The burden of Antimicrobial Consumption in Five Adult Intensive Care Units: A 33-month Surveillance Study

H. Balkhy *, A. El-Saed, A. El-Metwally, Y. Arabi, S. Al Johani, M. Al Zaibag, S. Baharoon, A. Alothman

King Abdullah International Medical Research Center

Introduction: As part of the ongoing antimicrobial stewardship activity aiming to reduce the burden and cost of antimicrobial consumption at our hospital, we sought to quantify ICU-specific antimicrobial consumption.

Objectives: Here we calculate ICU-specific antimicrobial consumption, using multiple metrics.

Methods: A surveillance study was conducted at King Abdulaziz Medical City, Riyadh, Saudi Arabia, between October 2012 and June 2015 in five adult intensive care units (ICUs). Usage data was collected manually on a daily basis by infection control practitioners. Data were presented as defined daily dose (DDD) and days of therapy (DOT) per 1000 patient days and as frequency of daily consumption.

Results: A total 43970 DDDs and 46940 DOTs were monitored during 4919 admissions contributing to 54116 patient-days. For the most frequently prescribed antimicrobials, the use of carbapenems, piperacillin/tazobactam, vancomycin, and colistin (respectively) in all ICUs combined were 255.9, 134.3, 98.2, and 13.6 DDDs per 1000 patient-days and 235.7, 145.9, 129.5, and 117.5 DOTs per 1000 patient-days. Using the frequency of daily consumption, carbapenems was the most frequently prescribed antimicrobial group in medical/surgical, burn, and step-down ICUs while piperacillin/tazobactam was the most frequently prescribed antimicrobial in neuro-surgical and cardio-thoracic ICUs.

Conclusion: We are reporting high consumption of broad-spectrum antimicrobial agents such as meropenem and piperacillin/tazobactam in multiple ICUs in a tertiary care hospital, with meropenem considerably higher than internationally comparative ICUs. Concurrent monitoring of antimicrobial resistance and identifying patient and physician characteristics associated with specific prescription patterns in subsequent studies may help in improving the judicious use of antimicrobials.