

PATTERNS OF ANTIBIOTIC PRESCRIBING IN A TERTIARY HOSPITAL IN GHANA USING REAL WORLD DATA



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Introduction

There is a global call to monitor consumption patterns of antimicrobials because of the looming threat of antimicrobial resistance and the diminishing rate in the research and development of new ones. In a recent estimate in 2019, bacterial AMR alone was responsible for 1.27 million global deaths, exceeding the number of deaths caused by malaria and HIV over the same period. Real world data includes the use of electronic health records (EHR).

Objective

To identify the types of antibiotics prescribed at the Korle Bu Teaching Hospital (KBTH) using EHR of patients whose prescriptions were filled at the pharmacy.

Methods

- A cross-sectional study was conducted at all the satellite pharmacies at the Korle Bu Teaching Hospital in July, 2022.
- EHR (from the Lightwave Health Information Management Systems, LHIMS) of all patients visiting the pharmacy during the study period were assessed and prescriptions were studied.
- All prescriptions with at least one antibiotic were noted and recorded.
- The data were transferred to Microsoft Excel and then to Stata version 17 (Stata Corp LP, College Station, TX, USA) for analyses.
- The types and distribution of the top 10 antibiotics was studied. These were then classified using the WHO Access (A)-Watch (Wa)-Reserve (Re) (AWaRe) framework for prescribing antibiotics and the anatomical and therapeutic classification (ATC) codes.
- Both crude and adjusted estimates were calculated using antibiotic prescription (Yes/No) as response variable.

Results

In all 1782 prescriptions were assessed during the study period with about 29.0% of those captured having an antibiotic. About 56.5% of all prescriptions were for female patients. Missing values were minimal (1%). The ten most prescribed antibiotics are shown on Table 1. No antibiotic from the Reserve class was identified during the study period (Table 2). Measures of effect using univariate and multivariate logistic regression (using odds ratios (OR)) are as shown on Table 3.

Table 1: Top Ten Antibiotics Prescribed During Study Period

Antibiotic class	Antibiotic Name (distribution)	ATC code
Penicillins	Co-Amoxiclav (17.8%)	J01CR02
Cephalosporins	Ceftriaxone (12.4%)	J01DD04
	Cefuroxime (10.2%)	J01DC02
Macrolides	Azithromycin (5.5%)	J01FA10
Aminoglycosides	Gentamycin (2.4%)	J01GB03
Lincosamides	Clindamycin (6.1%)	J01FF01
Quinolones	Ciprofloxacin (9.4%)	J01MA02
	Levofloxacin (2.2%)	J01MA12
Tetracyclines	Doxycycline (1.6%)	J01AA02
5-Nitroimidazoles	Metronidazole (14.8%)	JO1XD01

Table 2: Top Ten Antibiotics by WHO AWARe Classification 2023

Antibiotic Name (distribution)	Access	Watch	Reserve
Co-Amoxiclav (17.8%)	X		
Ceftriaxone (12.4%)		X	
Cefuroxime (10.2%)		X	
Azithromycin (5.5%)		X	
Gentamycin (2.4%)	X		
Clindamycin (6.1%)	X		
Ciprofloxacin (9.4%)		X	
Levofloxacin (2.2%)		X	
Doxycycline (1.6%)	X		
Metronidazole (14.8%)	X		

Table 3: Crude and Adjusted (Adj) Odds Ratios and 95% Confidence Intervals

Variable	Crude OR	95% CI	Adj OR	95% CI
Fewer medicines	1.000	—	1.000	—
More medicines	2.166	1.420 to 3.306	2.364	1.530 to 3.653
Younger age	1.000	—	1.000	—
Older Age	0.993	0.988 to 0.998	0.993	0.988 to 0.998
Male	1.000	—	1.000	—
Female	1.250	1.015 to 1.541	1.221	0.969 to 1.537

Conclusions

Studies on the prescription of antibiotics in particular, and antimicrobials in general, should be encouraged at all health facilities to ensure rational prescribing (a proxy for utilization) and reduce the number of antibiotics per prescription. That no antibiotic from the Reserve class was identified during the study period is refreshing but studies need to be extended over longer periods to confirm this.

References

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