



COMMENTARY

Antimicrobial resistance in the critical care and intensive care units: A clinical consternation

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There has been a significant increase in antimicrobial resistance, particularly in hospital sectors, after the COVID-19 pandemic. Several factors have led to this situation, and this emergence of antimicrobial resistance, particularly in intensive care units and critical care units, is a severe clinical consternation for the medics.¹ One major factor is the high usage of broad-spectrum antibiotics due to the severity and complexity of intensive care units and critical care unit patients. Secondly, in patients with weakened immune systems in intensive care units, critical care units play a synergistic role in making them susceptible to hospital-acquired infection, warranting the use of a broader spectrum and a combination of antibiotics.² Also, invasive devices are frequently used, which increases the risk of infection and leads to empirical therapy with antibiotics, which again drives antibiotic resistance. Further events like cross-transmission between paramedical workers and patients facilitate the spread of resistant bacteria in the hospital and society. Moreover, nosocomial infection is vital in harbouring and transforming antibiotic-resistant bacteria. Some commonly found antibiotic-resistant bacteria are methicillin-resistant.³ This problem is even more severe in lower and middle-income countries, which need more proper medical facilities and well-trained medical personnel.³ *Staphylococcus aureus*, which is resistant to beta-lactam antibiotics. Vancomycin-resistant Enterococci and carbapenem-resistant Enterobacteriaceae, respectively. Organisms like *Pseudomonas aeruginosa* and *Acinetobacter baumannii* are almost resistant to all antibiotics, and it has become difficult to treat them.⁴




HIGHLIGHTS

1. There has been a significant rise in antibiotic resistance (AMR) in the post-COVID era.
2. Several new AMR genes are found in patients, particularly in intensive care and coronary care units.
3. Strict regulatory and antibiotic usage policies must be implemented to control the spread of multi-drug-resistant bacteria.

Also, new forms of antimicrobial resistance genes like blaCAM-1 have been discovered, which easily get transferred within the bacterial community.⁵

Scientific measures and strategies can be implemented to reduce this global burden of antibiotic resistance. An antibiotic stewardship programme must be employed in all the units of the hospitals, and it should be periodically monitored for the rise in antimicrobial resistance bacteria. A dedicated group of microbiologists, public health experts, and nursing staff should be present at each hospital to deal with antimicrobial resistance problems.⁶ Additionally, regular surveillance and monitoring in each hospital sector, particularly in intensive care units and critical care units, should be done to track the increase and decrease of the prevalence of antimicrobial resistance Bacteria and regular steps to be taken accordingly. All the hospital staff, including cleaners, paramedics, and housekeeping personnel, should be educated and informed about the problem of antimicrobial resistance bacteria, and regular workshops must be held to increase their knowledge of this problem. A proper scientific hospital waste disposal system should be developed to reduce the spread of antimicrobial

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resistance bacteria in hospitals and the community.² Finally, research should be done to develop new antimicrobial agents and alternative drugs to combat AMR bacteria.^{2, 3, 4, 6}

In conclusion, addressing antimicrobial resistance problems in intensive care units and critical care units is a multi-faceted approach where contributions from hospital personnel and patients are required. A proper awareness campaign can help reduce this grievous situation before it becomes too late.

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