

**Original Article****Treatment Pattern of Acute Respiratory Tract Infections in General Practice with 3rd generation Oral Cefixime in Bangladesh**S Z Hossain<sup>1</sup>, R F Khan<sup>2</sup>, U K Barua<sup>3</sup>, M J Sobhan<sup>4</sup>**Abstract**

Respiratory tract infections (RTIs) are a major health problem in developing countries. RTIs are the most common reason for physician visits and prescription of antibiotics. Cefixime is quickly establishing as a potent broad-spectrum antibiotic with a variety of indications. This observational study was designed to describe the treatment pattern of third generation oral cefixime in managing RTIs in general practice. This non-controlled, multicenter, observational registry was carried out from March 2009 to July 2010. During this period 2400 patients aged 3 years to 76 years suffering from RTIs were enrolled by general physicians throughout the country. Study variable were socio demographic, signs and symptoms, clinical diagnosis, investigations, antimicrobial prescribed and clinical outcome. Clinical outcome was determined based on improvement of signs and symptoms. Compliance, efficacy and tolerance were assessed on days 7 and 10. The enrolled

patients were considered for analysis. The mean age was 26.59 ( $\pm 18.10$ ) years and 62% of patients were male. Common presenting signs and symptoms were fever, cough, shortness of breath and increased sputum volume in 80%, 75%, 39%, and 12% respectively. From prescriptions, pneumonia, acute bronchitis, acute exacerbation of chronic bronchitis and lung abscess were the diagnosis in 42%, 26%, 24% and 3% of the prescriptions, respectively. Following the treatment with cefixime clinically cured, much improved and better were obtained in 77%, 21% and 2% respectively. Furthermore, the rate of adverse events were insignificant. The study showed clinical symptoms improved rapidly and high rates of clinical cure were achieved. More over, the rate of adverse events were relatively quite low. The results supports the use of cefixime for a variety of respiratory infections in adult and pediatric patients in Bangladesh.

**Keywords:** Respiratory tract infections (RTIs), Cefixime, Efficacy, Pneumonia, Acute Bronchitis.

**Introduction**

Respiratory tract infections (RTIs) are a major health problem in developing countries.<sup>1</sup> An estimated 2.2 million people, world wide, die yearly because of acute respiratory infections.<sup>2</sup> It is estimated that Bangladesh, India, Indonesia and Nepal together account for 40% of global acute respiratory infection mortality.<sup>3</sup> These respiratory infections can manifest in any area of the respiratory tract. As an infection of lungs, pneumonia is one of the major causes for ARI. About 90% of ARI deaths are due to pneumonia, which is usually bacterial in origin.<sup>4</sup>

RTIs are also the most common reason for physician visits and prescription of antibiotics.<sup>5,6</sup> Infections of lower respiratory tract includes community-acquired

pneumoniae (CAP) and acute exacerbations of chronic bronchitis, which are associated with significant rates of mortality and are among the top 10 causes of death in developed world. In developing countries, infants under 4 years of age are at greatest risk of lower RTIs, whereas in developed countries the severity of infection and rate of mortality are greater in elderly.<sup>7</sup> There is no consensus regarding standard guideline/recommendation on use of cephalosporin in management of acute RTI (e.g. pneumonia and bronchitis) and the reference regimen varies in Bangladesh. Patients of acute RTI are managed with a wide of range of antibiotics, 3rd generation oral Cefixime may improve the effectiveness of the treatment due to their strong beta lactamase stability against respiratory pathogens.

The objective of the study was to describe the treatment pattern of third generation oral cefixime in managing RTIs in general practice. To assess also the clinical cure rate and occurrence of adverse events.

**Materials and Methods**

This non-controlled, multicenter, observational registry was carried out from March 2009 to July 2010. During this period 2400 patients aged 3 years to 76 years suffering from RTIs were enrolled by general physicians throughout the country.

