Editorial

Antimicrobial Resistance in Bangladesh: Turning Stewardship into Action

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Introduction

Antimicrobial resistance (AMR) poses an acute threat to the health security of Bangladesh, eroding treatment efficacy for common infections and driving prolonged illness, complications, and preventable deaths. Evidence reveals high resistance to first-line antibiotics, dominant empirical prescribing, incomplete surveillance, weak diagnostics, and minimal antimicrobial stewardship (AMS) implementation despite policy advances such as national treatment guidelines and AMR surveillance initiatives. Bridging this policy-practice gap demands institutional accountability, robust laboratories, multidisciplinary AMS teams, strict antibiotic regulation, core competency based training in rational prescribing. A genuine One Health approach is non-negotiable, requiring coordinated action across human health, animal production, and environmental systems to address AMR at its roots. Antimicrobial resistance in Bangladesh is no longer a looming threat but an entrenched and rapidly escalating clinical reality, with studies consistently reporting high resistance rates, often involving first-line agents and widespread multidrug resistance in hospital isolates, alongside a troubling reliance on empirical rather than culture guided antibiotic use.[1] The problem is intensified by easy access to antibiotics, self-medication, incomplete courses, poor infection control, and limited diagnostic infrastructure, all of which foster selective pressure for resistance. At the population level, this translates into higher treatment costs, prolonged hospital stays, repeated therapeutic failures, and an increased risk of transmission of resistant organisms within communities and health care facilities.[2,3] Bangladesh has not remained passive, as national treatment guidelines, AMR surveillance initiatives, and growing recognition of AMS have begun to shape the country's response. Yet the existence of policy does not guarantee change in practice, as many institutions still lack active stewardship programs, routine antibiograms, and multidisciplinary oversight of antibiotic use. This gap is particularly concerning in a lower-middle-income setting where infectious diseases are prevalent and clinicians often prescribe under uncertainty, time pressure, and limited laboratory support. The message is clear: Bangladesh must move from policy to implementation, from awareness to accountability, and from isolated interventions to a sustained, system-wide culture of antimicrobial stewardship.[4,5]

Clinical and Diagnostic Barriers

A major barrier to effective stewardship in Bangladesh is the pervasive reliance on empirical prescribing. Antibiotics are often initiated without microbiological confirmation, a practice that may be justified in severe infections but becomes problematic when it is the default. Recent evidence indicates that non–culture-guided prescribing remains dominant, accompanied by excessive use of broad-spectrum antibiotics. This pattern reflects both entrenched clinical habits and structural constraints, including limited access to timely diagnostics and financial barriers for patients. In this context, stewardship cannot be reduced to exhorting clinicians to prescribe less; it must ensure that diagnostics are accessible, affordable, and integrated into routine decision making.[5,6] Laboratory strengthening is therefore central to meaningful stewardship. Without culture and susceptibility testing, antibiotic use is guided by guesswork rather than local epidemiology. Bangladesh needs expanded laboratory capacity to generate reliable antibiograms at facility and district levels, supported by standardized methods and integrated reporting systems. Surveillance data must be translated from static reports into actionable tools for clinicians, pharmacists, infection prevention teams, and hospital managers. The 2016–2023 national surveillance report marks important progress, but surveillance alone will not curb inappropriate prescribing unless it feeds routinely into practice and is directly linked to treatment guidelines and AMS interventions.[5-7]

Stewardship, Regulation, Reform

Weak institutionalization cripples antimicrobial stewardship in Bangladesh. Studies and reviews reveal that many hospitals still lack formal AMS committees, clear policies, and robust multidisciplinary structures. A functional stewardship program demands more than optional academic exercises. It requires infectious disease physicians or internists, microbiologists, pharmacists, nurses, infection prevention personnel, and administrators empowered to enforce policy. The key stewardship tasks are well established: monitor antibiotic consumption, review restricted drugs, support de-escalation, enforce duration limits, and deliver local prescriber feedback. For Bangladesh, a tiered rollout, from tertiary hospitals to district and sub-district facilities offers the most practical early gains.[8] From a regulatory perspective, urgent enforcement is essential to control antibiotic supply and sales. Bangladesh has long tolerated prescription-free antimicrobial sales and irrational community use, a crisis rooted not just in pharmacies but in governance failures. The same drug gets inappropriately prescribed in clinics, sold directly over counters, and self-administered by patients without guidance. Stronger enforcement of dispensing laws, tighter regulation of retail outlets, and public education campaigns are essential. However, regulatory enforcement must pair with access. Without diagnostic support and quality medicines at primary care facilities, patients will continue seeking informal alternatives. Stewardship must therefore be aligned with universal access to reliable care.[9] Education on antimicrobial use and misuse forms another essential pillar against AMR. Evidence from Bangladesh shows many practitioners and students lack familiarity with guidelines, requiring stewardship to begin in undergraduate and postgraduate training. Medical curricula must prioritize rational antibiotic use, interpretation of susceptibility reports, infection prevention and control, and prescribing ethics. Continuing professional development is equally important for practicing clinicians, as training habits endure for decades. A true stewardship culture emerges when clinicians are taught not only what to prescribe, but also when not to prescribe, when to narrow therapy, and when to stop treatment.[9,10] Bangladesh must embrace a genuine One Health approach. AMR emerges not just from hospitals but from intertwined antibiotic use across humans, animals, agriculture, food systems, sanitation, and the environment. Fragmented human-sector responses fall short when resistant organisms persist in animal and environmental reservoirs. The One Health framework offers the correct conceptual model, but success hinges on coordination across ministries, professional bodies, universities, and surveillance networks.[11] For Bangladesh, this means integrating human

health data with veterinary and environmental surveillance and aligning cross-sector interventions rather than isolated projects.[12] Stewardship merits emphasis as both a quality-of-care and patient-safety intervention. Its goal is not to withhold antibiotics but to maximize their benefits while minimizing harm. When antibiotics are misused, without indication, for excessive durations, or with incorrect spectrum, patients face avoidable adverse effects, resistant flora selection, and future treatment failures. Stewardship safeguards both individual patients and health systems—one of the few interventions that simultaneously cuts costs, improves outcomes, and preserves future therapeutic options.[13,14] Bangladesh is testing practical stewardship pilots across hospital tiers, encouraging steps that shift from policy to real-world implementation. Their success hinges on demonstrable reductions in unnecessary antibiotic use, improved adherence to clinical guidelines, increased culture guided testing, and measurable declines in resistance rates; proven models can then be scaled nationally across both public and private health sectors.[15]

Conclusion

Antimicrobial stewardship in Bangladesh is no longer a theoretical imperative but a pressing operational challenge, as evidence reveals heavy resistance burdens, rampant empirical prescribing, incomplete surveillance, and persistent implementation gaps despite policy advances. The critical task now is to transform antimicrobial stewardship from policy rhetoric into routine clinical practice, backed by robust diagnostic laboratories, skilled personnel, institutional accountability, and enforceable governance mechanisms across the health system. This demands coordinated action across multiple levels, with hospitals establishing functional AMS teams and actively leveraging local antibiograms, while regulators strengthen antibiotic dispensing controls and enforce higher professional standards. Medical colleges and universities must embed rational antimicrobial use as a core competency in undergraduate and postgraduate training, while policymakers must approach AMR as a cross sectoral One Health crisis that demands coordinated action across human, animal, and environmental domains. Success in this transition will not only slow the spread of resistance but also elevate the quality of care, reduce avoidable costs, and preserve existing antimicrobial agents for future generations. The true urgency of stewardship lies not in merely describing the crisis but in transforming the entrenched culture that continues to perpetuate it.

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