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Prescription patterns of antibiotics used in urban and rural hospitals

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ABSTRACT

Antibiotics are the most extensively used drugs in hospital settings. Wide ranges of antibiotics are available to treat various types of infections. Though the choice of antibiotics prescribed depends upon the clinical interest, culture sensitivity, age and gender, their extensive use may lead to the poor therapeutic outcome in terms of both health and economic.

The present study was conducted over a period of eight months guidelines by the department of clinical pharmacy at the rural and urban government hospitals of Nallajerla, Venkataramannagudem, Tadepalligudem, Tanuku, Peravali, and Dwarkatirumala of West Godavari District, Andhra Pradesh.

A total of 250 cases were reviewed to evaluate the prescribing habits of physicians in the treatment of various types of infections. The result found that the majority of the patients were treated with quinolones (36.55%) and the major root of drug administration employed was oral route. This study noticed that there was prescription pattern of antibiotics used in urban and rural hospitals.

250 patients were prescribed antibiotics; 128 were males (51.2%) and 122 were females (48.8%). Median duration of hospitalization was 10 days. 390 antibiotics were prescribed and the most common were ciprofloxacin, amoxicillin, metronidazole, ampicillin, aminoglycosides, macrolide antibiotics and cephalosporin and Sulfonamides.

Excessive and inappropriate use of antibiotics contributes to the development bacterial resistance which is becoming a severe problem in the internal medicine ward. Formulation of a policy for hospital antibiotic use and an educational programme especially for junior doctors is required.

Keywords: Antibiotics, Infections, Internal medicine ward, Bacterial resistance.

INTRODUCTION

The discovery of the first antibiotics by Alexander Fleming [1] in 1928 revolutionized the therapy of infection and saved millions of lives especially during the two world wars.

Antibiotics are the substances produced by microorganisms which selectively suppress the growth (or) kill other microorganisms at very low concentrations.

Progressively falling costs and increasing availability of antibiotics, prescribing became less judicious.

Over use of Antibiotics (or) inappropriate use of Antibiotics in various developing countries it leads to Antibiotic Resistance, Increasing the health care cost and adverse reaction on patient health. Especially when given parent rally for a longer duration than actually required.

The International Network on Antibiotic Use in Developing Countries is a multi-country effort to document patterns of antibiotic overuse. The Network aims to compile meaningful quantitative information on which to base recommendations for appropriate antibiotic use in developing countries, with the end in view of significantly contributing solutions to the worldwide problem of antibiotic resistance. This report is the second part of a study on patterns of antibiotic use in the Philippines. Findings from the first phase, reflecting antibiotic use in an urban community in Metropolitan Manila, have been previously reported [2].The second phase is a drugstore survey of antibiotic use in a Philippine Rural Community.

As in most developing countries, there is a mall distribution of drugs between urban and rural areas in the Philippines. Metropolitan Manila, comprising only 12% of the total population, consumes 48% of all drugs sold while the rest are concentrated in other urban areas and towns [3]. The top-selling class of drugs is the systemic anti-infective agents, accounting for 24.2% of drug sales in 1986. The average frequency of antibiotics prescribing in the neighboring Pune was found to be 43% 4.in a north India study of 2400 prescriptions, antibiotics were found to be widely and inappropriately used by practitioners [5].

It may be assumed that these antimicrobial drugs are likewise unevenly distributed among the urban and rural consumers. It is thus important to determine the patterns of antibiotic usage in the rural areas where the drug supply is scarcer and less accessible but where the need for antibiotics is most pressing.

Global scenari

Currently Antimicrobials are the most widely used category of drugs in the world in 2004 the 'WHO' reported the figure of unwarranted antibiotics prescriptions standing at roughly 50%.

Overuse and misuse of antibiotics was particularly high (50% to almost 100%) in upper Respiratory infections, most of which are generally viral and self-limited a 'WHO' study of antibiotic use in 13 low-middle-high income countries from 1992-1996 revealed that antibiotics were wrongly prescribed for approximately 30% of cases of Urinary tract infections. Studies have revealed the existence of compulsive antibiotic prescribing all over the world [6].

