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Letter to the Editor

Escalating Antimicrobial Resistance: A Silent Public Health Catastrophe

Naqash Mukhtiar[1], Nazia Arain[2]

To the Editor,

Antimicrobial resistance (AMR) has emerged as one of the most serious public health threats in Pakistan, undermining the effective management of infectious diseases and compromising patient safety. Surveillance data from tertiary care hospitals reveal a sustained rise in resistance among major bacterial pathogens, including *Escherichia coli*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, and *Pseudomonas aeruginosa*, commonly isolated from urinary tract and bloodstream infections. These organisms are responsible for a significant proportion of community- and hospital-acquired infections, making the observed resistance patterns particularly alarming.

The gravity of the AMR crisis in Pakistan became globally evident with the emergence of extensively drug-resistant *Salmonella Typhi* (XDR typhoid). First reported in 2016 and subsequently described in the international literature, XDR typhoid demonstrated resistance to multiple first-line and second-line antimicrobials, leaving only limited therapeutic options[1]. This landmark development highlighted the consequences of prolonged antimicrobial misuse and raised concerns regarding international dissemination through travel and migration.

Beyond typhoid, resistance among gram-negative organisms has continued to escalate. Over recent years, declining susceptibility to third-generation cephalosporins and fluoroquinolones has been followed by increasing resistance to carbapenems, including meropenem. Of particular concern is the emergence of colistin resistance among carbapenem-resistant Enterobacterales in Pakistan, further narrowing the already limited treatment options for severe infections[2]. Such trends signal a potential future in which clinicians may encounter bacterial infections that are exceedingly difficult, or even impossible, to treat.

A major contributor to this accelerating resistance is the irrational and excessive use of antibiotics. Broad-spectrum agents are frequently prescribed for viral upper respiratory and gastrointestinal infections, despite their lack of clinical efficacy. In addition, non-prescription access to antibiotics remains widespread, encouraging self-medication, inappropriate dosing, and premature discontinuation of therapy. These practices are compounded by limited antimicrobial stewardship programs and insufficient reliance on culture- and sensitivity-guided treatment.

National and global surveillance data further confirm that Pakistan continues to face a growing AMR burden. Reports from the World Health Organization's Global Antimicrobial Resistance and Use Surveillance System (GLASS) highlight rising resistance rates across multiple priority pathogens and emphasize the urgent need for coordinated national action[3]. Without effective surveillance, stewardship, and regulatory enforcement, resistance will continue to spread across healthcare and community settings.

Addressing this escalating crisis requires immediate and coordinated interventions. Strengthening antimicrobial stewardship programs, enforcing prescription-only antibiotic policies, expanding laboratory-based surveillance, and integrating resistance data into public health policy are essential. Equally important is increasing awareness among healthcare professionals and the public regarding rational antimicrobial use. Urgent, collective action by clinicians, microbiologists, public health experts, and policymakers is crucial to prevent a return to an era in which common infections once again become life-threatening.

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REFERENCES

1. Chatham-Stephens K, Medalla F, Hughes M, Appiah GD, Aubert RD, Caidi H, et al. Emergence of extensively drug-resistant Salmonella Typhi infections among travelers to or from PakistanUnited States, 20162018. MMWR Morb Mortal Wkly Rep. 2019;68(1):1113. https://doi:10.15585/mmwr.mm6801a3.
2. Furqan W, Ali S, Usman J, Hanif F, Naeem A, Nasrullah A, Tayyab N. Assessing colistin resistance by phenotypic and molecular methods in carbapenem-resistant Enterobacterales in a tertiary care hospital in Pakistan. Infect Drug Resist. 2022;15:58995904. https://doi:10.2147/IDR.S376490. PMID: 36237291.
3. World Health Organization. Global Antimicrobial Resistance and Use Surveillance System (GLASS) Report: 2022. Geneva: World Health Organization; 2023 [cited 2025 Oct 1]. Available from: https://www.who.int/publications/i/item/9789240062702.

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Corresponding Author
Naqash Mukhtiar[1]
Email: naqash.mukhtiar@jsmu.edu.pk

Affiliations:
APPNA Institute of Public Health Jinnah Sindh Medical University, Karachi[1]
Sindh Institute of Urology & Transplantation (SIUT), Karachi[2]
Lecturer[1]
Assistant Professor[2]

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