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LETTER TO EDITOR

Concerns Regarding Overuse of Carbapenems and Emerging Antimicrobial Resistance in Tertiary Care Hospitals

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Sir,

The escalating use of carbapenems in tertiary care hospitals remains a pressing concern, particularly in light of the rapid emergence and dissemination of carbapenem-resistant organisms worldwide. By 2016, antimicrobial resistance (AMR) had already been identified as a critical global health priority, with both the World Health Organization (WHO) and the U.S. Centers for Disease Control and Prevention (CDC) issuing warnings regarding the misuse and overreliance on last-line agents such as carbapenems [1,2]. Despite these alerts, carbapenem consumption continued to rise in many institutions, often driven by a combination of diagnostic uncertainty, empirical prescribing habits, and escalating resistance to third-generation cephalosporins.

In tertiary care settings, where multidrug-resistant pathogens are frequently encountered, clinicians may feel pressured to initiate broad-spectrum therapy early in the course of illness. However, emerging evidence suggests that inappropriate or excessive carbapenem use may accelerate the selection of carbapenem-resistant Enterobacteriaceae (CRE), Pseudomonas aeruginosa, and Acinetobacter baumannii organisms associated with high mortality and limited therapeutic options [3-5]. Nordmann et al. highlighted the alarming global spread of carbapenemase-producing Enterobacteriaceae as early as 2011, attributing this trend partly to carbapenem overuse in hospital environments [4]. Similarly, Livermore emphasized the adaptive capacity of Gram-negative bacteria, cautioning that resistance to even the most potent β-lactams was increasing rapidly [5].

Short observational data from several tertiary hospitals including ours show notable rises in carbapenem prescription rates, often independent of culture-positive indications. Empirical meropenem or imipenem therapy is frequently initiated despite stable patient profiles or when narrower options remain viable. A pattern observed in multiple audits is the continued use of carbapenems even after susceptibility reports become available, suggesting gaps in antimicrobial stewardship (AMS) adherence. Though these trends mirror global observations, they underscore a local need for urgent interventions.

The relationship between antimicrobial pressure and resistance emergence is well established. Paterson and Bonomo demonstrated that broad-spectrum β-lactam exposure drives selection of resistant subpopulations, particularly when infection control measures are inconsistent or delayed [6]. Excessive carbapenem use creates an ecological niche that favors the proliferation and

spread of carbapenemase-producing organisms, increasing the difficulty of outbreak containment. As noted by the WHO in 2014, inadequate surveillance, inappropriate prescribing, and weak stewardship infrastructures significantly contribute to the acceleration of AMR worldwide [1].

Strengthening AMS programs remains a critical step in addressing this issue. Successful models demonstrate that implementing pre-authorization requirements, enforcing post-prescription review, and enhancing microbiology-clinician communication can meaningfully reduce carbapenem consumption without compromising patient outcomes. Furthermore, improving access to rapid diagnostic tools may help clinicians differentiate between colonization and infection and encourage targeted therapy instead of reflexive broad-spectrum prescribing.

Equally important is continuous education of healthcare providers regarding resistance patterns and optimal treatment algorithms. Many clinicians may be unaware of the long-term ecological consequences of carbapenem overuse or may underestimate the local prevalence of CRE. Transparent reporting of resistance trends within hospitals can reinforce judicious prescribing and guide empirical therapy more effectively.

In conclusion, the overuse of carbapenems in tertiary care hospitals represents a substantial and immediate threat to patient safety and global health. The emergence of carbapenem-resistant pathogens is not merely a predicted future concern it is an established reality documented across continents. Without decisive action to curb unnecessary carbapenem exposure and strengthen antimicrobial stewardship efforts, the therapeutic landscape may rapidly narrow, leaving clinicians with diminishing options for treating severe infections. We urge hospitals and policymakers to prioritize surveillance, stewardship, and education to mitigate further resistance development.

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