DOI: https://doi.org/10.54393/pjhs.v7i3.4110

PAKISTAN JOURNAL OF HEALTH SCIENCES
(LAHORE)
https://thejas.com.pk/index.php/pjhs
ISSN (E): 2790-9352, (P): 2790-9344
Volume 7, Issue 03 (March 2026)

Antimicrobial Stewardship in Pakistan: Lost in Policy, Weak in Practice

OPEN ACCESS

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ARTICLE INFO

How to Cite:

Humayun, A. (2026). Antimicrobial Stewardship in Pakistan: Lost in Policy, Weak in Practice: Antimicrobial Stewardship in Pakistan. Pakistan Journal of Health Sciences, 7(3), 01-02. https://doi.org/10.54393/pjhs.v7i3.4110

Antimicrobial resistance (AMR) is one of the most critical emerging public health threats in this century, jeopardizing decades of success in the treatment of infectious diseases in medical sciences. The discovery and effectiveness of these miracle drugs have now changed into a nightmare due to inefficient regulatory oversight, overprescription, and misuse as a widespread practice. Highly infectious disease-burden countries are poorly performing in stewardship practices, including Pakistan.

Antimicrobial stewardship is considered a fundamental strategy to optimize and rationalize the use of antibiotics. An analysis of antibiotic consumption over the last two decades has risen dramatically, showing a 65% increase between 2000 and 2015, with the fastest growth in LMICs. Pakistan is one of these countries with limited regulatory frameworks and diagnostic capacity [1]. High patient volume, poor microbiological support, patients & families' pressure, healthcare providers' attitude, over-the-counter availability of antibiotics, and delayed diagnostic results are major contributing factors towards high consumption of antibiotics in Pakistan.

Pakistan endorsed the Global Action Plan on AMR by the WHO and developed the National Action Plan (NAP) on AMR in 2017. The NAP emphasizes surveillance, infection prevention and control, rational use of antimicrobials, and multisectoral collaboration using the "One Health" approach through integrating human, animal, and environmental sectors [2]. National institutions such as the National Institutes of Health Pakistan have strengthened surveillance systems and are coordinating national efforts to monitor antimicrobial resistance trends. Now, Pakistan has initiated development of a second national action plan to strengthen provincial implementation mechanisms [3].

The National Institute of Health (NIH) is actively working on policy development and AMR reporting; the national strategies are poorly translated into existing stewardship efforts across Pakistani institutions. Evidence suggests that AMS (antimicrobial stewardship) programs are implemented in only a minority of hospitals, as reported in a study that only 7.6% of paediatricians worked in institutions with functional AMS and merely 15% had received formal training in antibiotic use, AMR, or stewardship principles [4].

Hospital policies and prescribing SOPs and practices further illustrate the level and scale of the challenge. There is substantial antibiotic utilization in hospitals of Pakistan, so a need for structured stewardship interventions to rationalize prescribing patterns [5]. The empirical therapy predominates, while microbiological culture and sensitivity testing remain underutilized.

The change in the use of antibiotics in Pakistan has been in terms of the increase in the number of doses per day used over the past decades, with an approximate of 800 million to over 1.3 billion doses being used daily. Implementation of stewardship is not a universal requirement of accreditation of hospitals, and thus institutional priorities are inconsistent [6].

The Pakistani hospitals do not have specific spreaders of infectious diseases, well-trained clinical pharmacists, and electronic prescription systems, which are normally needed in facilitating successful stewardship programmes. Another

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critical aspect of evidence-based prescribing that impedes it in lower levels of the healthcare system is diagnostic limitations.

However, it is possible to note that academic and tertiary healthcare organizations are forming multidisciplinary stewardship teams that include infectious disease specialists, microbiologists, pharmacists, and infection prevention experts. Such teams have been aiming at interventions like formulary restrictions, antimicrobial review rounds, and the spread of hospital antibiograms. It is indicated that the interventions can enhance the prescribing behaviours and decrease the use of antimicrobials when implemented properly [7].

Education and capacity building are also some of the essential pillars of antimicrobial stewardship. Research in Pakistan has demonstrated that specific training can increase knowledge levels on AMR and stewardship to a great extent [8]. The implementation of stewardship ideas in undergraduate and postgraduate medical, pharmacy, and nursing programs should be adopted as a long-term sustainable approach to enhance the stewardship capacity. CPD programs and institutional training initiatives can further support clinicians in implementing evidence-based prescribing practices.

Beyond hospitals, a broader systems approach is needed for combating AMR. Community prescribing practices, the private healthcare system, and pharmaceutical supply chains all influence antibiotic consumption patterns in Pakistan. Over-the-counter access to antibiotics continues to contribute to self-medication and inappropriate use among the general population. Regulatory oversight of antibiotic dispensing, expanding public awareness campaigns, and improving infection prevention and control practices across healthcare settings need to be strengthened, as these are the essential components of a comprehensive national strategy.

Pakistan is at a critical juncture in its response to AMR, so strengthening stewardship efforts is essential to preserve the effectiveness of existing antimicrobials and to prevent the escalating threat of antimicrobial resistance.

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