Antibiotics misuse [7] and overuse is common not only in developing countries but also in the developed world.

A large study in the USA found that 51% of patients with colds and URTI were receiving antibiotics and estimated that over 20% of all antibiotic prescriptions were clinically useless. Only 20-25% of antibiotics using in the USA. The situation of drug overuse/irrational use in 'India'

Utilization studies and prescription audits in GOA have shown that antibiotics constitute about 39% of drugs prescribed to outdoor patient (O.P) 8, 30% in indoor patients (I.P) 9 and 22% in rural hospitals [10].

Medical activities in India have been raising fingers at the rampant misuse of antibiotics for quiet sometimes now [11]. Over prescribing of antibiotics has been widely reported [12, 13] .In GOA revealed that poly pharmacy was the norm with 80% of prescriptions having more than one medicine. Many patients received 5/more preparations simultaneously. Antibiotics were included in almost a quarter of prescriptions.

In North Indian study of 2400 prescription antibiotics were found to be widely and inappropriately used by practitioners. A study of 2953 prescription from PHCs in south India revealed that patients received on average of 2.71 drugs accounting for more than 80% of the drugs prescribed.

In Andhra Pradesh, 60% of Antibiotics prescribed in rural areas and 47% of them in urban areas, were non-essential compared to 47% in urban areas [14].

Studies also revealed that in the majority of cases antibiotics prescribing was empirically directed of the putative site of infection. Since the meager culture facilities are available in a very small number of hospitals in India, empirical antibiotic use is rampant [15]. The distressing fact is that where these are available studies show that the third/fourth generation Cephalosporin plus Anti-Anaerobic agent were preferred (84% cases) for treating intra-abdominal infections.

Studies [16] show that the third/fourth generation Cephalosporin plus an anti-anaerobic agent preferred (84% cases) for treating intraabdominal infections. Approximately 55% of the surgeons prescribed "Single antibiotic" for clean surgeries. Combination of two (or) three antimicrobial agents was preferred in clean contaminated and dirty surgeries respectively. Third generation Cephalosporin's Ceftriaxone and Cefotaxime were the commonly prescribed antibiotics (80%) for all surgeries. In major cases antibiotics were prescribed for durations longer that recommended in standard guidelines.

The study of Jawaharlal Nehru Medical College, AMU revealed that the most commonly prescribed drugs by general surgeons were antibiotics (93%) mostly 'Ceftriaxone and Amikacin.

Unnecessary medication

Unwanted antibiotics prescriptions stands at roughly 50% according to figures gathered by surveys presented to WHO in 2000 about 60% of antibiotics in Nigeria were prescribed in 1996 were not necessary and 40% of medicine expenditure in the same year was wasted due to inappropriate prescriptions.

Retrospective analysis of case records in Nepal in 2003 showed that 26.2%cases, the use of the antimicrobials was irrational.

The results suggested ever increasing potential of irrational use of antibiotics for children including short courses, over prescribing and self-medication.

In a North Indian study of 2400 prescriptions, antibiotics were found to be widely and inappropriately used by practitioners.

Side effects of antibiotics

Antibiotics can potentially do the same to the host what they do the bacterium. For example: Trimethoprim can depress folic acid in both microorganism and the host.

Many antibiotics can lead to adverse effects through multiple means: Chloramphenicol depresses bone marrow in all the recipients but may drastically do so in a person with idiosyncrasy. A state food and Drug Administration "SFDA" survey revealed that nearly 50% of the total side-effect reports from drugs were for prescribed antibiotics.

Recently-Fluor quinolones are being blamed for multiple adverse effects which may be long lasting. In addition to development of resistance, "Super infection" may result from overuse prolonged administration of broad spectrum antibiotics.

