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DIAGNOSIS AND MANAGEMENT OF FUNGAL INFECTIONS IN ICU PATIENTS

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Background: Invasive fungal infections remain an important challenge in intensive care units (ICUs) because of their association with increased mortality, prolonged hospitalization, and substantial healthcare costs. Candidiasis, aspergillosis, and mucormycosis are among the major fungal infections encountered in critically ill patients, while the emergence of multidrug-resistant *Candida auris* has created additional diagnostic and infection-control concerns.

Objective: To summarize the main diagnostic and management challenges of fungal infections in ICU patients, with particular emphasis on differentiation between colonization and invasive infection, interpretation of fungal biomarkers, and infection prevention and control.

Methods: A focused review of clinically relevant evidence on invasive fungal infections in critically ill patients was performed. Particular attention was given to respiratory *Candida* isolation, beta-D-glucan and galactomannan testing, invasive aspergillosis, and infection-control measures related to *Candida auris*.

Results: Isolation of *Candida* species from respiratory samples frequently represents colonization rather than true infection. In one prospective autopsy study, *Candida* spp. were isolated from respiratory samples in 77 patients with histopathologically confirmed pneumonia, yet no cases of *Candida* pneumonia were identified. Beta-D-glucan is useful as a broad marker of invasive fungal infection, whereas galactomannan is more specifically applied in suspected aspergillosis. In proven or probable invasive aspergillosis, both markers showed 88% sensitivity and 90% specificity, while their combined use increased specificity to 100%. Interpretation must consider possible false-positive results related to hemodialysis, selected antibiotics, surgical materials, and severe bacterial infections. *Candida auris* represents an additional challenge because of multidrug resistance, environmental persistence, biofilm formation, and its capacity for healthcare-associated transmission.

Conclusion: Diagnosis of fungal infections in ICU patients requires careful integration of clinical findings, microbiological results, and fungal biomarkers. Distinguishing colonization from invasive disease is essential to avoid unnecessary treatment, while appropriate infection-control

measures are particularly important for emerging pathogens such as *Candida auris*. Close collaboration among clinicians, microbiologists, and epidemiologists remains central to effective management and prevention.

Keywords: Invasive fungal infections; Intensive care unit; *Candida auris*; Beta-D-glucan; Galactomannan