

Prescribing pattern of antimicrobials in various clinical departments of a tertiary care hospital

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Received: 31 December 2015

Revised: 05 January 2016

Accepted: 03 February 2016

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ABSTRACT

Background: Antimicrobials are one of the most commonly used group of drugs. Their overuse and inappropriate use is one of the major concerns today. Assessment of prescribing pattern of antimicrobials provides insight into the health consequences and helps update antimicrobial usage guidelines. Hence this study was conducted with an objective to analyse the prescribing pattern of the antimicrobials.

Methods: A cross sectional study was conducted based on the prescriptions collected from Department of Pharmacy, Pondicherry Institute of Medical Sciences (PIMS), Puducherry. A total of 838 outpatient prescriptions were collected from four clinical departments, viz. General Medicine, General Surgery, Pediatrics and Obstetrics & Gynecology for a period of four months. The data collected were analysed using descriptive statistics.

Results: Among 838 prescriptions 188 (22.43%) contained antimicrobials. Among the various departments, number of prescriptions with antimicrobials were more in department of General surgery (34.42 %) followed by Obstetrics & Gynecology (24.77 %). The commonly prescribed antibiotics were penicillins (25.47%), fluoroquinolones (12.73%), cephalosporins (10.84%), macrolides (8.96%), nitroimidazoles (6.60%) and tetracyclines (4.71%). Among the total antimicrobials, percentage of drugs prescribed by generic name and from National list of essential medicines (NLEM) were 38.20% and 80.18% respectively. Majority of antimicrobials (58.01%) were prescribed as oral tablets/ capsules.

Conclusions: It was found that penicillins were the most commonly prescribed group of antimicrobials, significantly less number of antimicrobials were prescribed by generic name, 80.18% of antimicrobials were prescribed from NLEM and tablets/ capsules were the most common dosage forms.

Keywords: Antimicrobials, Prescribing pattern, Generic name

INTRODUCTION

Antimicrobials are currently one of the most commonly prescribed group of drugs.¹ The over use of antimicrobial agents is well documented in scientific literature. WHO experts have found that, around 50% of antimicrobial prescriptions were inappropriate. It's not only the overuse; inadequate use is also a promoter for development of resistance.²

The main problems of this inappropriate use are the increased economic burden, increased incidence of adverse effects and most importantly the emergence of antimicrobial resistance.³ Antimicrobial resistance has

become a global concern and is a threat to all branches of medical and public health practice. Antimicrobial resistance undoubtedly increases mortality, morbidity and cost.⁴

Between 2000 and 2010, antimicrobials consumption increased by 36%. 76% of this increase is accounted by Brazil, Russia, India, China, and South Africa (BRICS). In BRICS countries, India accounted for 23% of this increase.⁵

The medicines prescribed from Essential drug list (EDL) of a country selected using unbiased and evidence-based information is a measure of the commitment towards

high-quality patient care and appropriate medicine use⁶. Prescription of antimicrobials by generic names instead of brand names avoids confusion about multiple names for the same product and simplifies procurement and dispensing and improves hospital efficiency.⁷

Injectable antimicrobials increase treatment cost and requires skilled personnel for administration. Additionally, there is an increased risk of transmission of potentially serious pathogens, such as hepatitis, HIV/AIDS, and blood-borne diseases, when unhygienic injections are administered.⁸

Monitoring antimicrobial prescription provides insights needed to make appropriate therapy decisions and to assess the public health consequences of antimicrobial misuse. Without data on antimicrobial use it would be difficult to regularly update diagnostic and treatment guidelines.⁹

This study attempts to fill this void by surveying the antimicrobial usage across various departments of a tertiary care hospital.

METHODS

A cross sectional study was conducted based on the prescriptions collected from Department of Pharmacy, Pondicherry Institute of Medical Sciences (PIMS), Pondicherry. A total of 838 Outpatient prescriptions were collected from four clinical departments, viz. General Medicine, General Surgery, Paediatrics and Obstetrics & Gynaecology (OBG) over a period of four months from April 2015 to August 2015. Data collected include; 1. Encounters with antimicrobials 2. Antimicrobials prescribed by generic name, 3. Antimicrobials prescribed from NLEM of India and 4. Dosage form of prescribed antimicrobials. The data collected were entered in Microsoft Excel software and analysed descriptively.

