

# Assessment of Pattern of Drug Utilization of Antimicrobials in the In-Patient Setting of a Tertiary Hospital: An Observational Study

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## ABSTRACT

**Background:** Antibiotics are the most frequently prescribed drugs among hospitalised patients. The programs which are designed to encourage appropriate antibiotic prescriptions in health care institutions are an important element in the quality of care, infection control and cost control. Hence; the present study was conducted for assessing pattern of drug utilization of antimicrobials in the in-patient setting of a Tertiary hospital.

**Materials & Methods:** A total of 100 patients were analyzed. Only those patients were assessed who were prescribed antimicrobials at the time of the visit. Complete analysis of the prescriptions was done using a self-framed questionnaire. A data base was generated which involved the detailed pattern of drug utilization of antimicrobials in the in-patient setting. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

**Results:** Gentamicin, Metronidazole, Ciprofloxacin, Cephalexin, Amoxicillin and Erythromycin were the most commonly prescribed antimicrobials in the present study.

**Conclusion:** No specific pattern of antimicrobial prescribing practice in tertiary care center. Hence; choice of antibiotics is largely chosen on the basis of specific pathology.

**Key words:** Antimicrobial, Drug, Prescription.

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## INTRODUCTION

Antibiotics are the most frequently prescribed drugs among hospitalised patients. The programs which are designed to encourage appropriate antibiotic prescriptions in health care institutions are an important element in the quality of care, infection control and cost control. The studies on the prescribing patterns seek to monitor, evaluate and suggest modifications in the practitioners' prescribing habits, so as to make medical care rational and cost effective.<sup>1-3</sup>

The information on the antibiotic use patterns is necessary to make a constructive approach to the problems that arise from the multiple antibiotics which are available. Drug utilisation research holds a crucial place in clinical practice as it forms the basis for making amendments in the drug dispensing policies at local and national levels. The ultimate goal of such research is to facilitate rational drug use. Also, since it helps in developing strategies to utilize health resources in the most efficient manner, it is particularly needed in a developing economy like India where 72% of all health care burden is borne by the patients.<sup>4-6</sup> Hence; the present study was conducted for assessing pattern of drug

utilization of antimicrobials in the in-patient setting of a Tertiary hospital.

## MATERIALS & METHODS

The present study was conducted in the Department of Pharmacology, Santosh Medical College & Hospital, Ghaziabad, Uttar Pradesh (India) and it included assessment of pattern of drug utilization of antimicrobials in the in-patient setting. Ethical approval was obtained before the starting of the study. In the present survey, complete inquiry was done for obtaining the knowledge about all anti-microbial prescriptions for all the in-patients. A total of 100 patients were analyzed. Only those patients were assessed who were prescribed antimicrobials at the time of the visit. Complete analysis of the prescriptions was done using a self-framed questionnaire. A data base was generated which involved the detailed pattern of drug utilization of antimicrobials in the in-patient setting. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

**RESULTS**

In the present study, pattern of drug utilization of antimicrobials in the in-patient setting was done. A total of 100 patients were analyzed. Antimicrobials were prescribed in majority of cases in lower respiratory tract infection (45 percent). In skin and subcutaneous tissue infection, antimicrobials were prescribed in 23 percent of cases. In bones and joint infections, and in infections of gastrointestinal tract, antimicrobials were prescribed in 12 percent of the patients. In the present study, gentamicin, Metronidazole, Ciprofloxacin, Cephalexin, Amoxicillin and Erythromycin were the most commonly prescribed antimicrobials in the present study.

**Table 1: Distribution of therapeutic antimicrobial use by site of infection**

Site of infection	n
Lower respiratory tract	45
Skin and subcutaneous tissue	23
Gastrointestinal tract	12
Bones and joints	10
Others	10

**Table 2: Individual antimicrobial use**

Antimicrobial	n
Gentamicin	26
Metronidazole	25
Ciprofloxacin	20
Cephalexin	15
Amoxicillin	20
Erythromycin	20
Others	10

**DISCUSSION**

Health is the extent to which an individual or group is able, on the hand, to realize aspirations and satisfy needs; and, on the other hand, to change or cope with the environment. Health as a result, seen as a resource in support of everyday life, not an entity of living; it is a constructive concept emphasizing social and individual resources, as well as substantial capacities.<sup>1</sup> The conventional role in preparing and providing medicines and informing patients concerning their use, pharmacists are well placed to assume responsibility for the supervision of drug therapy.<sup>7- 10</sup> Hence; the present study was conducted for assessing pattern of drug utilization of antimicrobials in the in-patient setting of a Tertiary hospital.

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Khan FA et al evaluated the current usage of the anti-microbial agents in medicine department of a teaching hospital in northern

India. The prescriptions and the patient records are reviewed and analysed. The rationality of the drug usage was also evaluated by analysing the drug prescriptions. Out of the 494 drugs which were prescribed to 180 patients, 291 were antibiotics. The most commonly used AMAs were the  $\beta$ -lactams (penicillins and cephalosporins) –n = 102, followed by the quinolones –n = 93, Nitroimidazoles –n = 43, aminoglycosides –n = 35 and the macrolides –n = 18. The most common indication for the antimicrobial therapy was infection. According to the evaluation, the use of the antimicrobial therapy was found to be rational in 77.77 per cent patients. The average number of antibacterial agents which were prescribed per patient per course was found to be 1.61 and the average numbers of drugs which were prescribed per patient were 2.74. The average cost per prescription per day was Rs.115 and the average antibiotic cost per encounter was Rs. 85. Antibiotic resistance is increasing at an alarming rate due to the irrational prescribing habits of physicians, leading to increasing morbidity, mortality and treatment cost.<sup>11</sup>

In bones and joint infections, and in infections of gastrointestinal tract, antimicrobials were prescribed in 12 percent of the patients. In the present study, gentamicin, Metronidazole, Ciprofloxacin, Cephalexin, Amoxicillin and Erythromycin were the most commonly prescribed antimicrobials in the present study. In spite of various benefits like low cost of drug therapy, increased patient adherence and equivalent therapeutic benefits as brand name alternatives, generic prescribing is not a common practice in India. In a previous study, more than 75 percent prescriptions were by brand names. Pharmaceutical step-therapy approach, whereby use of a first line agent, a generic alternative, is required prior to coverage of a second line agent, usually a branded product, can be a useful strategy in increasing drug cost savings.<sup>11- 13</sup>

**CONCLUSION**

From the above results, the authors concluded that there is no specific pattern of antimicrobial prescribing practice in tertiary care center. Hence; choice of antibiotics is largely chosen on the basis of specific pathology.

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