Editorial

Rising Rates of Antimicrobial Resistance: A Slow Crisis Demanding Urgent Action

Maria Aslam

Antimicrobial resistance (AMR) is no longer a distant threat; it is a crisis that is encountered in our hospitals and communities. Across the world, patients present with infections that no longer respond to previously effective antibiotics. This silent but relentless threat is undermining decades of medical progress and putting even routine procedures at risk. According to the World Health Organization (WHO), resistance to commonly used antibiotics has become widespread, with alarming levels seen in bacteria such as *Escherichia coli*, *Klebsiella pneumoniae*, and *Staphylococcus aureus*.[1] The WHO warns that the situation is deteriorating faster than expected, particularly in low- and middle-income countries where antibiotic misuse and poor infection control practices are common. The Global Burden of Disease (GBD) 2021 and Antimicrobial Resistance Collaborators, led by Naghavi and colleagues, analyzed data from 204 countries and concluded that antimicrobial resistance was directly responsible for 1.27 million deaths and associated with nearly 5 million deaths in 2019. The study projected a continued rise by 2050 if urgent global action is not taken.[2]

Antimicrobial resistance is not just a medical problem, it is a social and economic challenge. Antimicrobial resistance ranks as the third most common cause of mortality in Pakistan. Around 59,200 deaths are directly and an additional 221,300 deaths are indirectly caused by AMR in Pakistan. In Pakistan, drug resistance is most commonly seen in *Mycobacterium tuberculosis*, *Staphylococcus aureus*, *Salmonella enterica, Enterobacterales, and non-Enterobacterales*.[3]

The etiology of this escalating issue is multifactorial. The major factor is the over-the-counter availability and inappropriate prescription of antibiotics. Patients often demand antibiotics for viral infections, while physicians may prescribe them empirically without diagnostic evidence of bacterial etiology. In the agricultural sector, antibiotics are still used for growth promotion and prophylaxis in livestock, which contributes to resistant bacterial strains entering the human food chain. Environmental contamination from pharmaceutical manufacturing and poor sanitation further amplifies resistance.[4] Bertagnolio and colleagues emphasized the need for global research priorities to address gaps in diagnostics, surveillance, and the discovery of new antimicrobials. They stressed that effective AMR control requires a coordinated "One Health" approach, integrating human, animal, and environmental health.[5]

The clinical consequences of AMR are already evident. Patients with antimicrobial-resistant infections experience higher treatment failure rates, longer hospital stays, and increased mortality. A meta-analysis revealed that multidrug-resistant infections significantly increase mortality risk compared with susceptible infections.[6] Methicillin-resistant *Staphylococcus aureus*, Carbapenem-resistant *Klebsiella pneumoniae*, Extended-spectrum beta-lactamase (ESBL)-producing organisms are particularly concerning, as they are often resistant to multiple drug classes, with limited available treatment options. The economic burden of AMR is immense. Increased hospitalization, expensive second-line therapies, and the need for infection isolation facilities contribute significantly to healthcare costs. A study reported that if current trends persist, the global cost of AMR could exceed USD 100 trillion by 2050.[7]

Antimicrobial resistance has continued to rise silently across the world despite repeated warnings and stewardship programs for antimicrobial resistance. Many countries have developed and implemented their national action plans on antimicrobial resistance in alignment with the WHO Global Action Plan on AMR. In many low-resource settings, access to reliable diagnostic tools, effective infection control measures, and antimicrobial stewardship programs remains far from adequate.

To tackle this escalating crisis, the global community must act on several urgent priorities. Strengthening laboratory-based surveillance is fundamental; accurate and timely data are essential

Sharif Medical & Dental College, Sharif Medical City.
Sharif Medical City Road, Off Raiwind Road, Jati Umra,
Lahore 54000, Pakistan.

Correspondence: Dr. Maria Aslam
Head & Professor, Department of Pathology
Sharif Medical & Dental College, Lahore
E-mail: mariaaslam77@outlook.com

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to guide local treatment policies and track emerging resistance patterns. Increased access to rapid diagnostic testing can ensure that antibiotics are used only when truly necessary, preserving their effectiveness for the future. Rigorous infection control measures are vital and should be integrated into every healthcare system's strategy. Governments and health organizations must also provide both financial and regulatory incentives that encourage responsible antibiotic innovation. Without such support, the antibiotic pipeline will continue to decline, leaving clinicians with fewer options to combat increasingly resistant infections.[3]

Combating it requires a united effort across all sectors: clinicians, pharmacists, policymakers, and the general public. Awareness campaigns should reshape public perception of antibiotics, viewing them not as quick remedies for all illnesses, but as valuable and limited resources that require careful and responsible use. If the world continues on its current trajectory, the consequences will be catastrophic with common infections once again becoming deadly. Strong antibiotic stewardship programs with collective global commitment can still change the course of this crisis. Now it's the time to act decisively together.[8]

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