RESULTS

Among 838 prescriptions, 188 (22.43%) contained antimicrobials (Figure 1).

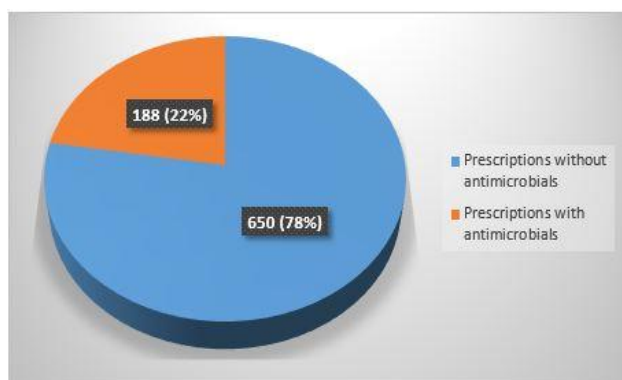
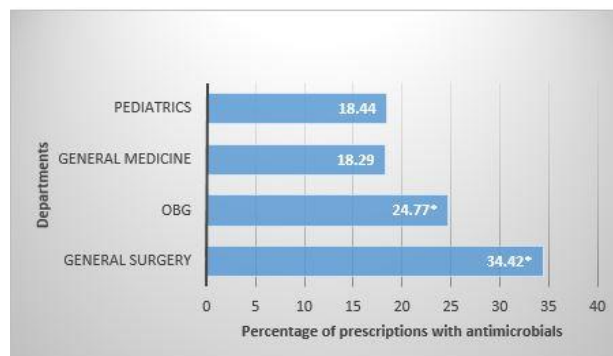


Figure 1: Percentage of prescriptions with antimicrobials.

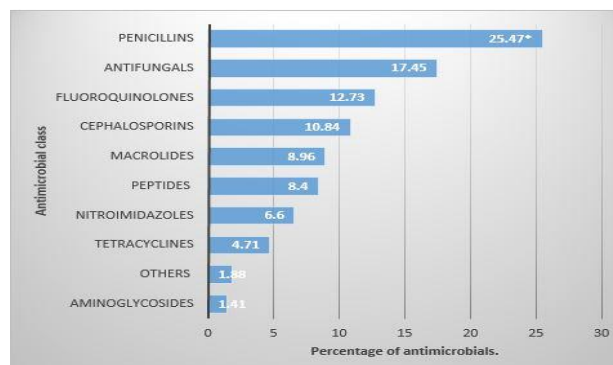
Among the various departments, number of prescriptions with antimicrobials were more in department of General surgery (34.42 %) followed by Obstetrics & Gynaecology (24.77 %). Number of prescriptions with antimicrobials in department of General medicine is 18.29% and in Paediatrics is 18.44% (Figure 2).



*Antimicrobials usage more in surgical departments

Figure 2: Percentage of prescriptions with antimicrobials in various departments.

The commonly prescribed antibiotics were penicillins (25.47%), fluoroquinolones (12.73%), cephalosporins (10.84%), macrolides (8.96%), nitroimidazoles (6.60%) and tetracyclines (4.71%) (Figure 3).



*Penicillins were the commonest group of antimicrobials prescribed.

Figure 3: Percentage distribution of various groups of antimicrobials.

Table 1: Number of antimicrobials prescribed by generic name and from NLEM.

Department	Generic name	NLEM
General medicine	28 (58.33%)*	40 (83.33%)
OBG	19 (28.35%)	58 (86.56%) [§]
Paediatrics	20 (40.81%)	36 (73.46%)
General surgery	14 (29.16%)	36 (75.00%)
Total	81 (38.20%)	170 (80.18%)

*More antimicrobials were prescribed in the department of General medicine.

[§]More antimicrobials prescribed from OBG department were from NLEM.

Table 2: Number of antimicrobials in various dosage forms.

