

## Establishment of Antimicrobial Stewardship (AMS) Program at a Tertiary Cancer Center: a 2-years' Experience at University Medical City/Sultan Qaboos Comprehensive Cancer and Research Center

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**Background:** Antimicrobial stewardship programs (ASP) are essential in oncology settings to optimize antimicrobial use, reduce resistance, and improve patient outcomes. At Sultan Qaboos Comprehensive Cancer Care and Research Center (SQCCCRC), a fully electronic, real-time ASP model was implemented from the center's inception to guide daily antimicrobial decision-making process.

**Methods:** A validated electronic ASP platform was developed to document interventions and generate automated reports. Daily stewardship reviews focused on broad-spectrum antibiotics and carbapenems sparing strategy in medical wards and intensive care unit. A retrospective descriptive analysis was conducted from January 2023 to December 2024 to evaluate key performance indicators (KPIs), including the ASP interventions, Days of Therapy (DOT) per 1,000 patient-days, prevalence of multi-drug-resistant organisms (MDROs) from clinical isolates, and most common bloodstream infections pathogens.

**Results:** Over the two-year period, 2,519 antimicrobial stewardship interventions were recorded, with a compliance rate of 93%. The most frequent interventions included antibiotic

discontinuation (39%), optimization of therapy duration (36%), and de-escalation (18%).

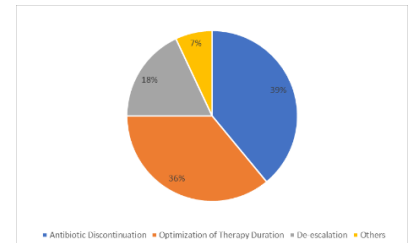
### Graph 1 .

Piperacillin–Tazobactam consistently had the highest use across the study period, ranging roughly 84–173 DOT/1,000 patient-days, with marked month-to-month fluctuations but an overall stable pattern. Carbapenems maintained intermediate use at around 44–92 DOT/1,000 patient-days, with modest fluctuations and no major upward or downward trend. Vancomycin showed the lowest use, relatively stable around 12–46 DOT/1,000 patient-days throughout the two years.

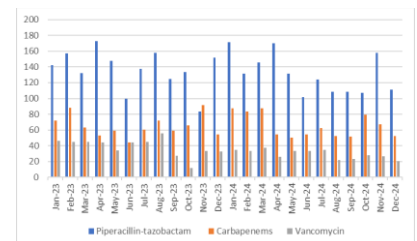
No clear increasing or decreasing trend was observed for any agent over time, but the data reflect sustained antimicrobial stewardship activity with controlled, consistent use of broad-spectrum antibiotics.

### Graph 2.

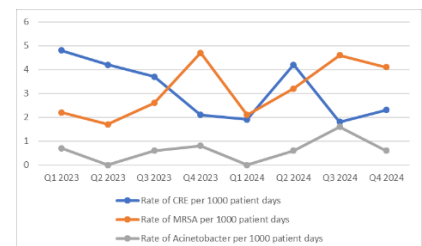
The prevalence of carbapenems-resistant Enterobacterales (CRE) ranged from 1.9 to 4.8 per 1,000 patient-days; methicillin-resistant Staphylococcus aureus (MRSA) ranged from 1.7 to 4.7; and multi drug-resistant Acinetobacter ranged from 0 to 1.6 per 1,000 patient-days. **Graph 3.**



**Line graph 1:** ASP interventions



**Line graph 2:** Days of therapy (DOTs) of broad-spectrum antibiotics .



**Line graph 3:** CRE, MRSA, and Acinetobacter rates per 1000 patient days.

**Conclusion:** The ASP at SQCCCRC demonstrated sustained implementation with high compliance and impactful, targeted interventions. The program contributed to reduced use of broad-spectrum antibiotics and facilitated close monitoring of resistance trends, underscoring the value of real-time, integrated stewardship program in a tertiary Oncology Center.