additionally, infliximab is administered by IV infusion every 8 weeks after three initial infusions. A boxed warning is included in the Enbrel, Humira, and Remicade labels regarding the potential development of life-threatening infections while using the TNF inhibitors. The labels also warn that lymphoma and other malignancies, some fatal, have been reported in children and adolescent patients treated with TNF blockers. Other common side effects associated with the TNF blockers include injection site reactions, headache, and nausea. Patients must be monitored for serious infection, malignancy, and blood dyscrasias.

GENERIC NAME	TRADE NAME	MANUFACTURER	GENERIC
Acitretin	Soriatane <sup>®</sup>	Connectis Corporation	N
Adalimumab	Humira <sup>®</sup>	Abbott	N
Alefacept	Amevive <sup>®</sup>	Astellia Pharma	N
Anthralin	Drithocrema <sup>®</sup> , Psoriatic <sup>®</sup> , Drithro-scalp <sup>®</sup>	Various	Y (1% cream only)
Betamethasone; Calcipotriene	Taclonex <sup>®</sup>	Leo Pharm	N
Calcipotriene	Dovonex <sup>®</sup>	Leo Pharm	Y
Calcitriol	Vectical <sup>™</sup>	Galderma Labs	N

Efalizumab	Raptiva™	Genentech	N
Etanercept	Enbrel®	Amgen	N
Infliximab	Remicade®	Centocor Inc	N
Methoxsalen	Oxsoralen-Ultra®	Valeant Pharmaceuticals International	N
Tazarotene	Tazorac®	Allergan	N
Ustekinumab	Stelara™	Centocor Inc	N

### Summary:

Calcipotriene is considered the treatment of choice by some clinicians, but clinical data and cost have not supported its use before an adequate trial of topical corticosteroids. Taclonex®, a combination of both calcipotriene and betamethasone, is available as an ointment and scalp suspension. The literature supports the use of systemic and topical agents simultaneously as well as the use of two topical agents at the same time. The biologics (i.e., adalimumab, alefacept, etanercept, infliximab, and ustekinumab) are the newest agents in this class and offer alternatives to immunosuppressants and chemotherapeutic agents in the treatment of moderate-to-severe plaque psoriasis. Selection of a preferred agent should be based on the ability to clear and prevent psoriatic lesions and safety.