

Indiana Medicaid Therapeutics Committee Therapeutic Class Review Summary

Therapeutic Class:

Topical Antifungals

Overview:

Topical antifungals are used to treat dermatophytes, belonging to 3 genera (*Trichophyton*, *Epidermophyton* and *Microsporum*) which cause fungal infections of keratinized tissue such as the skin, hair, and nails. These agents are useful due to a decreased potential for serious adverse side effects, often experienced with oral medications. The incidence of topical fungal infections has progressively increased in recent years, primarily because of an increased number of immunocompromised patients and the increased use of health clubs and communal swimming pools, which aid the spread of infection. Dermatomycoses were ranked second to acne as the most frequent skin disease in the United States.

Several topical antifungal agents are currently available. There are seven agents in the imidazole group, including the newest addition sertaconazole. Among the imidazoles, miconazole and clotrimazole are available over the counter and have similar efficacy and spectrum of activity. These agents are applied twice daily and are fungicidal at five to ten times the minimum inhibitory concentration (MIC). The newer imidazoles are available by prescription only, including oxiconazole and sulconazole, and can be applied once daily because they remain in the tissues for an extended period of time. Terbinafine and naftifine are allylamines. Terbinafine, which recently became generically available, is a fungicidal agent with a broad range of activity at lower concentrations. Terbinafine kills organisms at the level of the MIC and can be dosed once a day. Naftifine has anti-inflammatory effects and is fungicidal against dermatophytes and *Candida* species. Its potency is similar to that of tolnaftate and clotrimazole. Tolnaftate is a thiocarbamate that is available over the counter and has fungicidal activity against dermatophytes. Nystatin is a fungicidal and fungistatic polyene; its therapeutic target is candidiasis. Butenafine is a benzylamine derivative that is fungicidal against dermatophytes *in vitro* and fungistatic against *Candida albicans* at therapeutically achievable drug concentrations. Ciclopirox, a hydroxypyridone, is effective against dermatophytes, yeast and some bacteria; it also has direct anti-inflammatory actions.

The published data provide limited guidance for product selection. However, several studies have noted equivalent, if not superior, results with the newer agents as compared to miconazole and clotrimazole. Older agents, such as topical amphotericin B, clioquinol and triacetin, have been discontinued. Currently, no large multicenter study has compared the efficacy of the available antifungal agents.

SUBCLASS	GENERIC NAME	TRADE NAME	MANUFACTURER	GENERIC	OTC
Allylamines	Terbinafine HCl	Lamisil® AT	Novartis	Y	Y
	Naftifine HCl	Naftin®	Merz Pharmaceuticals	N	N
Thiocarbamate	Tolnaftate	Tinactin®	Schering-Plough, various	Y	Y
Benzylamine	Butenafine HCl	Mentax®	Bertex	N	Y (Lotrimin Ultra)
Hydroxy-pyridone	Ciclopirox	Penlac™, Loprox®	Dermik Labs Medicis	Y	N
Polyenes	Nystatin	Nilstat®	Lederle	Y	N
Imidazoles	Miconazole Nitrate	Micatin®	Pharmacia & Upjohn	Y	Y
	Oxiconazole	Oxistat®	GlaxoSmithKline	N	N
	Sulconazole	Exelderm®	Westwood Squibb	N	N
	Clotrimazole	Lotrimin®	Schering Plough, various	Y	Y
	Econazole	Spectazole™	Ortho McNeil, various	Y	N
	Ketoconazole	Extina® Nizoral® Xolegel™	Janssen Pharma, various	Y	Y (Shampoo)
	Sertaconazole	Ertaczo®	Ortho McNeil	N	N

Summary:

Cutaneous fungal infections occur frequently, and most are treated with topical antifungal agents. Many agents are available over-the-counter and generically. Importantly, systemic therapy should be considered when a fungal infection involves the scalp, the nails or large areas of the skin, when the patient is immunocompromised or when there is chronic or recurrent infection with a poor response to topical agents. Selection of an agent for the preferred drug list should be based upon efficacy, favorable adverse effect profile, dosing regimen, duration of therapy, relapse rate, and cost effectiveness.