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**Progression of Antibiotic Resistance in Uropathogens over Five Years: A
Retrospective Study in Nineveh, Iraq**

ABSTRACT:

Background: Antibiotic resistance arises due to the overuse of antibiotics, leading to bacterial strains becoming resistant to previously effective treatments. This can result in infections that are harder to treat and can lead to longer hospital stays, increased healthcare costs, and even mortality.

Objectives: To determine the most common bacterial uropathogens and their sensitivity to antibiotics among patients diagnosed with urinary tract infections (UTIs).

Materials and methods: In Mosul, Iraq, researchers conducted a retrospective cross-sectional analysis to evaluate the effectiveness of antibiotics commonly used to treat UTIs. In this study, researchers collected and analyzed urine samples from three centers that conducted culture and sensitivity tests over five years, from January 2018 to December 2022.

Results: Of the 1326 urine samples collected during the study period, 1265 (95.5%) showed significant bacteriuria caused by a variety of bacterial strains, with *Escherichia coli* being the most common. The study evaluated the effectiveness of 21 antibiotics frequently used to treat UTIs against the identified bacterial strains. The results indicated that only a limited number of antibiotics have shown effectiveness against particular strains of *Escherichia coli*, with a mere 10 out of the 21 drugs exhibiting significant antibacterial efficiency. The presence of bacterial resistance to all tested antibiotics was observed, indicating a significant prevalence of antibiotic resistance and a decline in the availability of effective antibiotics.

Conclusion: This study revealed a concerning rise in antibiotic resistance in bacterial strains responsible for UTIs, as well as multidrug resistance, especially among gram-negative bacteria.