

Antibiotic Prescribing Pattern in Department of Dermatology of a Teaching Hospital in Tamil Nadu

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ABSTRACT

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The present study was undertaken to study the prescribing behavior of clinicians in treating identified bacterial infection, cost of treatment, prescription error and patient counseling to improve the use of medicine from the patient view point. 132 patients with bacterial skin infections were selected from both out patients and inpatients at the time of ward round on daily basis, done in the department of Dermatology at RMMC & Hospital Annamalainagar, T.N, India and subjected for analysis according to the WHO/DSPRUD Indicators. It was observed that maximum number of cases (29.97) were in male patients between the age group of 20-39 years. Secondary infection was found most common (56.82%) and oral antibiotics were highly prescribed (66.18%) than topical antibiotic (23.04%). Most commonly used topical antibiotic was mupirocin (11.52%) while highly prescribed oral antibiotic was ampicillin (26.70%) and prescribing of parenteral preparation was rare. It was found that the total number of patients completely cured were 96 (11.36%). Among Prescription error occurred during practice it was observed that medication related error was more (43.28%) than duration related error (29.85%). During the follow up period it was found that counseling was effective in imparting the knowledge of time of medication (80%) and the importance of duration of treatment (90%). The WHO is advocating the promotion of rational use of drug by promoting the implementation of standard treatment guideline and essential drugs. The development and implementation of treatment guideline is a multidisciplinary activity of the health care team in which Pharmacist can play an active role.

Key words: Rational drug use, antibiotic, medication error, skin infection,

INTRODUCTION

Clinically and economically inappropriate prescribing in many forms including inappropriate and irrational use of antibiotics constitutes a major health problem. This problem is considered serious due to the risk of adverse clinical outcome, such as the spread of resistant bacteria and adverse economic impacts due to the high cost of clinically unnecessary antibiotics. Principles of good prescribing are based on sound knowledge and understanding of the pathophysiology of disease to be treated, and the knowledge of risks and benefits of the medicine.^{1,2} Irrational prescribing is a habit, which is difficult to change. Various factors which contribute to irrational prescribing include; lack of unbiased source of information, uncertainty about diagnosis, limited experience, aggressive drugs promotion by pharmaceutical industry and time patients demand etc. There was high

prevalence of polypharmacy including antibiotic and prescriptions by brand names thus increasing the cost of prescription. Although single intervention did not show much improvement in core as well as complimentary drug use indicators but regular discussion with the prescribers would probably check the deeply rooted wrong prescription and disbeliefs about drug use. Appropriate drug use by patients and adherence to instruction given by the prescriber is an integral part of successful rational drug use programme. Patient's non adherence to the prescribed treatment is a global problem. The reasons for poor compliance could be lack of instructions provided with the prescription, low literacy and poor dispensing practice. Patients should be actively involved in the therapeutic encounter and treatment, because it is the patients who decide whether to go ahead with treatment or not. The patients should get doubtless unbiased information about the drugs they take viz; dosage, purpose, frequency of administration etc. Health planners often overlook dispensing and it can lead to determine the impact on health care delivery system. All of the resources required to bring a drug to patient

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may be wasted if dispensing dose not ensure that the correct drug is given to the right patient in an effective dosage and amount with clear instruction. Rational prescribing can be achieved by practicing evidence-based medicine.^{3,4} Since pharmacist is often the final link between prescribed medication and the patient, better interaction between pharmacists and the patient can lead to better patient knowledge about drug use and compliance to therapy.

MATERIAL AND METHODS

The present study was done in the department of Dermatology at RMMC & Hospital Annamalainagar, Tamil nadu, India. This was a prospective randomized study carried out from July 2005 to April 2006 including all the patients with bacterial skin infections.

Collection of data: The prescribing pattern of antibiotics in 132 patients with bacterial skin infections were collected from both out patients and inpatients at the time of ward round on daily basis. These were analyzed according to the WHO/DSPRUD indicators^{5,12} for:

- * Age distribution of patients.
- * Category wise distribution of patients.
- * Pattern of antibiotics usage.
- * Therapeutic efficacy of the medication.
- * Cost of drug therapy.
- * Prevalence of prescription errors.
- * Patient awareness.

RESULTS

Table I shows that out of 132 prescriptions maximum number of cases were in male between the age group of 20-39 years (21.97%) followed by 1-19 years (16.67%) and in female 1-19 years (18.94%) followed by 40-59 years (9.09%). Table II Reveals that secondary infection was found most common (56.82%) among the patients. Table III shows distribution of patients on the basis of route of administration, it was found that oral antibiotic were highly prescribed with (66.18%) than (23.04%) parenteral preparation.

Table I. Baseline demographic data of patients

Sl.no	Age in year	Male (%)	Female (%)
1	<1	2 (1.52%)	5 (3.79%)
2	1-19	22 (16.67%)	25 (18.94%)
3	20-39	29 (21.97%)	11 (8.33%)
4	40-59	15 (11.36%)	12 (9.09%)
5	>61	9 (6.82%)	2 (1.52%)

Table II. Category wise distribution of patients

Sl.no	Category	No of Patients	Percentage
1	Primary infection	51	38.64
2	Secondary infection	75	56.82
3	Recurrent infection	6	4.55

Table III. Distribution based on route of administration

Sl. no	Route of administration	No of patients	Percentage
1	Topical antibiotic	47	23.04
2	Oral antibiotic	135	66.18
3	Parenteral antibiotic	9	4.41
4	Oral combination	8	3.92
5	Topical combination	5	2.45

Table IV reveals that most commonly used topical antibiotic was mupirocin (11.52%) while highly prescribed oral antibiotic was ampicillin (26.70%) and prescribing of parenteral preparation was rare. It was found that the treatment was very effective in 72.73% patients and moderately effective in 11.36% patients (Table V). Table VI reveals that average number of drugs per prescription is 5 in secondary & recurrent infection and 4 in primary infection, and average cost per prescription was Rs.72.50, 65.14 and 56.03 in recurrent infected patients, secondary infection and in primary infected patients respectively.

