

Tracking Antibiotic Resistance Trends in Central Iran Amidst the Covid-19 Pandemic from 2021 to 2023:A Comprehensive Epidemiological Study

Abstract

Introduction: The emergence of coronavirus disease in 2019 appears to be having an impact on antibiotic resistance patterns. Specific circumstances during the COVID-19 era may have played a role in the spread of antimicrobial resistance (AMR). This study aimed to look at the changes in antimicrobial resistance patterns of *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Acinetobacter baumannii* at Al-Zahra Hospital.

Methods: From March 2021 to January 2023, a total of 3651 clinical samples were collected from patients hospitalized at Isfahan's Al-Zahra Hospital. The Clinical and Laboratory Standards Institute (CLSI) recommended procedures for detecting gram-negative bacteria and assessing antibiotic susceptibility were used. We divided the information into three years.

Results: Highest resistance rates were seen in *Acinetobacter baumannii* to Ciprofloxacin (98.0%) and Ampicillin-Sulbactam (97.0%). For *P. aeruginosa* the resistance rate for ceftazidime (36.1), Levofloxacin (37.8) and Meropenem (47.1) dropped seriously in 2022.

Conclusion: During the second year of the pandemic in central Iran, all three species studied showed rising rates of antimicrobial resistance (AMR). This can be attributable to two peaks within Iran on May 6th, 2021 and August 27th, 2021. The results of this study show that *P. aeruginosa*, *K. pneumoniae*, and *A. baumannii* bacteria in central Iran have a higher level of antibiotic resistance than previously studied strains before the pandemic.

Keywords: Antibiotic resistance, COVID-19 pandemic, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*