

# Prescription Pattern in the Department of Surgery in A Tribal District Hospital of Andhra Pradesh, India

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## Abstract

**Background:** Usually, surgical management cannot be completed without the use of antimicrobial and analgesic drugs. Irrational prescription may lead to severe postoperative complications. **Aim:** The objective of this study was to evaluate the prescription trend in the surgery department of a tribal district hospital so as to determine the extent of rational use of medicines. **Materials and Methods:** It was a retrospective study in which 50 cases were selected randomly. Case records were analyzed for prescription trend. Data was analyzed using Microsoft Office Excel 2007 and values were presented descriptively. **Results:** Most of the cases were between the age group of 21 and 40 years, 18 cases (36%). Commonest cause of hospitalization was renal calculi (10 (20%)) followed by acute abdomen and abscess (6, (12%)). Total of 255 numbers of drugs were used with an average of 5.1 drugs per patient. Most preferred route was intravenous route (174 drugs, 68.2%). Antimicrobial was the most common (97 (38.0%)) group of drugs followed by analgesic/antipyretics (50 (19.6%)). Among antimicrobials, ciprofloxacin (22 (22.7%)) was the most common drug followed by metronidazole (21 (18.5%)). All the cases were managed by empirical treatment. Two different antimicrobials were prescribed to 20 (40%) of cases. Dosage of 83 (32.6%) drugs was inappropriate while frequency was inappropriate in 26 (10.2%) cases. **Conclusion:** Urgent steps like specific guidelines, training, and monitoring of drugs use are needed to correct some irrational approaches.

**Keywords:** Ampicillin, Ciprofloxacin, Surgery

## Introduction

Surgical management cannot be completed without the use of antimicrobial and analgesic drugs because infection at surgical sites is one of the most common causes of postoperative morbidity and mortality.<sup>[1]</sup> During surgical management of diseases, irrational prescription may lead to severe complications in pre and postoperative management such that even mortalities may occur.

Irrational prescription includes polypharmacy, use of medically ineffective and inappropriate drugs unrelated to diagnosis, expensive drugs, use of branded drugs instead of generic drugs, and excessive use and misuse of antimicrobials.<sup>[2-6]</sup>

Polypharmacy and preference for costly medicines are common not only in developing countries but also occur in developed countries.<sup>[6,7]</sup> Such irrational use of medicine results in increased incidence of adverse drug reaction, delay in relief, increased hospital days, increased morbidity and mortality, and financial loss and is one of the reasons for increasing resistance to antimicrobials.<sup>[8,9]</sup>

Drug prescription trend can be evaluated retrospectively by the analysis of clinical records of the region or hospital.<sup>[9]</sup> Such types of drug utilization studies, which are one of the tools for evaluation of healthcare system, provide information regarding prevalence of irrational medication in a particular region.<sup>[10]</sup>

This study was carried out to in Adilabad, India, in a predominantly tribal and rural population.<sup>[11]</sup>

## Materials and Methods

The study was carried out during the year 2011 at Rajiv Gandhi Institute of Medical Sciences (RIMS), Adilabad. It was a retrospective study in which 50 cases belonging to Department

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of General Surgery were included. Case sheets were collected from medical record section of the institute. All the hospitalized cases were sorted out excluding OPD cases and 50 cases were randomly selected for the study. All the case sheets were examined and findings recorded for gender differences, average age of the patients, diagnosis, number of diseases, route of drug administration, types of drugs consumed, types of antimicrobials used, most common and least common antimicrobials, use of single and multiple antimicrobials, culture and sensitivity tests, use of generic and branded drugs, fixed-dose combination, appropriateness of dose, and frequency of drugs and non-pharmacological measures. Necessary permission was granted by the institutional authorities for the study. Data was analyzed using Microsoft Office Excel 2007 and values were presented descriptively.

### Results

Out of 50 cases, 25 (50%) were females and 25 (50%) were males. Most of the cases (18 cases, 36%) were between the age of 21 and 40 years, followed by 11 to 20 years of age (7 cases, 14%), while least number of cases (3 cases, 6%) were in the age 60 years or more [Table 1].

Commonest cause of hospitalization was renal calculi (10 (20%)), followed by acute abdomen and abscess (6 (12%)). Other disorders constituted 11 (22%) in which each disorder was less than 1% of the total diagnosis [Figure 1]. 45 (90%) patients were hospitalized due to single disease while remaining 5 (10%) were suffering from multiple disorders or primary disease-associated complications.

A total of 255 drugs were prescribed to the 50 cases, giving an average number of drugs per prescription of 5.1 (median 5). Most preferred route of drug administration was intravenous route (174 drugs, 68.2%) followed by oral (58 drugs, 21.9%) and intramuscular (23 drugs, 9.0%) route [Figure 2].