Many wide spectrum antibiotics are recognized to cause death of the normal Intestinal and Vaginal flora. Fungal infections are linked to overuse of such expensive antibiotics as Cephalosporin's.

Sometimes the adverse effect of the antibiotic is related to the dose administered and this require precise dose calculation before administering the antibiotic to the patient especially in case of injection because the amount that reach the blood is higher than oral administered antibiotics. Calculating the antibiotic dose per kilogram of patient body weight is the best solution to avoid this problem.

The third type of adverse effect of antibiotics is due to the amplification of the body reaction against some antibiotic substances. Some patients may develop allergic reactions against certain types of antibiotics and this side effect could be treated easily through performing a simple allergy test before starting the course of treatment to find out whether the body can tolerate the antibiotic substance or not. If the patient develops skin rashes then the antibiotic should be replaced with another to avoid more serious allergic reactions.

Another serious side effect which is related to the dose of antibiotics is the toxicity. Toxicity is now thought to be one of the most serious side effects of antibiotics and doctors should pay extra care for dose calculation of the administered antibiotic especially in patients who do not normal body condition. Patients who suffer from kidney dysfunction are not able to eliminate the metabolites of the antibiotic substance, those who suffer from liver disease also are not able to completely degrade antibiotic. Patients who suffer from immunosuppressive diseases like HIV and AIDS may suffer from the same adverse side effects.

Antibiotics are one of the most prevalent drugs used in treatment of many ailments and diseases. Although there are several types and categories for antibiotics but they all poses the same risk for adverse side effects. The side effects or the adverse effects range from simple side effects due to the nature of the pharmacological substances of the

antibiotic till serious toxicity due to the substance itself or any of its metabolites in the body.

The simplest side effect is the diarrhea associated with the administration of the antibiotics, especially in long course treatments. This occurs because the antibiotic affects the normal existing flora in the gastrointestinal tract while affecting the pathogenic microorganisms in the same time so, it causes lose stool with abnormal motility pattern of the GIT. This could be easily solved with the usage of probiotic with antibiotics. The probiotics tend to preserve the normal flora of the gastrointestinal tract and regain the normal motility of the GIT. Other side effects related to the same cause are nausea and vomiting and probiotics are the best solution for both of them

Problem of resistance

Irrational uses of antimicrobials are contributing to growing resistance to treatment for the so many diseases that contribute most to the burden of illness in low-income countries. The irrational use of pharmaceutical drugs, contributing to increasing resistance was particularly discussed at the 9 day long World Health Assembly in May"2005"

The WHO says that Anti-Microbial resistance is one of the world's most serious public health problems a major cause being the wrong use of medicines.

Antibiotics resistance

Antibiotic resistance is defined as the increased tolerance of specific type of bacteria against specific types of antibiotics. This means that the microorganism can withstand the therapeutic dose of the antibiotic without showing any effect on the microorganism.

The scientists searched for a long time before they discovered the real reasons for antibiotic resistance. The first cause was the usage of sub - therapeutic doses of antibiotics over a long period of time. This appeared when the farmers used antibiotics as a growth promoter in their animals' feed. The antibiotic residues that are present in meat will enter the body of the consumer and start to accumulate gradually giving time for the pathogenic microorganisms to adapt with it and develop resistance.

Another important reason for antibiotic resistance is the administration of low doses of antibiotic in some household items or toys which was thought to combat daily infections in children but lately, it was discovered to be one of the main reasons for developing antibiotic resistance against specific species like staphylococcus aurous.

Antibiotic resistance occurs through what is called natural selection and mutation. The simple explanation for this process is that when an antibiotic is administered to combat a certain species of microorganisms it may cause a mutation in the genetic code of some microorganisms of this specific species causing them to survive the course of antibiotic so, some of these microorganisms will die and the mutant microorganism will tend to replicate and spread the mutant gene between them horizontally, and the colony became fully resistant to that type of antibiotic.

