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AUDIT ON APPROPRIATE PRESCRIBING OF ANTIBIOTICS (ANTIMICROBIAL STEWARDSHIP)

Willma Naeem Abbasi[*1], Zainab Junaid[2], Mamoon Baghdad[3], Midhat Ashfaq[4], Aizaz ur Rehman[5]

[*1,2,5]*Cmh Rawalpindi,*
[4]*Kyiv Medical University, Ukraine*
[3]*Army Medical College, Rawalpindi*

[*1]wilmaabbas00@gmail.com

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Corresponding Author: *
Willma Naeem Abbasi

Abstract

Background: *Antimicrobial resistance is a growing global concern, often driven by inappropriate antibiotic prescribing. This audit aimed to assess compliance with antimicrobial stewardship (AMS) practices in tertiary care hospitals of Rawalpindi.*

Methodology: *A retrospective, questionnaire-based review was conducted across three tertiary care hospitals–Holy Family Hospital, Benazir Bhutto Hospital, and DHQ Hospital. A total of 100 inpatient medical records from medical, surgical, and pediatric wards were randomly selected. Data were collected using a structured checklist evaluating key antibiotic prescribing indicators and analyzed using SPSS version 26.*

Results: *The indication for antibiotic use was documented in 88% of cases, and 74% of prescriptions adhered to national or local guidelines. Correct dose and frequency were observed in 81% of cases, while cultures were sent before antibiotic initiation in 61%. Review or de-escalation within 48–72 hours occurred in only 54% of cases. These findings highlight deficiencies in guideline adherence, culture testing, and timely therapy review.*

Conclusion: *Although documentation and dosing practices were satisfactory, significant gaps remain in guideline-based prescribing and stewardship compliance. Structured interventions, regular audits, and integration of antibiotic review alerts into electronic medical records are recommended to enhance rational antibiotic use.*

Introduction:

The development of antibiotics is one of the most revolutionary discoveries in the history of medicine. Antibiotics have enhanced healthcare delivery and increased life expectancy by allowing for advanced medical practices, including surgery and organ transplants, and reducing morbidity and mortality. (1) Contrary to these advantages, resistant pathogens develop due to inappropriate antibiotic use. Antimicrobial resistance (AMR) is an increasing global threat to public health systems. Failure to prioritize the management of AMR causes an upsurge in mortality and lengthier hospital stays as infections caused by drug-resistant resistant pathogens lead to higher

rates of adverse clinical outcomes. Furthermore, this increases expenditure due to resource utilization and more costly treatment options. (2,3) The spread of AMR among human and animal populations has led to use of newer and more expensive antibiotics in high-income countries (HICs) whilst increasing morbidity and mortality in low- and middle-income countries (LMICs), frequently attributable to lack of access to second- and third-line antibiotics. Antimicrobial use (AMU) is the main driver of AMR. If AMR is not addressed, it is projected to cost the global economy between USD 90 trillion and USD 210 trillion by 2050 and increase global economy inequality. (4, 5) The audit titled "Audit on Appropriate Prescribing of Antibiotics (Antimicrobial Stewardship)" is designed to evaluate and enhance prescribing practices in alignment with local and national guidelines. By assessing compliance, identifying inappropriate or empirical antibiotic use, and reviewing the quality of documentation related to indication, dose, route, and duration, the audit aims to promote rational and evidence-based prescribing. Additionally, it serves as an educational tool to raise awareness among healthcare providers about the importance of antimicrobial stewardship in combating resistance, improving patient outcomes, and ensuring the responsible use of antibiotics.

Methodology:

The audit was conducted as a retrospective, questionnaire-based review across three tertiary care hospitals in Rawalpindi: Holy Family Hospital, Benazir Bhutto Hospital, and District Headquarters (DHQ) Hospital. A total of 100 inpatient medical records were randomly selected from medical, surgical, and pediatric wards. Data were collected using a structured checklist that evaluated key elements of antibiotic prescribing. The questionnaire included specific questions such as: *"Is the indication for the antibiotic documented?", "Is the choice of antibiotic in accordance with local or national guidelines?", "Was the dose and frequency appropriate for the patient's age and condition?", "Were culture sensitivity tests sent before initiating antibiotics (if applicable)?", and "Was antibiotic therapy reviewed or de-escalated within 48–72 hours?"* These criteria were used to assess compliance with antimicrobial stewardship practices, and the findings were analyzed to identify gaps and areas for improvement. SPSS version 26.0 was used to enter, analyzed the data.

Results:

Out of the 100 inpatient records reviewed from the three tertiary care hospitals, several key trends were identified regarding antibiotic prescribing practices. The indication for antibiotic use was documented in 88% of cases, indicating reasonably good documentation practices.

Table I: Total Records Reviewed

Standard	Compliance (%)
Indication documented	88%
Prescribed according to guidelines	74%
Correct dose and frequency	81%
Cultures sent before antibiotics	61%
Review/De-escalation within 72 hrs	54%

only 74% of antibiotic prescriptions were found to be in accordance with local or national guidelines, indicating that nearly one-quarter of prescriptions did not follow recommended protocols. This deviation often involved inappropriate drug selection, incorrect spectrum coverage, or unnecessarily prolonged durations. About 26% of antibiotics were prescribed empirically without a documented rationale, reflecting a concerning gap in evidence-based

prescribing practices. Although some empirical use is clinically justified, the lack of supporting documentation raises questions about the appropriateness and justification of such decisions.

Furthermore, culture sensitivity testing was sent before initiating antibiotics in only 61% of applicable cases, suggesting that microbiological confirmation was underutilized in nearly 40% of the patients. This undermines targeted therapy and contributes to the overuse of broad-spectrum antibiotics. Review or de-escalation of antibiotic therapy within 48–72 hours was documented in just 54% of cases, showing that more than half of the cases lacked timely reassessment, a critical component of antimicrobial stewardship. On a positive note, 88% of the cases had a clearly documented indication for antibiotic use, indicating relatively better compliance in terms of initial justification. However, the overall results point to a need for structured interventions, improved documentation, and stronger adherence to antimicrobial stewardship guidelines across all levels of clinical care.

Gaps Identified and Plan:

To address the gaps identified in antibiotic prescribing practices, a structured action plan has been proposed. The Antimicrobial Stewardship (AMS) Committee will take the lead in developing and distributing standardized prescribing guidelines across all departments within the next month. In parallel, the hospital administration and infectious disease (ID) teams will organize targeted training workshops within two months to enhance prescribers' knowledge of antimicrobial stewardship principles and guideline-based prescribing. To ensure continuous monitoring and improvement, the Quality Assurance (QA) Department will implement regular quarterly audits to track compliance and identify ongoing challenges. Additionally, collaboration between the Information Technology (IT) department and the AMS team will be essential to integrate antibiotic review alerts into the hospital's Electronic Medical Records (EMR) system within three months. These alerts will prompt clinicians to review or de-escalate antibiotic therapy within 48–72 hours, promoting timely reassessment and improved antibiotic use.

Table II: Actions, Plan, Responsibility and Timeline

Action	Responsibility	Timeline
Develop & distribute prescribing guidelines	AMS Committee	Within 1 month
Conduct training workshops	Hospital Admin / ID Team	Within 2 months
Set up regular audits	QA Department	Quarterly
Integrate antibiotic review alerts in EMR	IT + AMS Team	Within 3 months

Conclusion:

The audit reveals suboptimal adherence to national/local antibiotic prescribing guidelines in tertiary care hospitals of Rawalpindi. Although most prescribers documented indications and appropriate dosing, guideline-based antibiotic selection and review practices need significant improvement.

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