

# Antimicrobial Utilization Study in Indoor Patients of Paediatric Ward of a Tertiary Care Teaching Hospital

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## ABSTRACT

**Introduction:** Antimicrobial prescribing pattern analysis is very important for judicious use of antimicrobials. Antimicrobials are commonly prescribed in paediatric population. Irrational antimicrobial prescriptions along with suboptimal therapy and polypharmacy have led to emergence of antimicrobial resistance. Hence, the present study was done to assess the trend of antimicrobial prescription in our hospital.

**Objective:** The present study was undertaken to know the prescribing trends of antimicrobials in indoor patients of paediatric ward of a tertiary care hospital

**Methods:** A prospective prescription audit of antimicrobials was conducted for a period of 4 months from July 2014 to October 2014 at Paediatric ward and data was analysed using WHO indicators.

**Results:** The total number of prescriptions analysed was 443. Average number of antimicrobials per prescription was 3.5. Most commonly prescribed antimicrobial agent were Cotrimoxazole and Gentamicin (95 % each). Mean duration of hospitalization was 4-5 days

**Conclusion:** Antimicrobial agents were found to be prescribed in significant number. They were mostly prescribed by proprietary names. The high incidence of resistance can be minimized by feedback to the prescribers.

**Keywords:** Antimicrobials utilization, prescription pattern, paediatric ward, WHO indicators.

## INTRODUCTION

Antimicrobials are used to treat infections caused by microorganisms like bacteria, mycobacteria, viruses, parasites and fungi. They are one of the most commonly prescribed drugs in the world. [1] Studies indicate that approximately one-third of all hospitalised patients receive antimicrobial therapy. [2] This group of drugs is also commonly prescribed in the paediatric population. [3,4] Antimicrobials are commonly administered for acute respiratory illnesses, with 70% of all prescriptions issued for upper respiratory

tract infections in paediatric patients. [5,6] The increase in antimicrobial prescriptions accompanied by their inappropriate use, augments the rates of antibiotic resistance and the burden on healthcare budgets worldwide. [7,8] Antimicrobial resistance can lead to prolonged hospitalisation, failed treatments, increased healthcare costs and mortality. [9] Infants and children are especially vulnerable to contract illnesses and to the harmful effects of drugs due to differences in pharmacodynamics and pharmacokinetics. [10] This study was undertaken to know the trend of

antimicrobial prescriptions in indoor paediatric patients so as to form a safe, cost-effective therapy and antimicrobial policy for the hospital setup.

### AIM AND OBJECTIVES

The aim of this study was to evaluate the antimicrobial utilization pattern in the paediatric setting of a tertiary care teaching hospital.

Objectives : 1) To evaluate the rationality of prevalent prescribing practices on the basis of WHO prescribing indicators for antimicrobials.

2) To provide feedback to the prescribers so as to enable them to help rationalize the prescribing practices

### MATERIALS AND METHODS

Prospective observational study was undertaken in the Paediatric ward of BSTRH attached to MIMER Medical College, Talegaon Dabhade after securing permission from the institutional ethics committee (IEC) to access the prescriptions issued in paediatric ward for a period of 4 months from July 2014 to October 2014. Relevant and necessary data was compiled from the prescriptions such as demographic details (name, age, sex of the patients), symptoms of the patient, past history, general and medical examination and drugs prescribed (name, dosage form, dose, frequency, route of administration, and duration of treatment).

All the information pertaining to the prescribed medications was analyzed by using WHO guidelines as described in accordance with 'How to investigate drug use in health facilities'<sup>4</sup>.

The WHO indicators applied to the present study are as follows: <sup>[12]</sup>

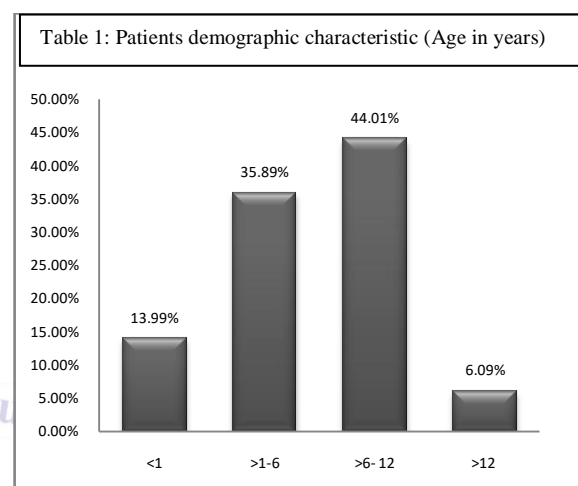
The core indicators include:

- (1) Average number of drugs per encounter
- (2) Percentage of drugs prescribed by generic name
- (3) Percentage of encounters with an antibiotic prescribed
- (4) Percentage of encounters with an injection prescribed

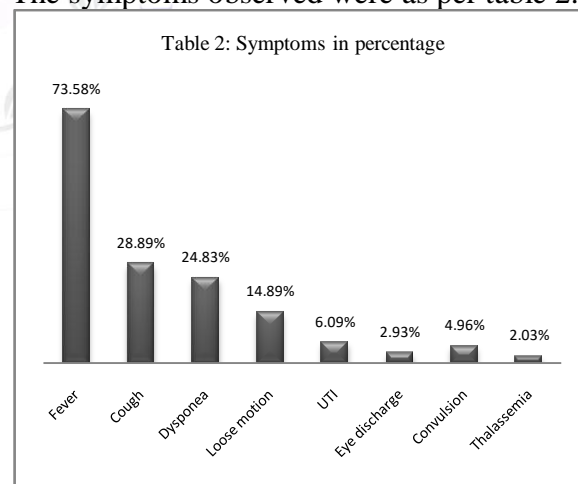
(5) Percentage of drugs prescribed from Essential Drug List – India, WHO.