Scientists discovered an important use of the drug resistance and they started to use it in genetic engineering. The simple idea behind that is binding the gene that they want to add to the microorganism with the resistance gene then they introduce it to the population of the colony, after that when the antibiotic is introduced to the same colony, the microorganisms that failed to implement the new gene and the resistance gene will die from the effect of antibiotic leaving the mutant microorganism only in the colony.

While this is a useful usage of antibiotic resistance but scientists are still looking for a solution for antibiotic resistance in humans. The first solution was the development of new types of antibiotics to help overcome the antibiotic resistance against the old drugs. This is a continuous method because after a while, a specific microorganism will develop resistance against the new drug and scientists will start looking for another new antibiotic.

Classification of antibiotics

Antibiotics are of the oldest discovered drugs that combat specific microorganisms like bacteria and fungi. The antibiotics are classified according to three criteria and although that each category contains several drugs but each one of them is unique in some features and effects.

The first classification is according to the spectrum. The spectrum means the number of the organisms affected by the same drug. There are narrow and wide spectrum antibiotics. The wide spectrum antibiotics affect several types of bacteria and fungi and it is usually used where the specific

type of the microorganism is unknown. For example, when we are treating an bacterial caused inflammation, we know that we are dealing with a staphylococcus or streptococcus microorganism so the doctor can proceed with the treatment without asking for more lab tests to identify the specific type of the microorganism using the broad spectrum antibiotics but in other cases, where we know the specific type of the microorganism, we can use the narrow spectrum antibiotics that are more effective on specific microorganism but less effective on others.

The second classification is according to the type of the action of antibiotics. It could be bactericidal or bacteriostatic. The bactericidal antibiotics kill the harmful microorganism while the bacteriostatic ones tend to slow down their growth and give the body the chance to use its immune system against the microorganisms. In case of virulent microorganisms or in case of weak immunity, bactericidal antibiotics are preferred because they will omit the problem from its roots but they will affect the normal microorganisms in the body. In mild cases, bacteriostatic antibiotics could be used because of their minor side effects.

The third classification of antibiotics is according to the route of administration of the drug. The prevalent route of administration is the oral route but, there are other routes of administration that are more effective in certain cases like injection or topical applications.

Antibiotic injection is used when the doctor wants to see a rapid onset of action and a quick presence of antibiotic in the blood stream. It is used in severe cases and as a postoperative regime. Topical application of antibiotics is more used in cases of superficial inflammations and skin infections. Direct application of antibiotics on the affected part make it more powerful in combating the microorganism because when antibiotic is administered through oral or injection route, some of it is degraded in the liver before it reach the peripheral circulation and superficial legions.

General objectives

To assess the prescribing habits of antibiotics used in Urban and rural hospitals.

Specific objectives

- To enhance the quality use of antibiotics.
- To promote the cost effective use of antibiotics.
- To minimize the risk of adverse drug reactions.
- To improve the patient care.
- To reduce the drug resistance.
- To disseminate the project findings to the clinical and scientific communities and to the general public.
- Collect relevant demographic information and information on duration of hospitalization of patients admitted to the Internal Medicine ward and prescribed antibiotics during the study.
- Obtain information on the antibiotic prescribing pattern and the disease conditions for which antibiotics were prescribed.

MATERIALS AND METHODS

Source of data

Prescriptions treatment charts of patients who were treated for infections across the various departments of hospitals.

Study site

The patterns of Antibiotics used in a Rural and Urban areas. We observed Antibiotics purchases and dispensing in the rural hospitals in Nallajerla, Venkataramannagudem, Peravali and Urban hospitals in west Godavari municipalities of Tadepalligudem, Tanuku and Dwaraka Tirumala**.**

Method

The study includes both retrospective and prospective treatment chart review. It was conducted over a period of 8 months. Those patients who met study criteria were identified from inpatients wards and outpatient departments. Data of the patients were collected from medical record section and medicine department.

A suitable data collection form was designed for the data collection. A total of 250 cases with a diagnosis of infections were reviewed for data collection. Data is collected from various infections of inpatients and out patient's diagnosis.

