

Managing invasive fungal infections



New research provides insights into antifungal utilisation within U.S. academic medical centres (AMCs) in the neonatal, paediatric, and adult patient groups.

"In AMCs, there are differences in antifungal utilisation between neonatal, paediatric, and adult patient groups. Factors associated with antifungal use were not able to be identified for the neonatal patient group and this suggested a wide variation in practices due to unknown factors and a need for antifungal stewardship in this area. In the paediatric and adult patient groups admission to immunosuppressed service lines and broad-spectrum antibiotic use were positive factors associated with antifungal use," according to the study published in the journal *BMC Infectious Diseases*.

Similar to antibiotics, frequent use of common antifungal agents has been associated with increased resistance in adults. Appropriate and judicious use of antifungals may help preserve the utility of currently available antifungals in treating invasive fungal infections (IFIs).

The paediatric and neonatal populations, meanwhile, have unique Antimicrobial Stewardship (ASP) needs and IFI etiology, which will alter the needs of age-specific antifungal stewardship initiatives.

Study authors said there is limited data in U.S. AMCs to determine antifungal usage patterns and guide potential paediatric and neonatal antifungal stewardship activities. Their study sought to identify factors associated with antifungal utilisation in neonatal, paediatric and adult patient groups, and to determine if antifungal restriction impacts antifungal use.

For this hospital-level analysis, the authors excluded centres that only provide care for haematology/oncology patients. Analysis of variance was used to compare antifungal use between patient groups. Three multivariable linear regression models were used to determine independent factors associated with antifungal use in the three patient groups.

For the neonatal, paediatric, and adult patient groups, 54, 44, and 60 hospitals were included, respectively. Total antifungal use was significantly lower in the neonatal patient group (14 days of therapy (DOT)/1,000 patient days (PDs) versus 76 in paediatrics and 74 in adults, $p < 0.05$).

The authors found no significant associations identified with total antifungal DOT/1,000 PDs in the neonatal patient group (model $R^2 = 0.11$). In the paediatric patient group (model $R^2 = 0.55$), admission to immunosuppressed service lines and total broad-spectrum antibiotic use were positively associated with total antifungal use (coefficients of 1.95 and 0.41, both $p < 0.05$). In the adult patient group (model $R^2 = 0.79$), admission to immunosuppressed service lines, total invasive fungal infections, and total broad-spectrum antibiotic use were positively associated with total antifungal use (coefficients of 5.08, 5.17, and 0.137, all $p < 0.05$).

The authors also found that institutions that restricted echinocandins had significantly higher total antifungal utilisation in the adult patient group despite a similar number of IFIs. This was an unexpected finding and deserves additional analysis to identify possible causes, the authors say.

"The large variability noted in neonatal antifungal practices despite controlling for multiple possible factors highlights that AMC stewardship programmes should consider reviewing these populations to ensure use is appropriate," the authors explain. "Due to the likely low number of cases, this could be an area for review of appropriateness on a daily basis."

In addition, the authors say review of antibacterial and antifungal regimens by ASPs, especially among the immunosuppressed, could serve as a useful strategy towards ensuring optimal use of antifungal agents.

"Guideline development, periodic utilisation reviews, or antifungal restrictions may be more feasible stewardship initiatives versus daily review due to a higher volume of use among the immunosuppressed," the authors write.

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