



ANTIMICROBIAL PRESCRIBING PATTERNS AND STEWARDSHIP GAPS IN OBSTETRIC AND NEONATAL CARE: A POINT PREVALENCE STUDY FROM A TERTIARY HOSPITAL

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ABSTRACT

Background: Antimicrobial resistance (AMR) is a critical global health threat driven by inappropriate antibiotic use, particularly in hospital settings. Obstetric and neonatal populations are frequently exposed to antimicrobial agents, often for prophylactic purposes, which may contribute to unnecessary selection pressure.

Objective: To evaluate antimicrobial use patterns and identify key antimicrobial stewardship gaps in an obstetric and neonatal tertiary care hospital.

Methods: A cross-sectional point prevalence study was conducted including 142 hospitalized patients. Data were collected on antimicrobial use, indications, microbiological documentation, compliance with clinical guidelines, and antibiotic spectrum.

Results: Antimicrobials were prescribed in 40.8% of patients, reaching 100% in intensive care units. Prophylactic use accounted for 48%, exceeding recommended thresholds. Broad-spectrum antibiotics comprised 75% of prescriptions. Compliance with clinical guidelines was 72.4%, with significant interdepartmental variability. Microbiological confirmation was documented in 36.7% of cases. Consumption density was 1.4 prescriptions per patient.

Conclusion: Significant antimicrobial stewardship gaps were identified, including excessive prophylaxis and overuse of broad-spectrum antibiotics. Targeted stewardship interventions are urgently required.

INTRODUCTION

Antimicrobial resistance (AMR) is one of the most pressing global health challenges, largely driven by inappropriate and excessive antibiotic use. Hospital settings play a central role in this process, particularly in surgical, obstetric, and neonatal care, where antibiotics are frequently prescribed for both therapeutic and prophylactic purposes.

In obstetric and neonatal populations, antimicrobial exposure is often initiated empirically or as prophylaxis to prevent infections. While such practices may be justified in selected cases, inappropriate or prolonged use can lead to adverse consequences, including microbiome disruption and the emergence of resistant pathogens.



Antimicrobial stewardship programs (AMS) aim to optimize antibiotic use and reduce resistance. However, implementation remains inconsistent, particularly in resource-limited settings.

This study aimed to evaluate antimicrobial prescribing patterns and identify stewardship gaps in an obstetric and neonatal tertiary care hospital.

METHODS

A cross-sectional point prevalence study was conducted in a tertiary obstetric and neonatal hospital.

A total of 142 patients were included:

Adults: 124

Children: 18

Data collected included:

Antimicrobial prescriptions

Indications (treatment vs prophylaxis)

Microbiological data

Compliance with clinical guidelines

Documentation quality

Key indicators:

Prevalence of antimicrobial use

Consumption density

Prophylaxis vs therapy ratio

Broad-spectrum antibiotic use

Microbiological confirmation

Guideline compliance

RESULTS

Antimicrobial Prevalence

Antibiotics were prescribed in 58 out of 142 patients (40.8%). Use reached 100% in intensive care units.

Consumption Density

A total of 82 prescriptions resulted in a density of 1.4 prescriptions per patient.



Indications

Treatment: 52%

Prophylaxis: 48% (above recommended 10–30%)

Microbiological Documentation

Microbiological confirmation was present in 36.7% of cases.

Compliance

Overall compliance: 72.4% Range: 25%–100% across departments

Antibiotic Spectrum

Broad-spectrum antibiotics: 75%

Most common:

Ceftriaxone (24.4%)

Cefazolin (13.4%)

Cefoperazone/sulbactam (11%)

TABLE 1. Key Antimicrobial Stewardship Indicators

Indicator	Value
Prevalence	40.8%
Prophylaxis	48%
Broad-spectrum use	75%
Compliance	72.4%
Microbiology	36.7%

DISCUSSION



This study identified several critical antimicrobial stewardship gaps.

The prevalence of antimicrobial use (40.8%) was at the upper acceptable threshold, consistent with global PPS data. However, the most concerning finding was excessive prophylactic use (48%), indicating potential overuse or prolonged administration beyond recommended guidelines.

The high reliance on broad-spectrum antibiotics (75%) represents a major concern, as it increases selective pressure and contributes to antimicrobial resistance. This finding suggests limited implementation of de-escalation strategies.

Although compliance with clinical guidelines was acceptable overall, the wide interdepartmental variability highlights inconsistencies in practice and suggests the absence of a unified stewardship framework.

Microbiological documentation was moderate (36.7%), indicating partial reliance on laboratory confirmation but continued dependence on empirical therapy.

CONCLUSION

The study demonstrates significant antimicrobial stewardship gaps, particularly excessive prophylaxis and high use of broad-spectrum antibiotics.

Urgent interventions are required, including:

Optimization of prophylactic antibiotic use

Implementation of de-escalation strategies

Strengthening microbiological diagnostics

Standardization of prescribing practices

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