The patterns of Antibiotics used in this survey of rural community. The type of Antibiotics used for a wide range of illnesses is similar in the two populations surveyed.

The usages of antibiotics are similar in the two areas. Antidiarrheal agents containing antibiotics were common.

- Dysentery
- Skin diseases
- Diarrhea
- Pains were the common illnesses for which antibiotics were used.

Although legislative, financial and other logistic considerations play an important role in the patterns of drug utilization, attention should also be placed on the people's beliefs with regard to antibiotics. Use of antibiotics as 'Vitamins' are 'First aid' prior to seeing a physical has been previously noted.

RESULTS AND DISCUSSION

Patient's demographic characters

A total of 250 patients were treated with antibiotics for various types of infections. The mean age of the patient was found to be 34.25±20.16 years ranging from 1 to 60 years. The number of patients were maximum from middle aged group(16-35years) which accounts for 49.6% of patients ,the 250 of patients 36-58 (31.6%) and 59(5.6%) were male and female patients respectively. Male patients 128(51.2% and females 122(48.8%) including children.

The patients demographic data, different types of infections, classes, subclasses of antibiotics used in infections, mode of administration, patient receiving parenteral, oral, both parenteral and oral antibiotic therapy, patients receiving mono therapy and combination therapy**.**

Table -1: Patient Demographic Characteristics

S NO	DEMOGRAPHIC CHARACTERISTIC	NUMBER OF PATIENTS	%OF PATIENTS
1	AGE (in years)		
	0-15	33	13.3%
	16-35	124	49.6%
	36-58	79	39.6%
	Above58	14	5.6%
			100%
2	SEX		
	Male	128	51.2%
	Female	122	48.8%
			100%
3	INPATIENTS	75	30%
4	OUTPATIENTS	175	70%
5	RESIDENCE		
	Rural :	108	43.2%
	Urban:	142	56.8%
			100%

Table-2: Patients Demographic Characters Based On Age

S.NO	AGE (YEARS)	TOTAL NUMBER OF PRESCRIPTIONS	PERCENTAGE OF PRESCRIPTIONS (%)
1	O-15	33	13.2
2	16-35	124	49.6
3	36-58	79	31.6
4	Above 58	14	5.6
	Total	250	100

Table-3: Number of prescriptions based on type of diagnosis

S.no	Diagnosis	Number of prescriptions	Percentage of prescriptions
1	Fever	63	25.2
2	Typhoid	6	2.4
3	Hand fracture	6	2.4
4	Leg fracture	13	5.2
5	Diarrhea	32	12.8
6	Urinary tract infections	5	0.2
7	Respiratory tract infections	24	9.6
8	Wounds	6	2.4
9	Ear infection	11	4.4
10	Eye infection	12	4.8
11	Tooth ache	3	1.2
12	Burns	8	3.2
13	Tooth removal	3	1.2
14	Piles	8	3.2
15	Tubectomy	3	1.2
16	Rabies	1	0.4
17	Postoperative case	1	0.4
18	Labour pains	4	1.6
19	Abscess	3	1.2
20	Right hernia + hydrocil	3	1.2
21	Leucorrhoea	3	1.2
22	Skin allergy	9	3.6
23	Throat infection	5	2.4
24	Cellulites of leg	9	3.6
25	Joint pains	9	3.6
	Total	250	100%

Table-4: Number of antibiotics prescribed in each prescription and number of patients

S.NO	NUMBER OF ANTIBIOTICS	NUMBER OF PATIENTS	PERCENTAGE NUMBER OF ANTIBIOTICS
1	ONE	126	50.4
2	TWO	62	28.8
3	THREE	42	16.8
4	FOUR	20	8
	TOTAL	250	100%