Antimicrobials were the most commonly prescribed drugs (97 (38.0%)) followed by non-steroidal anti-inflammatory drugs

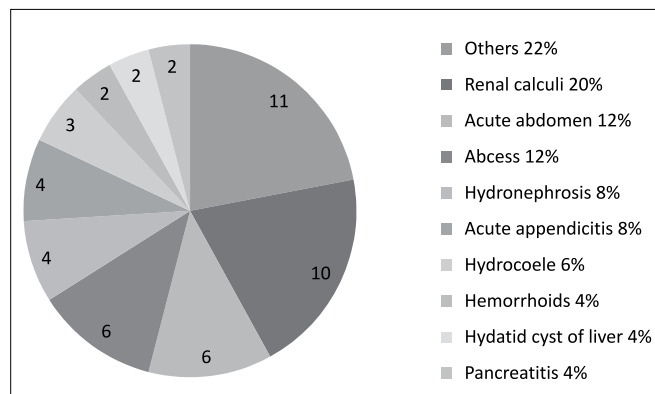


Figure 1: Common diagnosis (n = 50)

(NSAIDs), which constituted 50 (19.6%). In other groups of drugs, different groups were used with less than 5% drugs in each group shown as in Table 2. Out of 97 antimicrobials, ciprofloxacin (22 (22.7%)) was the most commonly used, followed by metronidazole (21 (21.6%)), while amikacin (2 (2.0%)) was the least used drug [Figure 3].

Out of 255 prescribed drugs, most (182 (74.5%)) were prescribed by brand name. All the cases were managed by empirical treatment. Dosage of 83 (32.6%) of drugs was inappropriate while frequency was inappropriate in 26 (10.2%) of medications. Fixed-dose combination was given to 2 (4%) cases. Non-pharmacological measures like cold sponging were used in 1 (2%) of patients. Most of the cases (20 (40%)) were prescribed two different antimicrobials although one antimicrobial therapy was given to 18 (36%) cases [Figure 4].

### Discussion

We observed that majority of cases in this sample were between the age group of 21 and 50 years. This is the usual trend as it is the productive age group that is actively involved in socioeconomic activities, making them vulnerable to diseases, which may needs surgical interventions.

Most of the hospitalizations were due to renal calculi, abscess, and acute abdomen. This is because our study center is a referral hospital for the district. A large number of acute abdomen cases indicate insufficient healthcare facilities at the primary and secondary health care centers of the region. Moreover, excess cases of renal calculi and abscess might be due to lack of awareness to get early medical help since this region does not belong to an endemic zone for renal calculi. Moreover,

Table 1: Age and gender distribution of surgical patients in a rural hospital

Age group	Male (%)	Female (%)	Total (%)
Up to 10 years	01 (2)	04 (8)	05 (10)
11–20 years	03 (18)	04 (8)	07 (14)
21–30 years	05 (10)	04 (8)	09 (18)
31–40 years	04 (8)	05 (10)	09 (18)
41–50 years	07 (14)	05 (10)	12 (24)
51–60 years	02 (4)	03 (6)	05 (10)
>60 years	03 (6)	00 (0)	03 (6)
Total	25 (50)	25 (50)	50 (100)

Table 2: Drugs with major groups (n = 50, total number of drugs = 255)

Group of drugs	Total (%)
Antimicrobials	97 (38.0)
*NSAIDs	50 (19.6)
Antihistamines	43 (16.8)
Others	33 (12.9)
Antispasmodics	32 (12.5)

\*NSAIDs: Non-steroidal anti-inflammatory drugs.

poverty may also be a reason for late arrival of the cases since the region is relatively less developed on developmental indices in comparison with other districts of the state.<sup>[11]</sup>

In the studied population, polypharmacy was observed as drugs per prescription were high (5.1), which contain antimicrobials in most of the cases (38%), followed by NSAIDs (19.6%), and antihistamines and drugs were given preferably by intravenous route. Kumari *et al.*,<sup>[12]</sup> at Lucknow in north India and Bapna *et al.*<sup>[13]</sup> in South India also observed polypharmacy in their respective regions. Sometimes, more number of drugs is required for the management of a few conditions, but our

findings suggests polypharmacy as a routine practice in the region. Reasons may include getting early relief in the diseases.

Among antimicrobials, preferred drugs were ciprofloxacin (22.65%); metronidazole (21.65%), 3<sup>rd</sup> generation cephalosporins, gentamicin, and ampicillin. Majority of drugs were branded drugs and used without culture and sensitivity tests. Use of two antimicrobials agents was also common. Vaccheri *et al.*,<sup>[14]</sup> in their study, which was conducted in Italian hospitals, observed 18% antimicrobial use and combination of penicillin with  $\beta$ -lactamase inhibitors followed by fluoroquinolones and third-generation cephalosporins was common. They also observed more use of antimicrobials in surgical units in comparison with medicine units and higher number of 3<sup>rd</sup> generation cephalosporins for surgical prophylaxis.