Table IV. Antibiotic used pattern

Sl. no	Name of Antibiotic	No of patients	Percentage
1	Mupirocin	22	11.52
2	Sisomicin	10	5.24
3	Fusidic acid	3	1.57
4	Nodifloxacin	2	1.05
5	Framycetin]	10	5.24
6	Sulfadiazine	1	0.52
Oral			
1	Ampicillin	51	26.70
2	Erythromycin	32	16.75
3	Ciprofloxacin	16	8.38
4	Gatifloxacin	1	0.52
5	Doxifloxacin	6	3.14
6	Metronidazole	16	8.38
7	Azithromycin	1	0.52
Parenteral			
1	Amikacin	3	1.57
2	Ampicillin	2	1.05
3	Erythromycin	2	1.05
Oral combination			
1	Ampicillin and cloxacillin	3	1.57
2	Amoxicillin and cloxacillin	5	2.62
Topical combination			
1	Fluticasone propionate and mupirocin	5	2.62

Sl. no	Category	Outcome	Percentage
1	Very effective	96	72.73
2	Moderately effective	15	11.36
3	Mild/Not effective	4	3.05
4	Not follow up	17	12.88

Sl. no	Category	No of drugs	Cost (in Rs.)
1	Primary infection	4	56.03
2	Secondary infection	5	65.14
3	Recurrent infection	5	72.50

Among the prescription errors occurred during practice (Table VII), it was observed that medication related error were more (43.28%) than in duration related error (29.85%). Table VIII reveals that before counseling out of 132 patients only few patients had the knowledge about time of medication & direction (60%), importance of duration of treatment (55%). During the follow up period it was found that

counseling was effective in imparting the knowledge of time of medication (80%) and the importance of duration of treatment (90%).

Sl. no	Prescription error	No of patients	percentage
1	Dose Not mentioned	2	1.49
	Wrong	3	2.24
	Other	-	-
	Dose frequency		
2	Not mentioned	24	17.91
	Wrong	-	-
	Other	-	-
3	Dose duration		
	Not mentioned	37	27.61
	Wrong	3	2.24
4	Other	-	-
	Drug interaction	7	5.22
5	Medication error	58 4	3.28

Sl. no	Patients awareness	Pre counseling (% of patient known)	Post counseling (% of patients known)
1	Time of medication & direction (if applicable)	60%	80%
2	Duration of treatment	55%	90%
3	What should you do if you forget to have drugs	30%	70%
4	Do you know what other food/ medication should be advised while taking these medication	45%	65%

DISCUSSION

Antibiotics represent one of the most commonly used drugs. Their irrational use leads to a number of consequences in term of cost, side effects and bacterial resistance. Pharmacoeconomics plays an important role in rational therapeutic decision making.

In this study, we found a higher incidence of infection in male between the age group of 20-39 years and in females of 1-19 years. Secondary infection was more (in 75 patients) in comparison to other infection. The type of infection plays an important role in the management. The average number of drugs and cost per prescription was high in recurrent infection cases which was Rs.72.50 respectively. In general, due to multiple infections, patients are at a greater risk of polypharmacy.⁶ In recurrent infections rather than given broad spectrum antibiotic it is better to prescribe antibiotic based on pus culture sensitivity testing.

As per as prescribing habit of antibiotic in different routes is

concerned, the frequently prescribed antibiotics in oral, topical and parenteral route are ampicillin (26.70%) mupirocin (11.52%) and amikacin (1.57%) respectively. Combination of amoxicillin & cloxacillin (2.62%) is the main combination in oral route and combination of fluticasone propionate & mupirocin (2.62%) is the only combination in topical route. This is good prescribing habit oral dosage form as parenteral dosage can definitely play an important role in improving patient's adherence to treatment.⁷ By the adequate use of topical antibiotics, the over use of oral antibiotic can also be reduced.

According to the study 43.28% of medication errors were found among the total prescription error followed by dose duration related error (29.85) and dose frequency related error (17.91). Prescription errors are very common,^{8, 9} especially with fresh doctors.¹⁰ The basic problem which contributes to the irrational prescribing is that the medical students were not adequately instructed.¹¹ Medication errors during practice should be reduced for better therapeutic efficacy.

In our study a patient awareness centre was maintained in the pharmacy where all patients were counseled and educated. We found that out of 132 patients only few patients had knowledge about drug and importance of duration of treatment before counseling. During the follow up period it was found that counseling was effective in imparting the knowledge of drugs and importance of duration of treatment.

An agreed clinical guideline helps in the selection of essential drugs. The essential drugs may be limited in number but they should be carefully selected based on the clinical guidelines. The development of treatment guidelines and essential drugs list are of more importance in resource poor situations where the availability of drugs in the public sector is often erratic.

The World Health Organization (WHO) is advocating the promotion of rational use of drugs by of promoting the implementation of standard treatment guidelines and essential drugs.^{5,12}

The process for guideline development should be aimed at identifying intervention that will ensure the best possible health outcomes. The purpose of treatment guideline is to encourage the treatment that offers individual patients maximum likelihood of benefit and minimum harm and is acceptable in terms of cost.

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CONCLUSION

The standard treatment guidelines and essential drugs are the basic tools for assisting health professionals to choose the most appropriate medicine for the given patient with a given condition. It should be followed by the appropriate use of the selected medicine. Health care providers and those responsible for dispensing medicines should take every opportunity to inform patients about the rational use of drugs, including the use of drugs for self medication at the time they are dispensed.

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