Table-5: Different Classes of Antibiotics Used

S. No	Antibiotics	No. of antibiotics prescribed	Percentage Prescriptions
1	Quinolones	143	36.55
2	Amino Glycosides	41	10.50
3	Lincosamide Antibiotics	5	1.28
4	Tetracycline's	1	0.25
5	Nitro benzene Derivatives	3	0.76
6	Macrolide Antibiotics	12	3.07
7	Nitro Imidazole derivatives	44	11.27
8	Nitro furan derivatives	5	1.28

9	Nicotinic acid derivatives	5	1.28
10	β -Lactam Antibiotics	95	24.31
11	Sulfonamides	32	8.20
12	Amides	4	1.02

Table-6: Different Classes& Subclasses of Antibiotics Used

S. No	Antibiotics	No. of antibiotics prescribed	Percentage Prescriptions
1	Quinolones • Ciprofloxacin • Norfloxacin • Levofloxacin	143	36.55
2	Amino Glycosides • Amikacin • Gentamycin	41	10.50
3	Lincosamide Antibiotics • Clindamycin	5	1.28
4	Tetracycline's • Doxycycline	1	0.25
5	Nitrobenzene Derivatives • Chloramphenicol	3	0.76
6	Macrolide Antibiotics • Erythromycin • Azithromycin	12	3.07
7	Nitro Imidazole derivatives • Furazolidine	44	11.27
8	Nitro furan derivatives • Metronidazole • Ornidazole	5	1.28
9	Nicotinic acid derivatives • Isoniazide	5	1.28
10	B-Lactam Antibiotics • Amoxicillin • Ampicillin	95	24.31
11	Sulfonamides • Cotrimoxazole	32	8.20
12	Amides • Nitazoxanide	4	1.02

Table-7: Different Types of Combinations Of Antibiotics Used

S.no	Type of combination	Number of patients (%)
1	Aminoglycosides+Nitroimidazoles	1(0.9)
2	Quinolones +Nitroimidazoles	12(11.1)
3	Quinolones + Amino glycosides	12(11.1)
4	β-lactams + Quinolones	14(12.9)
5	Sulphonamides + Quinolones	7(6.5)
6	Nitroimidazoles + Quinolones	12(11.1)
7	Amino glycosides +sulphonamides	4(3.7)
8	β-lactams +sulphonamides	4(3.7)
9	β- lactams+Nitroimidazoles	3(2.8)
10	Nitroimidazoles + Nitrofurons	6(5.5)
11	Quinolones + Nitro benzenes	2(1.8)
12	β-lactams + Macrolides	1(0.9)
13	Macrolides+Lincosamides+Amides	1(0.9)
14	β-lactams +Sulphonamides+Quinolones	9(8.3)
15	Nitroimidazoles+Quinolones+Aminoglycosides	14(12.9)
16	Nitroimidazoles+Quinolones+β-Lactams	4(3.7)
17	Macrolides+ Lincosamides+Amides+Sulphonamides	2(1.8)
	TOTAL	**108(100%)**

Table-8: Mode of Drug Administration Based On Diseases

S.NO	DIAGNOSIS	ORAL	PARENTERAL	ORAL & PARENTERAL	TOTAL	% OF THE DRUG
1	Typhoid	-	1	1	2	0.8
2	Rabbis	1	-	-	1	0.4
3	GI Infections	24	4	10	38	15.2
4	Leucorrhoea	5	-	-	5	2
5	UTI Infections	4	-	-	4	1.6
6	Labor Pain	-	-	2	2	0.8
7	Ear Infections	-	-	10	10	4
8	Injury	12	5	-	17	6.8
9	Respiratory Infections	30	3	2	35	14
10	Cellulites	1	-	-	1	0.4
11	Fever	40	10	1	51	20.4
12	Tuberculosis	5	1	1	7	2.8
13	Tubectomy	-	2	1	3	1.2
14	Eye Infections	1	3	7	11	4.4
15	Tooth ach	7	-	-	7	2.8
16	Burns	6	-	-	6	2.4
17	Allergy	9	1	-	10	4

