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TRENDS IN ANTIMICROBIAL RESISTANCE IN STAPHYLOCOCCUS AUREUS ISOLATES AMONG HOSPITALIZED PATIENTS IN THE WEST BANK (2020–2025) AND THE IMPACT OF DIABETES MELLITUS ON INFECTION PROGRESSION AND MULTIDRUG RESISTANCE

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Abstract:

Background: Antimicrobial resistance (AMR) in *Staphylococcus aureus* represents a growing clinical and public health challenge, particularly in low-resource and fragmented healthcare settings such as the West Bank. Current local evidence is limited to short-term, single-center studies, which are insufficient to describe long-term resistance trends. Meanwhile, the increasing prevalence of diabetes mellitus, a known risk factor for impaired immunity and infection susceptibility, may contribute to both infection progression and the emergence of multidrug-resistant organisms. There is a critical need for longitudinal, multi-center data to inform antibiotic stewardship and clinical decision-making. Study Purpose/

Objectives: This study aims to evaluate temporal trends in antimicrobial resistance among *Staphylococcus aureus* isolates from hospitalized patients in the West Bank between 2020 and 2025. It also investigates whether diabetes mellitus is associated with an increased risk of progression from colonization to active infection and a higher likelihood of multidrug-resistant isolates.

Methods: A retrospective cohort design is employed using microbiology laboratory databases and patient medical records from multiple hospitals. Data collected include patient demographics, comorbidities (with emphasis on diabetes mellitus), site of isolate, antimicrobial susceptibility testing (AST) profiles, and clinical classification of colonization versus infection. Data are de-identified and subjected to standardized quality control procedures. Statistical analysis is performed using SPSS, including descriptive statistics, trend analysis, logistic regression, and risk estimation to identify predictors of multidrug resistance and infection progression.

Results: Preliminary findings indicate significant year-to-year variability in MRSA prevalence, suggesting a dynamic resistance pattern. Early analysis also demonstrates a higher proportion of multidrug-resistant



isolates among diabetic patients compared to non-diabetic individuals. Additionally, initial trends suggest an increased likelihood of progression from colonization to active infection in patients with diabetes. These findings are preliminary and subject to confirmation upon completion of the full dataset and comprehensive statistical analysis.

Conclusions: This study is expected to provide the first multi-year, multi-center assessment of antimicrobial resistance in *Staphylococcus aureus* in the West Bank. The Results highlight diabetes mellitus as a potential modifier of infection risk and resistance patterns. The findings will support the optimization of empiric antibiotic therapy, strengthen antibiotic stewardship strategies, and contribute to the development of a national AMR surveillance framework in resource-limited settings.

Key Words: *Staphylococcus aureus*, antimicrobial resistance, MRSA, diabetes mellitus, multidrug resistance, West Bank, infection, colonization, antibiogram, retrospective study