



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.