Khan *et al.*<sup>[15]</sup> observed use of cefixime and combination of amoxicillin with clavulanic acid followed by gentamicin, azithromycin, ciprofloxacin, and metronidazole was common in North India. They also found that use of antimicrobial monotherapy and two-drug antimicrobial therapies were also common. Giri *et al.*<sup>[16]</sup> in Nepal found that culture and sensitivity was done only in 32.4% cases who were suffering from surgical site infection and that use of combination of ampicillin with cloxacillin was common. This was followed by metronidazole, ampicillin, gentamicin, and cefuroxime. Al Shimememri *et al.*<sup>[17]</sup> in their study observed ceftriaxone as the most common drug without use of culture and sensitivity tests. Thomas *et al.*<sup>[18]</sup> also observed use of antimicrobials without culture and sensitivity as common practice in primary and tertiary healthcare system in India.

Surgical procedures needs antimicrobial coverage to avoid postoperative infective complications, but it is observed that unnecessary use of antimicrobials is also common. For surgical prophylaxis, international guidelines indicates that use of 1<sup>st</sup> or at the most 2<sup>nd</sup> generation cephalosporins is suitable, rather 3<sup>rd</sup> and 4<sup>th</sup> generation and other higher antimicrobials are also commonly used for the purpose.<sup>[19]</sup> There are many reasons for such a type of trend such as the desire to avoid postoperative complications, to get early relief, claim of lack of time for of investigations or lack of sufficient microbiological laboratory infrastructure, and belief and experience of surgeon over a number of antimicrobials.

In the present study, branded drugs were preferred by the surgeons, and dose and frequency of drugs were inappropriate in some cases. Such trend can affect the regional population.

### Conclusion

We conclude that prescription trend in surgery department of the region is needed to be reviewed. The use of higher antimicrobials and branded drugs are common. Urgent steps are needed to correct some irrational approaches such as specific guidelines, training, and monitoring of drugs uses.

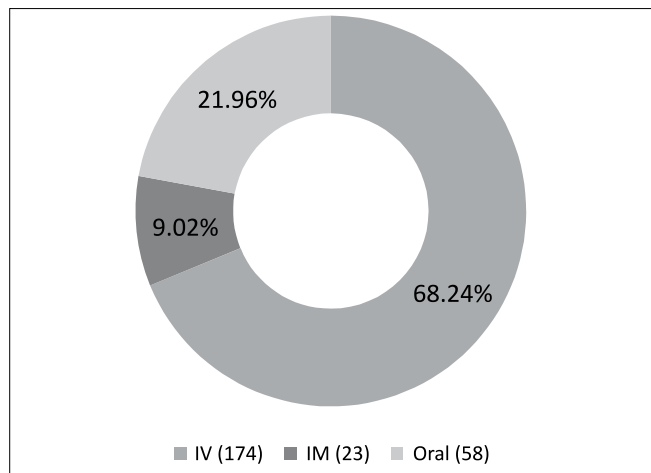


Figure 2: Route of drug administration (n = 50)

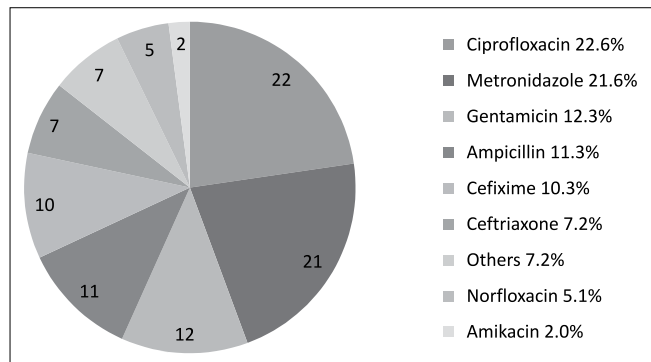


Figure 3: Frequently used antimicrobials (n = 50) (Some patients received more than one antibiotics)

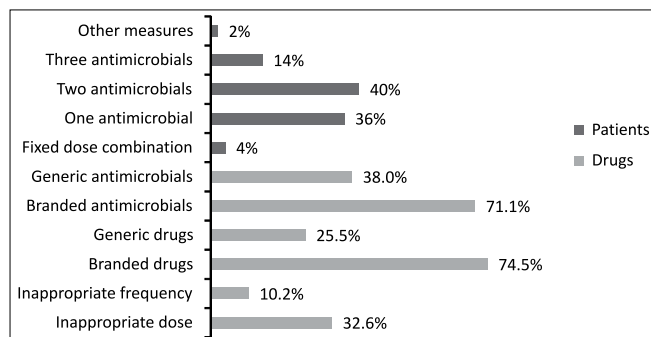


Figure 4: Some other parameters (n = 50)

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