Patients included in this study were of different age, diagnosed with one or more RTIs. The tool used for study was a set of prepared questionnaire

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for each patient whose diagnosis was based on clinical evidence by the doctor and other diagnostic test reports and the technique adopted was personal interview with the patient. Individual patients were interviewed using the prepared questionnaire for this study after their visit to the doctor. All the prescriptions were returned to the patients after noting down the study variables. Verbal consent was taken from every patient before enrolling in the study. In case of minor, parents gave the consent. Patients with very severe infection who required hospitalization were excluded.

Study variable were socio demographic, signs and symptoms, clinical diagnosis, investigations carried out, antimicrobial prescribed and clinical outcome. Clinical outcome was determined based on improvement of signs and symptoms. Compliance, efficacy and tolerance were assessed on days 7 and 10.

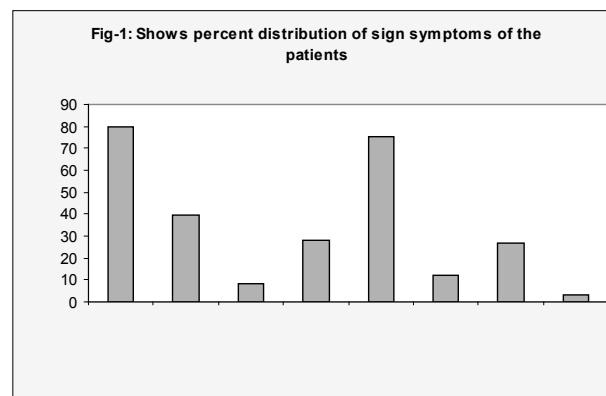
**Results**

The enrolled 2400 patients were considered for analysis. The patients were between 3 to 76 years old and the mean age was 26.59(± 18.10) years. Among the patients 62% were male. The occurrence of RTI was higher among urban residents than semi-urban and rural residents 56%, 32% and 11% respectively. Among the patients only 15% were engaged in different professions but majority was non-professionals. From the patients 25% were The socio-demographic characteristics of the patients are summarized in Table 1.

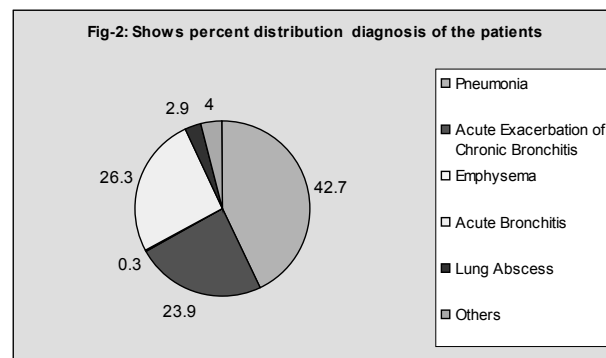
**Table 1: The demographic characteristics of the patients**

Characteristics		%	N (2400)
Age	Below 20 yrs	36.8	884
	20 to 39 yrs	36.0	864
	40 to 59 yrs	23.3	559
	Above 60 yrs	3.9	93
	Range	3 to 76 years	
	Mean±SD	26.59±18.10	
Gender	Male	62.0	1488
	Female	38.0	912
Locality area	Urban	56.9	1365
	Semi Urban	32.1	771
	Rural	11.0	264
Education	Illiterate	31.6	759
	Primary	24.6	591
	Secondary	30.0	720
	University	13.8	330
Occupation	Non-professional	84.4	2025
	Professional	15.6	375
Habit	Smoker	25.2	605
	Non-Smoker	74.8	1795

Common presenting signs and symptoms were fever and chills, cough, shortness of breath and increased sputum volume in 80%, 75%, 39%, and 12% respectively (Fig-1)



From the laboratory diagnosis, pneumonia was found in majority of the cases (42.7%). Other cases were acute bronchitis (26.3%), acute exacerbation of chronic bronchitis (23.9%) and lung abscess (3%) respectively. (Fig-2).



