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Impact of Clinical Pharmacist's Intervention on Use of Anti-microbials in Dermatology Department in Tertiary Care Hospital

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Abstract

The standard treatment guidelines and essential drugs are the basic tools for assisting health professional 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. The study was done in the department of Dermatology at RMMC and hospital, Annamalainagar. 132 Cases of selected Bacterial skin infection were collected during the pre intervention and post intervention studies. Unit I work placed as a control while unit 2 was placed as test during the adherence study. Out of 132 prescriptions 29 number were found in male patients between the age group of 20-39 years (21.97%) Therapeutic efficacy was found in 26 patients to be increased significantly in test unit of intervention as compared to pre intervention test unit i.e. 23 patients. The average drugs per prescription, medication error, duration of therapy and the cost of therapy per prescription got reduced in post intervention study. The first line choice of standard antibiotics as advised in WHO and DSPRUD guideline, dose and duration should be as described in standard texts (BNF,WHO's formularies etc.), and prescribing of narrow spectrum antibiotics in skin infection is preferable to broad spectrum if therapeutic outcome is expected to be same (substantiated with sensitivity testing). The study on the prescribing pattern and implementation of treatment guideline for selected bacterial skin infection has helped to increase therapeutic efficiency to significant extent Treatment guidelines have to be developed in a similar manner for other common disease of dermatology. For rational use of drugs these guidelines should be revised periodically and a new treatment option should be adopted based on new findings.
Key words: Antimicrobial agents, clinical pharmacist's intervention

INTRODUCTION

The rational use of drugs is a programme implemented in India by the Delhi State Government as a collaborative effort with the WHO. Also, actively involved in the programme is the Delhi Society for promotion of rational use of drugs. The Delhi society for rational use of drugs was set up in 1996 with the objective of establishing ethical criteria for drug promotion, developing methods for availability of safe and effective drugs ensuring quality and improvement in procedure in procurement and rational prescription of drugs. The objective of the programme is to ensure a selected list of medicine which can treat 90% of the ailments diagnosed in the hospitals and health care facilities. This medicine should be of good quality so as to be efficacious. 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 in fact a multidisciplinary activity of the health care team in which pharmacist can play an active role. In other words, Pharmacist can contribute towards the promotion of safe, cost effective and quality use of medicine or rationalization of drug therapy by his active participation in developing and implementing treatment guidelines in a health facility[1].

The procedure used to develop the standard is increasingly based on thorough evaluation of the evidence, including an appropriate analysis of published options and also the opinion of expert panels. The statements are intended to be a distillation of current evidence and opinion on best practice.
The process for guideline development should be aimed

at identifying intervention which will ensure the best possible health outcome. Also there is a clear need for the development of prescribing guidelines and educational initiatives to encourage the rational and appropriate use of drugs[2, 3]. The purpose of treatment guideline is to encourage the treatment that offers individual patients maximum likelihood of benefit in terms of cost. Recommendation contained in guideline should be based on the best possible evidence of the link between the intervention and clinical outcomes of interest.

MATERIALS AND METHODS

Design

This was a prospective randomized study carried out from July 2005 to April 2006 which includes all patients with primary, secondary and recurrent bacterial skin infection. The total patients were divided into two groups: test group (provided with standard treatment guidelines) and control group (guidelines not provided). The study was done in the department of Dermatology at RMMC and hospital, Annamalainagar. 132 Cases of selected Bacterial skin infection were collected during ward round participation in in-patient department and sitting with clinicians in out-patient department for the pre-intervention and post-intervention studies. Group I as a control while group 2 mention as test during the adherence study in both pre and post intervention studies.

Designing a data collection form

A data collection form was designed and the required data was collected from the prescription. The data include name, age, sex, weight, patient identification number, date of visit, report of ADRs, diagnosis, detail of therapeutic management and follow up. Prescription of all patients with bacterial skin infection was collected in the out patients and in patient at the time of ward rounds on daily basis. The collected data were analysed after considering expert opinion of the clinicians. The prescriptions were analyzed to find out average duration of treatment, number of drugs per prescription, medication error and average cost of per prescription. Therapeutic efficacy was analysed by getting follow up from the patients,

Developing standard treatment guidelines

The treatment pattern was analyzed and compared with that given in the standard reference and also in the various standard treatment protocols developed by WHO and DSPRUD. 50 cases of antibiotic sensitivity testing were completed including 25 cases of retrospective and 25 cases of prospective to cover the most common pathogens for developing standard treatment guidelines.

Intervention

The collected information was discussed with the clinician and most acceptable protocol with objective of promoting rational use of antibiotics was implemented.

Adherence study

A study was conducted to monitor the adherence by routine discussion if clinician's follow to standard treatment guidelines by making use of all the parameters used earlier.

Statistical analysis

All values were expressed Student's t-test. $P<0.05$ was considered as statistically significant.

RESULTS

The patients were divided into three categories based on the state of infection that is primary infection, secondary infection and recurrent infection. Table 1 shows that Out of 132 prescriptions 29 number were found in male patients 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%) and in Table 2 it was found that the therapeutic efficacies were not changed among control unit of pre intervention and post intervention studies. Therapeutic efficacy was analysed by getting follow up from the patients was found to be increased significantly ($P< 0.05$) in test unit of intervention as compared to pre intervention test unit.

