

Fungal Infections

"Opportunistic Infections": Candidiasis

- Wide spread use of broad spectrum of Antibiotics

- HIV patients

- Immunosuppressants and cancer chemotherapy patients

- Elderly

- Diabetic patients

- Pregnant women

- Burn wound victims

Fungal Infection Treatments

Organism(s) responsible	Principal disease(s)	Common drug treatments	
Yeasts	<i>Cryptococcus neoformans</i>	Meningitis	Amphotericin, fluconazole, fluconazole
Yeast-like fungi	<i>Candida albicans</i>	Thrush (and other superficial infection)	Fluconazole, itraconazole
		Systemic candidiasis	Echinocandins, fluconazole, amphotericin, other azoles
Filamentous fungi	<i>Trichophyton</i> spp. <i>Epidermophyton floccosum</i> <i>Microsporum</i> spp.	All these organisms cause skin and nail infections and are referred to as 'trich' or 'ringworm'	Itraconazole, terbinafine, griseofulvin
	<i>Aspergillus fumigatus</i>	Pulmonary aspergillosis	Voriconazole, amphotericin, caspofungin, other azoles
Dimorphic fungi	<i>Histoplasma capsulatum</i>	Histoplasmosis	Itraconazole, amphotericin
	<i>Coccidioides immitis</i>	Coccidioidomycosis	
	<i>Blastomyces dermatitidis</i>	Blastomycosis	

Superficial Fungal Infections:

Dermatomycoses: skin, hair, nails (onychomycoses)

- Candidiasis

- Tinea versicolor

- Dermatophytoses

Dermatophytoses:

- *Trichophyton*, *Microsporum*, *Epidermophyton*

- Tinea capitis

- Tinea cruris

- Tinea pedis

- Tinea corporis (**Treatment:** Clotrimazole 2% cream, apply tds for 2 weeks after lesion has cleared)

Clinical Features:

- Itchy ring-like patches

- Raised borders

- Patches slowly grow bigger = as patches extend, a clear area develops in the center which may become hyperpigmented in dark skin.

Tinea Versicolor:

- also implicated for dandruff/ seborrheic dermatitis

- Selenium sulphide (Selsun)

- Zinc pyrithione (Head and Shoulders)

- Soap: Sulphur (10%) and Salicylic acid (3%)

Oral Candidiasis (Thrush):

- Presents: painful creamy white patches, can be scraped off tongue and buccal mucosa.

- Common in healthy babies (up to 1mo)

- **Risk Factors:** Poor Oral Hygiene, Immunosuppression, Prolonged use of broad spectrum antibiotics or corticosteroids (including inhaled), Certain chronic diseases, Trauma

- **General Measures:** Identify underlying cause, Improve oral hygiene, Ensure proper fitting dentures

Treatment:

- Nystatin suspension, oral, 100 000 IU/mL, 1ml, 6 hourly after each meal/feed for 7 days.
- = Keep in contact with affected area for as long as possible prior to swallowing
- = In older children, ask child to swirl in mouth prior to swallowing
- = In infants: apply to front of mouth and spread around mouth with clean finger
- = continue for 48hrs after cure

Tinea Capitis:

Round or patchy bald areas with scales and stumps of broken of hair

Avoid shaving head in children

Don't share combs and hair brushes = Contagious

Treatment:

- Children: Fluconazole, oral, 6mg/kg once daily for 28 days
- Adults: Fluconazole, oral, 200mg once daily for 28 days

Systemic (Disseminated) Fungal Infections:

- Cryptococcal meningitis

- Candidiasis

- Pulmonary aspergillosis

- Histoplasmosis

Candida Oesophagitis:

- Oesophageal involvement in HIV infected patients with oral candidiasis who have pain or difficulty swallowing

- Maintain hydration

- Fluconazole 200g po daily for 14 days

- Refer: unable to swallow, poor response to fluconazole

Antifungal: Mechanisms of Action

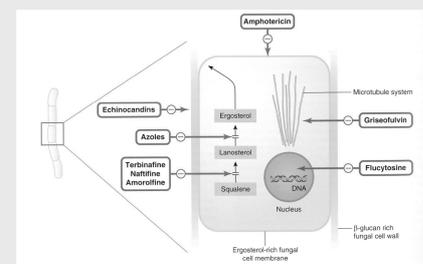


Fig. 53.1 Sites of action of common antifungal drugs. Fungi are morphologically very diverse organisms, and this diagram of a 'typical' fungus is not intended to be technically accurate. The principal sites of action of the main antifungal agents mentioned in this chapter (in red-bordered boxes) are indicated as shown.

Classes of Antifungal Treatment

Antifungal antibiotics	Synthetic antifungal drugs	Other
Polylene antibiotics	Azoles	Flucytosine**
Amphotericin B	Imidazole	Terbinafine
Nystatin*	Ketoconazole	
	Miconazole*	
Griseofulvin	Triazoles	
	Bifonazole*	
Echinocandins	Clotrimazole*	
Anidulafungin**	Econazole*	
Caspofungin**	Fluconazole	* Mostly topical agents
	Itraconazole**	** Second line / severe infections
	Posaconazole**	
	Voriconazole**	

Amphotericin B:

- **Drug of Choice** of severe systemic mycoses

- pks: administered IV, eliminated slowly in urine

- !Nephrotoxicity, hypokalemia

- High probability of AEs: drugs tox and administration

- NB: toxicity monitoring (dosage and duration NB)

Nystatin

- GI absorption is negligible
- Most of dose excreted in stool
- safe in pregnancy
- MOA: same as amphotericin B

Fluconazole:

- Treatment for: Candidiasis, CCM (maintenance txt)
- Pks: D-wide, CFS; Unchanged in urine (DA)
- WEAK INHIBITOR of P450



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