In most of the cases RTIs was diagnosed and treated by assessing clinical sign and symptoms. Chest X-ray was done in 35% patients. (Table 2)

**Table 2: Investigation status of the patients**

Investigations	%	N (2400)
Culture and Sensitivity Positive	4.5	108
Chest X-ray	35.0	839

Many patients reported that they suffer from associated diseases along with RTIs. Increased frequency of exacerbation of chronic bronchitis (30%) and previous history of pneumonia (25%) were commonly present (Table 3). Many patients reported that they suffer from associated diseases along with RTIs. Increased frequency of exacerbation of chronic bronchitis (30%) and previous history of pneumonia (25%) were commonly present (Table 3).

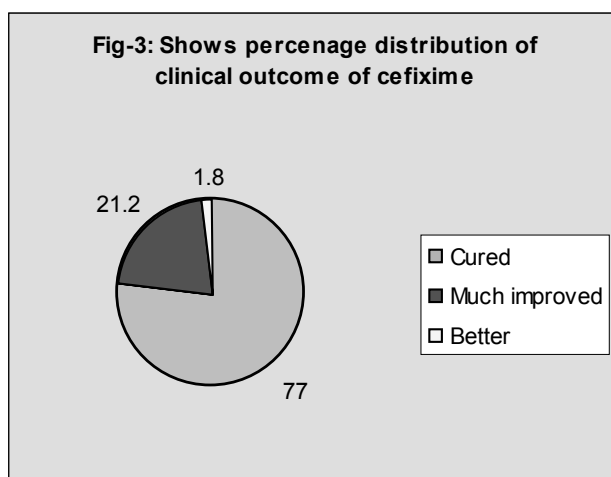
**Table 3: Risk Factors/Related Disease of the patients**

Diagnosis	%	N (2400)
Severe impairment of the lung function	11.3	270
Increased frequency of exacerbation per year	30.0	720
Previous history of pneumonia	25.0	600
Age (>65 years)	1.5	36
Coronary Artery Disease / Congestive heart failure	0.6	15
Neurological disease	1.3	30
Neoplastic disease	0.6	15
Diabetes Mellitus	3.0	72
Hepatic and Renal Disease	1.4	33
Other disease	0.1	3

The aim of the study was to obtain information on the clinical efficacy and safety of cefixime in the treatment of RTIs in children and adults. This is a brief summary of the results of the study (Table 4). By cefixime treatment, 77% were cured, 21% much improved and 1.8% better. Furthermore, the rate of adverse events was low (3%) which were not serious and was managed accordingly. Clinical outcome with cefixime shown in fig-3.

**Table 4: Assessment of evaluation at the end of treatment**

Evaluation of treatment		%	N (2400)
Adverse event with Cefixime	None	97.0	2328
	Diarrhea	0.5	12
	Nausea/vomiting	1.6	39
	Dizziness	0.4	9
	Headache	0.5	12
Clinical Outcome with Cefixime	Cured	77.0	1849
	Much improved	21.2	509
	Better	1.8	42
	No Change	0	0



**Discussion**

Total 2400 patients with RTIs were eligible for analysis. Pneumonia, acute bronchitis, acute exacerbation of chronic bronchitis and lung abscess were made in 42%, 26%, 24% and 3% of the prescriptions. This represents close similarity to the other studied in different countries.<sup>9,10</sup> Percentage of smoker was higher among patients of acute bronchitis and acute exacerbation of chronic bronchitis.

Following treatment with cefixime, clinical cure, much improved and better was obtained in 77%, 21% and 2% respectively. Clinical symptoms improved rapidly and high rates of clinical cure were achieved and result showed with other studies.<sup>11,12</sup> Furthermore, the rate of adverse events were relatively low in comparison with other studies.<sup>13,14</sup>

**Conclusion**

Cefixime is quickly establishing as a potent broad-spectrum antibiotic with a variety of indications. The aim of the study was to obtain information on the clinical efficacy and safety of cefixime in the treatment of respiratory tract infections in children and adults in Bangladesh. The study showed clinical symptoms improved rapidly and high rates of clinical cure were achieved. In summary, the results supports the use of Cefixime for a variety of Respiratory infections in adult and pediatric patients in Bangladesh.

**Conflicts of Interest**

Sanofi-Aventis funded this clinical study. Md. Javed Sobhan has served as employee of Sanofi-cAventis and contributed to study design and coordination.

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