Table 3 showed that average duration of antibiotic therapy was not changed in control units of post intervention study. Test unit of post intervention showed significant ($P< 0.05$) decrease in average duration of antibiotic therapy as compared to test unit of pre intervention study and in table 4 the average cost per prescription was not significantly changed ($P< 0.05$) in control and test unit of post intervention study when compared with control and test unit of pre intervention study respectively.

Table 5 showed that medication error were not changed in control unit of post intervention study compared to pre intervention study, but it was reduced significantly ($P< 0.05$) in test unit of post intervention as compared to test unit of pre intervention. The average number of drugs per prescription was significantly changed only in the test unit of post intervention study when compared with test unit of pre intervention study (Table 6).

DISCUSSION

In this present study an attempt was made by the clinical pharmacist to promote rational use of antibiotics in skin infection by means of developing and implementing standard treatment guidelines. While accessing the rationality of prepared protocol, the following are taken as standard (or rational). The first line choice of

Table 1. 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 2. Therapeutic efficacy and outcome during pre and post intervention studies

Sl.no	Category	Pre-intervention				Post-intervention			
		Control		Test		Control		Test	
		Outcome	%	Outcome	%	Outcome	%	Outcome	%
1	Very effective	23	69.7	23	69.7	24	68.6	26	83.9
2	Moderately effective	5	15.1	4	12.1	5	14.3	1	3.2
3	Mild / Not effective	1	3.0	1	3.0	1	2.9	1	3.2
4	No follow up	4	12.1	5	15.1	5	14.3	3	9.7

Table 3. Comparison of average duration of antibiotics therapy (in days) during pre and post intervention

Sl. No.	Category	Pre-intervention		Post-intervention	
		Control	Test	Control	Test
1	Primary infection	8	8	8	6
2	Secondary infection	10	10	9	7
3	Recurrent infection	10	10	10	8

Table 4. Comparison of average cost per prescription pre and post intervention studies

Sl. No.	Category	Pre-intervention		Post-intervention	
		Control	Test	Control	Test
1	Primary infection	56.03	56.17	57.17	48.95
2	Secondary infection	65.14	64.37	64.81	54.62
3	Recurrent infection	72.50	73.81	70.18	60.43

Table 5. Comparison of prescription error during pre and post intervention studies

Sl. No.	Category	Pre-intervention				Post-intervention			
		Control		Test		Control		Test	
		outcome	%	outcome	%	outcome	%	outcome	%
1	Dose not mentioned	1		-		1		-	
	Wrong	-	3.0	1	3.0	2	8.6	-	-
	other	-		-		-		-	
2	Dose frequency not mentioned	6		5		11		8	
	Wrong	2	24.2	2	21.2	-	31.4	-	25.8
	Other	-		-		-		-	
3	Dose duration not mentioned	11		10		8		8	
	Wrong	-	33.3	1	33.3	2	28.6	-	25.8
	other	-		-		-		-	
4	Drug interaction	2	6.0	2	6.0	2	5.7	1	3.2
5	Medication error	17	51.5	16	54.5	16	45.7	7	20.0

Table 6. Comparison of number of drugs per prescription during pre and post intervention studies

Sl. No.	Category	Pre-intervention		Post-intervention	
		Control	Test	Control	Test
1	Primary infection	4	4	4	3
2	Secondary infection	5	5	5	4
3	Recurrent infection	5	5	5	5

standard antibiotics as advised in WHO and DSPRUD guideline, dose and duration should be as described in standard texts (BNF,WHO's formularies etc.), and prescribing of narrow spectrum antibiotics in skin infection is preferable to broad spectrum if therapeutic outcome is expected to be same (substantiated with sensitivity testing). The study on the the prescribing pattern and implementation of treatment guideline for selected bacterial skin infection has helped to increase therapeutic efficiency to significant extent (increase form 69.7% to 83.9%). These should be followed by drug utilization studies and feedback to the clinicians regarding prescribing behavior since the use of feedback has been shown to have a significantly favorable impact on clinician's compliance with hospital guidelines, especially on antimicrobial prescribing[5]. The average drugs per prescription, medication error, duration of therapy and the cost of therapy per prescription got reduced. Although several studies reported cost savings only due to decreased antibiotic use[6, 7, 8.] For the treatment guidelines to be implemented in a successful manner the prescribing behavior has to be constantly analyzed and monitored and the treatment pattern should be revised whenever necessary. Interpersonal communication of clinicians and clinical pharmacy service should be made mandatory in health setup to improve medicine use.

CONCLUSION

Treatment guidelines have to be developed in a similar manner for other common disease of dermatology. For rational use of drugs these guidelines should be revised periodically and a new treatment option should be adopted based on new findings. Agreed clinical guidelines lead to more rational prescribing and help in compiling a list of essential drugs, which in turn helps in controlling the cost of prescription, prescription errors, number of drugs per prescription and duration of therapy.

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