### RESULTS

During the study period, a total of 443 patients were admitted in the paediatric ward. Of the total 443 patients, 58.46 % were males and 41.53% were females. The age of the patients in years is as follows (Table 1):



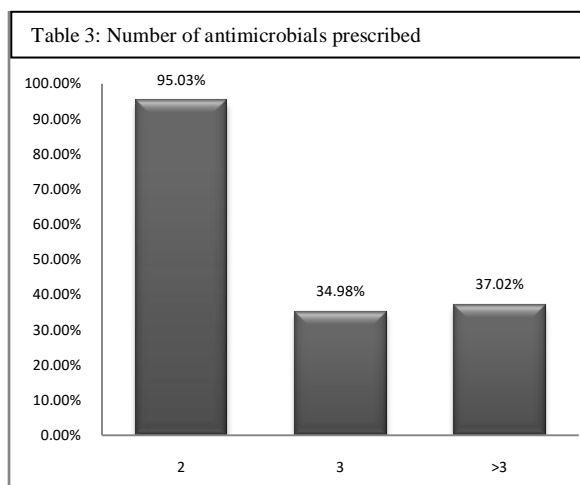
The symptoms observed were as per table 2.



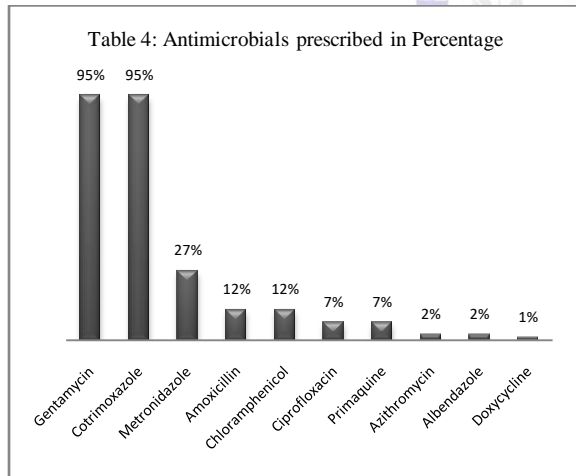
The duration of stay for maximum number of children 339 (76.52%) were between 4 to 5 days.

432 (97.5%) children were prescribed with two or more antibiotics for the treatment of various disorders. Average number of antibiotics prescribed per patient was 3.5. All of the patients were treated with a minimum of 2 antibiotics (95.03 %), 3 antibiotics were prescribed in 34.98% and

≥ 3 antibiotics were prescribed in 37.02% children (Table: 3).



There were 10 different antibiotics prescribed, of which 3 were prescribed most commonly. Cotrimoxazole and Gentamicin were the most common drug prescribed (95% each) followed by metronidazole (27%), amoxicillin (12%) and Chloramphenicol (12%) (Table:4).



The doses of the antimicrobial medications were prescribed according to standard regimens. All the antimicrobials prescribed were available at the hospital pharmacy.

## DISCUSSION

Antimicrobials are prescribed widely across the world. Study performed in Norway and Oman found that preschool children were the most common group exposed to antimicrobials, whereas in the

present study maximum number of patients was between the age group 6-12years. [10,11] WHO recommends the use of < 2 drugs per prescription whereas in our study all the prescription contained more than 2 antimicrobials. [10,11]

In a study from Pakistan, the presenting complaints were fever in 18%, cough in 9 %, both fever and cough in 21% of patients and in present study fever (73.58%) was the most common reason for hospitalization followed by cough (28.89%) and dyspnoea (24.83%). [13]

All of the patients were treated with a minimum of 2 antimicrobials (95.03%), 3 antimicrobials were prescribed in 34.98% and more than 3 antimicrobials were prescribed in 37.02% patients. In a similar study from Coimbatore, 2 antimicrobials were prescribed in 11.2%, 3 antimicrobials were prescribed in 3.7 % and 4 or more antimicrobials in 0.5% prescriptions which is lesser as compared to the present study. [9]

The study from Coimbatore showed that cephalosporin (68.2%) and penicillin (31.3%) were most commonly prescribed antimicrobial drugs. [9] As against our study which showed Cotrimoxazole and Gentamicin as the most commonly prescribed antimicrobials.

Study from Nepal showed that the duration of hospitalization was 1-4 days in most of the patients. [14] In our study average duration was 4-5 days.

## CONCLUSION

Antimicrobial audit over a period of 4 months showed that antimicrobials were widely prescribed. Cotrimoxazole and Gentamicin were the most common antimicrobial prescribed. Antimicrobials were found to be prescribed by the proprietary name in significant number of prescriptions. Suggestions and recommendations from this particular audit would be useful to improve the prescribing trends for the benefit of the recipients and will help to build up antimicrobial policy at our hospital setup.

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