



# Fungal Infections - Comprehensive Medical Reference Guide

## General Overview of Fungal Infections

Fungal infections are caused by pathogenic fungi that may exist as yeasts or molds. They commonly affect the skin, nails, mucous membranes, lungs, and internal organs.



### High-Risk Populations

Fungal infections are particularly significant in:

- Immunocompromised individuals
- Patients with diabetes
- Long-term antibiotic or corticosteroid users

## Classification by Depth and Severity

- **Superficial** - Affecting outer layers of skin
- **Cutaneous** - Involving skin structures
- **Subcutaneous** - Affecting deeper tissue layers
- **Systemic (invasive)** - Internal organ involvement

---

## 1. Candidiasis

## Overview

Candidiasis is caused by *Candida* species, which are part of normal human flora but can cause infection when host defenses are compromised.

## Symptoms

- Oral white plaques (oral candidiasis)
- Vulvovaginal itching and discharge
- Intertrigo and skin erythema
- Fever and sepsis (invasive disease)

## Stages of Infection

1. Commensal colonization
2. Local mucocutaneous overgrowth
3. Tissue invasion
4. Systemic dissemination (high-risk patients)

## Preventive Measures

- Glycemic control
- Rational antibiotic use
- Good oral and skin hygiene
- Avoid prolonged moisture exposure

## Diagnosis

- Direct microscopy
- Culture
- Blood cultures (invasive candidiasis)

## First Aid / Immediate Care

- Maintain dryness of affected areas

- Avoid irritants
- Prompt medical evaluation

## Antifungal Drugs (Educational Reference)

- **Fluconazole**
  - **Clotrimazole**
  - **Nystatin**
  - **Amphotericin B** (systemic infection)
  - **Echinocandins** (severe invasive disease)
- 

## 2. Aspergillosis

### Overview

Aspergillosis is caused by inhalation of *Aspergillus* spores and primarily affects the respiratory system.

### Symptoms

- Persistent cough
- Fever
- Chest pain
- Hemoptysis in advanced disease

### Stages of Infection

1. Environmental spore inhalation
2. Pulmonary colonization
3. Invasive pulmonary disease
4. Dissemination to other organs

### Preventive Measures

- Avoid dust exposure in high-risk patients
- Hospital infection control
- Immune status monitoring

## Diagnosis

- Chest imaging (CT scan)
- Galactomannan antigen testing
- Fungal culture

## First Aid / Immediate Care

- Respiratory support if required
- Immediate referral for immunocompromised patients

## Antifungal Drugs (Educational Reference)

- **Voriconazole**
  - **Itraconazole**
  - **Amphotericin B**
- 

# 3. Dermatophytosis (Tinea / Ringworm)

## Overview

Dermatophytosis is a superficial fungal infection involving keratinized tissues such as skin, hair, and nails.

## Symptoms

- Itchy, ring-shaped skin lesions
- Scaling and redness
- Thickened, discolored nails

## Stages of Infection

1. Direct skin contact exposure
2. Superficial fungal growth
3. Expansion of lesions
4. Chronic infection if untreated

## Preventive Measures

- Keep skin clean and dry
- Avoid sharing personal items
- Proper foot and nail hygiene

## Diagnosis

- Clinical examination
- Potassium hydroxide (KOH) microscopy

## First Aid / Immediate Care

- Clean and dry affected areas
- Avoid occlusive clothing

## Antifungal Drugs (Educational Reference)

- **Clotrimazole**
- **Terbinafine**
- **Ketoconazole**
- **Griseofulvin**

---

# 4. Cryptococcosis

## Overview

Cryptococcosis is a serious opportunistic fungal infection caused by *Cryptococcus* species, frequently involving the central nervous system.

## Symptoms

- Headache
- Fever
- Neck stiffness
- Altered mental status

## Stages of Infection

1. Inhalation of spores
2. Pulmonary infection
3. CNS involvement (meningitis)
4. Disseminated disease

## Preventive Measures

- Immune function monitoring
- Early detection in high-risk patients

## Diagnosis

- CSF examination
- Cryptococcal antigen testing
- Neuroimaging

## First Aid / Immediate Care

- Emergency referral
- Supportive neurological care

## Antifungal Drugs (Educational Reference)

- **Amphotericin B**
  - **Flucytosine**
  - **Fluconazole**
-

## 5. Histoplasmosis

### Overview

Histoplasmosis results from inhalation of fungal spores found in soil contaminated with bird or bat droppings.

### Symptoms

- Fever
- Cough
- Chest discomfort
- Fatigue

### Stages of Infection

1. Spore inhalation
2. Pulmonary infection
3. Disseminated disease (immunocompromised)

### Preventive Measures

- Protective equipment in endemic areas
- Avoid exposure to contaminated soil

### Diagnosis

- Antigen detection
- Imaging
- Fungal culture

### First Aid / Immediate Care

- Monitor respiratory symptoms
- Medical evaluation if symptoms persist

## Antifungal Drugs (Educational Reference)

- Itraconazole
  - Amphotericin B
- 

## 6. Mucormycosis (Zygomycosis)

### Overview

Mucormycosis is a severe, rapidly progressive fungal infection caused by fungi of the order Mucorales, commonly affecting patients with diabetes or immunosuppression.

