

Analysis of Clinical Pathogen Composition and Antimicrobial Resistance Profiles among Inpatients at a Children's Hospital in Zhejiang Province

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Abstract

Objective: To analyze the species composition, specimen sources, and antimicrobial resistance profiles of clinically isolated pathogens at a children's hospital in 2025, with a focus on the resistance spectra and extended-spectrum β -lactamase (ESBL) phenotypes of *Escherichia coli*, *Klebsiella pneumoniae*, and *Staphylococcus aureus*, so as to provide laboratory evidence for clinical anti-infective therapy and hospital antimicrobial stewardship.

Methods: Data on pathogenic isolates that underwent antimicrobial susceptibility testing at the clinical microbiology laboratory of a tertiary hospital from January 1 to December 31, 2025 were retrospectively collected. A single isolate from the same patient and same specimen source was taken as the analysis unit, yielding a total of 571 clinical isolates. Information including species, patient age and sex, patient category, ward, specimen type, clinical diagnosis, resistance phenotypes, and antimicrobial susceptibility results was collected. Antimicrobial

susceptibility rates (susceptible, intermediate, and resistant) were calculated by pathogen species, and major resistance phenotypes were descriptively analyzed.

Results: Among the 571 clinical isolates, the predominant pathogens were *E. coli* (322, 56.4%), *S. aureus* (147, 25.7%), *K. pneumoniae* (71, 12.4%), *Acinetobacter baumannii* complex (17, 3.0%), and *Pseudomonas aeruginosa* (14, 2.5%). The main specimen sources were sputum (171, 29.9%), pus (170, 29.8%), and urine (118, 20.7%), together accounting for 80.4% of all isolates. Marked differences were observed in pathogen composition and resistance spectra among different species and specimen sources.

Conclusion: In 2025, Gram-negative bacteria predominated among clinical isolates at this children's hospital, with *E. coli* being the most prevalent. *E. coli* exhibited notable resistance to ampicillin, piperacillin, certain cephalosporins, and fluoroquinolones, and showed a relatively high

ESBL-positive rate. In *S. aureus*, resistance to penicillin, erythromycin, and clindamycin was common. Clinically, antimicrobial agents should be selected rationally based on the site of infection, pathogen species, and susceptibility results, and enhanced surveillance of key resistance phenotypes

including ESBL-producing and multidrug-resistant organisms is warranted.

Keywords: Clinical isolates; Antimicrobial resistance; Antimicrobial susceptibility testing; *Escherichia coli*; *Klebsiella pneumoniae*; *Staphylococcus aureus*; ESBL

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