Department	Tablet\ Capsule	Injectable	Syrup	Ointment	Pessary	Others
General medicine	41	7 (70%)	0	0	0	0
OBG	36	0	0	2	26 (96.29%)	3
Pediatrics	10	1	25 (89.28%)	9	1	3
General surgery	36	2	3	7	0	0
Total	123 (58.01%)*	10 (4.71%)	28 (13.20%)	18(8.49%)	27 (12.73%)	6 (2.83%)

*Tablets/Capsules were the commonest dosage forms among prescribed antimicrobials.

Among the total antimicrobials percentage of drugs prescribed by generic name and from National list of essential medicines (NLEM) were 38.20% and 80.18% respectively (Table 1).

Majority of antimicrobials (58.01%) were prescribed as oral tablets/ capsules. Syrups (13.2%) and Pessaries were next commonly prescribed dosage forms (12.73%). Majority of syrup formulations (89.28%) were prescribed in Paediatrics department and Pessaries (96.29%) were mostly prescribed in OBG department (Table 2).

DISCUSSION

A cross sectional survey of OPD prescriptions of four departments Viz. General medicine, General surgery, Paediatrics and OBG was carried out to assess the prescription pattern of antimicrobials.

We found that 22.43% of encounters were with antimicrobials. The most commonly prescribed antimicrobials were penicillins followed by antifungals. Among the total antimicrobials prescribed 38.20% were prescribed by generic name. 80.18% of the total antimicrobials prescribed were from NLEM. Majority of the prescribed antimicrobials were in the form of tablets (58.01%). Syrups were more commonly prescribed in paediatrics department and pessaries were more commonly prescribed in the department of OBG.

Penicillins like amoxicillin and ampicillin were the most commonly prescribed antimicrobials may be because of their activity against both gram positive and gram negative organisms.¹⁰ Apart from that these agents also have advantages like bactericidal activity, wide distribution throughout the body, better safety profile. Antifungals were the second commonly prescribed group majority of which were prescribed in OBG department, probably because of increased encounters with fungal infections.

We found that 38.20% of drugs were prescribed by generic name. It is significantly less when compared to the WHO recommendation of 100% prescriptions with generic name.¹¹ But, it is more than 21.5% as found in a study by Niti Mittal, et al.¹² And slightly low as compared to 42.9% found in a study done by Siva Prasad,

et al.⁷ This could be due to lack of awareness regarding the importance of prescribing by generic name and also could be due to influence of marketing methods of pharmaceutical companies.

Among the total antimicrobials prescribed 80.18% were from NLEM. This was significantly better when compared to figure of 45.5% of drugs prescribed from NLEM, as found from a study by Anjan Adhikari, et al.⁶ This is less when compared to 95.6% of drugs from NLEM, as reported by a study from Andhra Pradesh by Siva Prasad, et al.⁷

Out of 212 antimicrobials prescribed, majority i.e. 58.01%, were prescribed as oral tablets/ capsules. This could be due to their advantages such as ease of administration and economy, which improves patient compliance. Antimicrobials which were prescribed as injectable were only 4.71%. This could be due to the fact that prescriptions collected were outpatient prescriptions. Syrups (13.20%) and pessary (12.73%) were other commonly prescribed formulations. Syrup formulations were mainly encountered in paediatrics department for obvious reasons as they are mainly meant for paediatric population. Pessaries on the other hand were prescribed almost entirely from OBG department. We found that all pessaries were antifungal preparations prescribed mainly in OBG department for the treatment of genital fungal infections.

CONCLUSION

In conclusion, we found that penicillins were the most commonly prescribed group of antimicrobials, significantly less number of antimicrobials were prescribed by generic name, a good number of antimicrobials were prescribed from NLEM and Tablets/ capsules were the most common dosage forms.

ACKNOWLEDGEMENTS

We sincerely would like to acknowledge Dr. Alwar M.C, Dr. Jesudoss Prabhakaran and other colleagues for their support.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Rohith V, Manjunatha CH, Anusha N, Jayasheela J, Topno I. Prescribing pattern of antimicrobials in various clinical departments of a tertiary care hospital. *Int J Basic Clin Pharmacol* 2016;5:402-5.