18	Postoperative	1	-	-	1	0.4
19	Wounds	2	-	-	2	0.8
20	Hernia	-	-	7	7	2.8
21	Piles	-	-	7	7	2.8
22	Throat Infections	3	-	-	3	1.2
23	Abscess	2	-	3	5	2

Table-9: Mode of Administration Based On Type of Drug

S. No	Name of antibiotics	Oral	Parentral	Oral&parentral	Total	Percentage
1	Amoxicillin	47	5		52	11.37
2	Norfloxacin	18			18	3.93
3	Ciprofloxacin	90	46	12	147	32.16
4	Isoniazide	5			5	1.09
5	Ethambutol	5			5	1.09
6	Pyrazinamide	5			5	1.09
7	Rifampicin	5			5	1.09
8	Metronidazole	31	11		42	9.19
9	Amikacin	6	25		31	6.78
10	Ampicillin	14	14		28	6.12
11	Clindamycin	7	0		7	1.53
12	Taxim	1	13		14	3.06
13	Gentamycin		10		10	2.18
14	Co-trimoxazole	36			36	7.87
15	Doxycyclin	2			2	0.43
16	Azythromycin	6			6	1.31
17	Nitazolamide	6			6	1.31
18	Ceftrioxane	3			3	0.65
19	Furazolidine	6			6	1.31
20	Ciphalaxim	3	2	1	6	1.31
21	Chloramphenicol		2		2	0.43
22	Cefotaxime	4			4	0.87
23	Ornidazole	2			2	0.43
24	Leavofloxacin	2			2	0.43
25	Erythromycin	7			7	1.5
26	Oflaxacin	3			3	0.65
	Total	316	129	13	457	100%

TABLE-10: Patients Receiving Parenteral, Oral, and both Oral and Parenteral Antibiotics Therapy

S. NO	ANTIBIOTICS	ROUTE OF ADMINISTRATION	PERCENTAGE
1	Quinolones:	156	38.23
	I. Ciprofloxacin Oral	90	22.05
	Ciprofloxacin Injection	46	11.27
	II. Norfloxacin Oral	18	4.41
	III. Leofloxacin Oral	2	0.49
2	Amino Glycosides	41	10.04

	I. Amikacin Oral	6	1.47
	Amikacin Injection	25	5.14
	Gentamycin Injection	10	2.45
3	Lincosamide	1.7	
	I. Clindamycin Oral	7	1.7
4	Tetracyclines	0.49	0.49
	I. Doxycyclines Oral	2	-
5	Nitrobenzene Derivitives	0.49	-
	I. Chloramphenicol Oral	-	0.49
	Chloramphenicol Injections	2	-
6	Macrolide Antibiotics	13	3.18
	I. Erythromycin Oral	7	1.7
	Erythromycin Injection	-	-
	II. Azithromycin Oral	6	1.47
	Azithromycin Injection	-	-
7	Nitro Imidazole derivatives	44	10.78
	I. Metronidazole Oral	31	7.59
	Metronidazole Injection	11	2.69
	II. Ornidiazole Oral	2	0.49
	Ornidiazole injection	-	-
8	Nitrofurone derivatives	-	-
	I. Furazolidine Oral	6	1.47
	Furazolidine injection	-	-
	II. Isoniazide Oral	5	1.22
10	β- lactum antibiotics	90	22.05
	(A) Amino Pencillins	-	-
	I. Amoxycillin Oral	47	11.51
	Amoxycillin Injection	5	1.22
	II. Ampicillin Oral	14	3.43
	Ampicillin Injection	14	3.43
	(B) Cephalosporins	-	-
	I. Cefotoxime Oral	3	0.73
	II. Cefexime Oral	4	0.98
	III. Cefalaxime Oral	3	0.73
11	Sulfonamides	-	-
	I. Cotrimoxazole Oral	36	8.82
12	Amides	-	-
	I. Nitazoxamide Oral	6	1.47

Antibiotics used

Majority (36.55%) of the patients were treated with Quinolones of the 250 patients. Ampicillin250mg prescribed such doses not achieve required therapeutic concentrations hence it would be a better choice to use either of these drugs alone containing 500mg.