### Symptoms

- Facial pain and swelling
- Nasal congestion or black nasal discharge
- Fever
- Vision disturbances

### Stages of Infection

1. Spore inhalation or wound contamination
2. Local tissue invasion
3. Angioinvasion and tissue necrosis
4. Cerebral or systemic spread

### Preventive Measures

- Optimal diabetes control
- Judicious steroid use
- Early management of immunosuppression

### Diagnosis



- Clinical suspicion
- Imaging (CT/MRI)
- Histopathological examination

### **First Aid / Immediate Care**

- Medical emergency referral
- Early surgical consultation

### **Antifungal Drugs (Educational Reference)**

- **Liposomal Amphotericin B**
  - **Posaconazole**
  - **Isavuconazole**
- 

## **7. Blastomycosis**

### **Overview**

Blastomycosis is a systemic fungal infection caused by *Blastomyces dermatitidis*, affecting lungs and potentially skin and bones.

### **Symptoms**

- Fever
- Cough
- Weight loss
- Skin lesions

### **Stages of Infection**

1. Inhalation of spores
2. Pulmonary infection
3. Dissemination to skin and bones

## Preventive Measures

- Avoid exposure in endemic regions
- Protective equipment for soil exposure

## Diagnosis

- Culture
- Histopathology
- Imaging studies

## First Aid / Immediate Care

- Symptom monitoring
- Early medical evaluation

## Antifungal Drugs (Educational Reference)

- **Itraconazole**
  - **Amphotericin B** (severe disease)
- 

# 8. Sporotrichosis

## Overview

Sporotrichosis is a subcutaneous fungal infection caused by *Sporothrix schenckii*, often associated with gardening injuries.

## Symptoms

- Nodular skin lesions
- Ulceration
- Lymphatic spread (sporotrichoid pattern)

## Stages of Infection

1. Skin inoculation

2. Local lesion formation
3. Lymphatic spread

## Preventive Measures

- Protective gloves during gardening
- Wound care

## Diagnosis

- Culture
- Clinical examination

## First Aid / Immediate Care

- Clean wound thoroughly
- Avoid manipulation of lesions

## Antifungal Drugs (Educational Reference)

- **Itraconazole**
  - **Potassium iodide** (educational reference)
- 

# 9. Pneumocystis Pneumonia (PCP)

## Overview

Pneumocystis pneumonia is an opportunistic fungal infection caused by *Pneumocystis jirovecii*, mainly in immunocompromised individuals.

## Symptoms

- Progressive dyspnea
- Dry cough
- Fever
- Hypoxia

## Stages of Infection

1. Colonization
2. Alveolar infection
3. Respiratory compromise

## Preventive Measures

- Immune status monitoring
- Prophylaxis in high-risk patients

## Diagnosis

- Imaging
- Bronchoalveolar lavage
- PCR testing

## First Aid / Immediate Care

- Oxygen support
- Urgent hospital referral

## Antifungal Drugs (Educational Reference)

- **Trimethoprim-Sulfamethoxazole**
  - **Pentamidine** (alternative)
- 

# 10. Chromoblastomycosis

## Overview

Chromoblastomycosis is a chronic subcutaneous fungal infection caused by dematiaceous fungi, commonly affecting rural workers.

## Symptoms

- Slow-growing warty lesions

- Skin thickening
- Secondary infection

## Stages of Infection

1. Traumatic inoculation
2. Chronic localized infection
3. Progressive tissue involvement

## Preventive Measures

- Protective footwear
- Early wound care

## Diagnosis

- Microscopy (sclerotic bodies)
- Culture

## First Aid / Immediate Care

- Clean affected area
- Early dermatological consultation

## Antifungal Drugs (Educational Reference)

- Itraconazole
  - Terbinafine
- 

# 11. Paracoccidioidomycosis

## Overview

Paracoccidioidomycosis is a systemic fungal infection caused by *Paracoccidioides* species, primarily affecting lungs and mucosa.

## Symptoms

- Chronic cough
- Weight loss
- Oral mucosal ulcers
- Lymphadenopathy

## Stages of Infection

1. Inhalation exposure
2. Pulmonary infection
3. Dissemination

## Preventive Measures

- Reduce environmental exposure
- Occupational safety

## Diagnosis

- Microscopy
- Serology
- Imaging

## First Aid / Immediate Care

- Symptom monitoring
- Medical referral

## Antifungal Drugs (Educational Reference)

- **Itraconazole**
  - **Amphotericin B** (severe cases)
- 

# General Principles of Antifungal Therapy



## Key Treatment Principles

- Drug selection depends on infection severity and host immunity
- Systemic infections require prolonged therapy
- Monitor for adverse drug effects
- Avoid empirical antifungal misuse



## Resistance & Public Health Note



### Antifungal Resistance Warning

Inappropriate antifungal use can lead to:

- Emerging antifungal resistance
- Treatment failure
- Increased morbidity in vulnerable populations

**Always consult healthcare professionals for diagnosis and treatment.**

**Disclaimer:** This document is for educational purposes only. All drug references are for educational understanding. Always seek professional medical advice for diagnosis and treatment of fungal infections.