

Mycology across medical fields: syllabus

Title	Presenter	Date
Mycology basics	Esther Segal	4/11/2024
Antifungal agents and susceptibility testing	Ronen Ben-Ami	
Post-viral fungal diseases	Martin Hoenigl	18/11/2024
Hematology and stem cell transplantation	Johan Maertens	
Invasive fungal disease in critically ill patients		2/12/2024
<ul style="list-style-type: none">• Diagnostic modalities	Jean Pierre Gangneux	
<ul style="list-style-type: none">• Management	Ronen Ben-Ami	
Skin and skin-structure mycoses	Rod Hay	16/12/2024
Vulvovaginal candidiasis	Ahinoam Lev Sagi	
Ocular fungal disease	Matthew Burton	30/12/2024
Endemic and travel related mycoses	Ilan Schwartz	
Antifungal immunology and immune deficiency	Mihai Netea	13/1/2025
Fungal diseases of the central nervous system	Yair Mina	
ENT: Fungal sinusitis and otitis	Arunaloke Chakrabarti	27/1/2025
Infections in pediatric patients	Emmanuel Roilides	
Guidelines	Oliver Cornely	10/2/2025

Syllabus

Mycology basics:

- Nomenclature and taxonomy of human pathogenic fungi
- Fungal cell structure, organization and physiology
- Must-know laboratory procedures: microscopy, staining, culture, histopathology
- Principles of fungal genetics

Antifungal agents and susceptibility testing:

- Classes of antifungals: Polyenes, triazoles, echinocandins, allylamines
- Novel antifungals: olorofim, fosmanogepix, ibrexafungerp
- Mechanisms of action
- Pharmacokinetics and pharmacodynamics
- Mechanisms of resistance
- Antifungal susceptibility testing
- Therapeutic drug monitoring

Antifungal immunology and immune deficiency:

- Antifungal immunity
- Work-up for immune deficiency in a patient with invasive fungal disease
- Immune modulation as a treatment strategy

Invasive fungal disease in critically ill patients:

- Invasive candidiasis
 - Epidemiology
 - Diagnosis: culture and non-culture-based methods
 - Treatment guidelines: prophylactic, preemptive and targeted treatment
- Invasive aspergillosis in patients with COPD
- Trauma-associated mold disease
- Fungal diseases in burn patients

Hematology and stem cell transplantation

- Invasive mold diseases in patients with hematologic malignancies: Aspergillus and non-Aspergillus mold diseases
- Epidemiology
- Clinical and radiological manifestations
- Biomarkers: galactomannan and PCR
- Approaches to management:
 - Prophylactic treatment
 - Diagnostic/biomarker-driven approach
 - Empirical treatment
- Antifungal treatment and monitoring response
- Non-pharmacologic prevention of mold diseases

Skin and skin-structure mycoses

- Pathogens
 - Dermatophytes
 - Candida and non-Candida yeasts: Malassezia, Microascus (Scopulariopsis)
 - Non-dermatophyte molds: Aspergillus spp., Fusarium spp., Mucorales
- Subcutaneous infections
 - Eumycetoma
 - Chromoblastomycosis
 - Sporotrichosis
- Epidemiology
- Host susceptibility
- Diagnosis
- Clinical manifestations
- Treatment

Fungal infections of upper airways and ears

- Fungal sinusitis
 - Allergic fungal sinusitis
 - Invasive fungal sinusitis
 - Chronic granulomatous invasive fungal sinusitis
- Rhino-orbital-cerebral mucormycosis
- Fungal otitis
- Base of skull osteomyelitis

Ocular fungal disease

- Chorioretinitis
- Endogenous endophthalmitis
- Exogenous endophthalmitis
- Fungal keratitis

Endemic and travel related mycoses

- Histoplasmosis
- Coccidioidomycoses
- Blastomycoses
- Paracoccidioidomycoses
- Emergomycoses

Post-viral fungal diseases

- Influenza-associated pulmonary aspergillosis
- COVID-associated pulmonary aspergillosis
- COVID-associated mucormycosis

Fungal diseases of the central nervous system

- Cryptococcal meningoencephalitis
- Post-neurosurgical infections:
Post operative meningitis, brain abscess and ventricular shunt infections
- CNS involvement in endemic mycoses: coccidioidomycosis, blastomycoses, histoplasmosis

- Cerebral aspergillosis, mucormycosis and fusariosis
- Outbreaks of fungal CNS infections related to non-sterile injection

Vulvovaginal candidiasis

- Sporadic, recurrent, and chronic VVC
- Epidemiology
- Host susceptibility
- Diagnosis
- Treatment
- Prevention

Treatment guidelines for invasive fungal diseases

- Formulating treatment guidelines
- Grading system for recommendations
- Real world impact of guidelines
- Guidelines for invasive candidiasis
- Guidelines for aspergillosis
- Guidelines for mucormycosis

Infections in pediatric patients

- How pediatric patients differ from adults with respect to IFD:
 - Epidemiology, host susceptibility
 - Clinical manifestations
 - Antifungal drug response
- Pharmacokinetics and pharmacodynamics in pediatrics