The major number of infection are treated with Quinolones, Quinolones were used in patients who were below the age of 13years these classes of drugs are contraindicated to the pediatric population as they may cause musculoskeletal disorders. Combination therapy also used to cure the infections. Quinolones are widely used in combination therapy.

Patient's demographic characters

A total of 250 patients were treated with antibiotics for various types of infections. The mean age of the patient was found to be

34.25±20.16 years ranging from 1 to 60 years. The number of patients were maximum from middle aged group(16-35years) which accounts for 49.6% of patients ,the 250 of patients 36-58 (31.6%) and 59(5.6%) were male and female patients respectively. Male patients 128(51.2% and females 122(48.8%) including children.

The patients demographic data, different types of infections, classes, subclasses of antibiotics used in infections, mode of administration, patient receiving parenteral, oral, both parenteral and oral antibiotic therapy, patients receiving mono therapy and combination therapy.

Diseases treated

The total 250 patients were treated with antibiotics for various types of infections. From that diseases data major number of patients suffered from viral fever (25.2%) and respiratory tract infections (9.6%). In this data collection diseases are mainly seasonal disease or infections.

Number of antibiotics prescribed in each prescription

In this survey single antibiotics (50.4%) is prescribed in more prescription, medium number of prescriptions have two (28.8%),Three (16.8%) types of antibiotics and five types of antibiotics (8%) are prescribed in very less number of prescriptions based on diseased state of patient.

Combination of Quinolones

Quinolones- Amino glycosides (12.9%), Quinolone-sulphonamides (12.9%), Quinolones-Nitroimidazoles (11.1%), Quinolones – Beta lactam antibiotics (12.9%) and Quinolones - Nitrobenzene (1.8%). Data collected for treatment of infections contains mostly the drug combination, but also three drug combinations and four drug combinations are used.

Mode of administration

Mainly the drugs are administered by Oral route and parenteral routes. Oral route of administration is more preferable route of administration. But in children's and unconscious patients this route of administration is difficult. Parenteral route of administration is less preferred when compared to oral route of administration. As the parental formulations of antibiotics are less stable. They are prepared in powder form and converted into liquid form using water for injection at the time of administration. Total number of drugs administration through oral route of administration is 69% and parenteral route of administration is 28%. Sometimes both oral and parenteral therapy is used (2.8%) but this type of administration is less observed.

Mode of administration is based on infections

In majority of the infections, Oral route is major route and parenteral route is minor route. Fever- oral route (51%), parenteral route (19.6%),
Respiratory infection-
Oral route- (85%) parenteral route- (8.5%), GI infection- oral route- (63%), parenteral route- (10.56%) In some cases only oral route is used

- Urinary tract infection,
- Toothache.

Only parentral route of administration is used in treatment of Tubectomy.

In some cause oral and parentral route are used together for the treatment of infection.

CONCLUSION

In conclusion, comparison of the antibiotics prescription patterns in Rural and Urban hospitals shows that more antibiotics were prescribed in urban hospitals when compared to rural hospitals. In this study, majority of prescriptions were collected from out patients 175(70%) when compared to in patients 75(30%).

When prescriptions of male patients were compared with female patients, it showed that male's prescriptions contained more antibiotics, than female patients.

Majority of patients were treated with Quinolones. In combination therapy too, Quinolones were widely used when compared to other combinations of antibiotics.

AKRG COLLEGE OF PHARMACY
DATA COLLECTION FORM

Date :
IP/OP no :

Name of the patient :
Age :
Sex :
Address :
Past medical history :
Complaints :
Diagnosis :
Drug prescription :

S. No	Name of the drug	Route of administration	Day starts	Day stopped	Number of days

Name of the physician **Signature of the pharmacist**
Name of the hospital

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