

### Fungal Infections

"Opportunistic Infections":	Candidiasis:
- Wide spread use of broad spectrum of Antibiotics	- Elderly
- HIV patients	- Diabetic patients
- Immunosuppressants and cancer chemotherapy patients	- Pregnant women
	- Burn wound victims

### Fungal Infection Treatments

**Table 53.1 Some clinically significant fungal infections and a typical first choice of antifungal drug therapy**

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

### 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:

### 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:

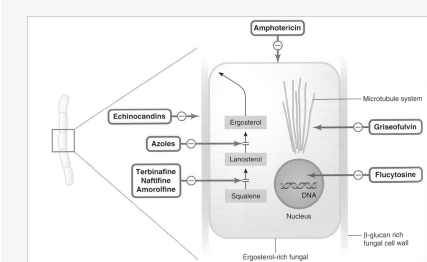
- Children: Fluconazole, oral, 6mg/kg once daily for 28 days
- Adults: Fluconazole, oral, 200mg once daily for 28 days

### Systemic (Disseminated) Fungal Infections:

- Cryptococcal meningitis
- Candidiasis
- Pulmonary aspergillosis
- Histoplasmosis

### Candida Oesophagitis:

### 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
<b>Polyene antibiotics</b>	<b>Azoles</b>	Flucytosine**
Amphotericin B	Imidazole	Terbinafine
Nystatin*	Ketoconazole	
	Miconazole*	
Griseofulvin	Triazoles	
	Bifonazole*	
Echinocandins	Clotrimazole*	
	Econazole*	
Anidulafungin**	Fluconazole	* Mostly topical agents
Caspofungin**	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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- also implicated for dandruff/ seborrhoeic dermatitis

- Selenium sulphide (Selsun)

- Zinc pyrithione (Head and Shoulders)

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

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- 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

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