

Prescribing pattern and health economics in upper respiratory tract infection in the paediatric out-patient department

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ABSTRACT

Objective: To analyse the current prescription patterns and the economics of drugs used in the treatment of URTI.

Methods: A prospective observational study was carried out in the out-patient department of paediatrics. Children of 1 month to 18 years, diagnosed with URTI by the physician were included in the study. The demographic details, drugs prescribed, dose, duration of therapy, cost of drug therapy were all noted from the outpatient record. The cost of individual drug was analysed and the health economic analysis of drugs were performed.

Results: The maximum number of children was in the age group of 1-5 years. The average number of drugs per encounter was found to be 2.01. Antihistamines were commonly prescribed and hence it cost more to the patients, followed by cough syrups.

Conclusion: Medical audit is effective in improvising the prescribing pattern. Long-term interventional studies are needed to enhance the rational prescribing.

KEY WORDS: Paediatrics, economics, URTI.

1. INTRODUCTION

Infections of the Upper Respiratory Tract (URT) are the most commonly encountered illness of childhood (Herendeen and Szilagy, 2000) and one of the main reasons for pediatric consultations (Teng, 2001; Mlynarczyk, 2001). More than 200 viruses can cause upper respiratory tract infections (URTIs). Acute respiratory infection accounts for 20-40% of outpatient in Pediatrics (Jain, 2001).

Anti-Microbial Agents (AMAs) are the most frequently used drug and it is misused more commonly compared to all other drugs. The inevitable consequence of the common use of AMAs has been the emergence of antibiotic resistant pathogens, fuelling an ever increasing need for new drugs. Decreasing inappropriate antibiotic use is the best way to reduce or control resistance. Even though there are increased awareness about the harmful effects of antibiotic misuse, over prescribing remains widespread. It mainly occurs by patient demand, time pressure on clinicians and diagnostic uncertainty. Appropriate selection of AMAs for treating infectious diseases requires clinical judgment of disease and the drugs. The bacterial infection should be identified before treatment and should be initiated whenever possible. To initiate right choice of empirical antibiotic therapy, knowledge on the most likely infecting microorganism and their susceptibilities to antimicrobial drugs is essential (Chambers, 2006).

The bacterial agents that are resistant to antibiotics are of greatest concern. These resistance are mainly due to common and inappropriate antibiotic therapy for children with upper respiratory tract illnesses. Approximately three fourths of all outpatient antibiotic prescriptions given to children are for upper respiratory tract conditions mainly viral infections, bronchitis, pharyngitis, sinusitis, and otitis media. To reduce and look into this problem, the Centers for Disease Control and Prevention (CDC) and the American Academy of Pediatrics published "The Principles of Judicious Use of Antimicrobial Agents for Pediatric Upper Respiratory Tract Infections" (Dowell, 1998). This document focuses on reducing the antibiotic usage for such conditions that do not respond to them and promoting the use of narrow- rather than broad-spectrum antibiotics.

Respiratory infections are the major reason for prescribing antibiotics in paediatrics. According to the 1992 National Ambulatory Medical Care Survey (NAMCS) in the United States, acute otitis media was the most common diagnosis for which antibiotics were prescribed (30%), followed by upper respiratory tract infection (URTI), pharyngitis and bronchitis (12%, 10% and 9%, respectively) (McCaig and Hughes, 1995). Inappropriate prescription of antibiotics can lead to the emergence of bacterial resistance, an increase in adverse drug effects and high pressure on financial burden.

Medical audit looks into the standards of medical treatment at all levels of the healthcare delivery system (Gupta, 1997). Prescribing pattern study is a part of the medical audit and it monitors, evaluates and suggest modifications in prescribing practices to make medical care rational and cost-effective.

The CDC in collaboration with the American Academy of Paediatrics (AAP) recommends stringent diagnostic criteria for URTIs to avoid misdiagnosis and inappropriate antibiotic prescriptions. Antibiotic treatment is helpful to children only if symptoms persist for 10-14 days without any improvement (Rosentstein, 1998).

New drugs and new modes of treatment are constantly being introduced. The medical care's quality should be judicially implemented, appropriate, safe, effective and economic.

“Good” prescribing is a complex balance between various conflicting factors (Martin, 1998). This study attempts to analyze the current prescription patterns and the economics of drugs used in the treatment of URTI. Findings of this study are expected to provide relevant and useful feedback to pediatricians and general practitioners.

2. MATERIALS AND METHODS

This prospective observational study was carried out in the out-patient department of paediatrics, Sri Ramachandra Medical Centre, Sri Ramachandra University, after getting approval from the Research and Ethics Committee of Sri Ramachandra University. Children of 1 month to 18 years, diagnosed with URTI by the physician were included in the study. Children with lower respiratory infections/wheeze/gastro intestinal symptoms and pre-existing symptoms and with co-morbid conditions like heart disease, asthma, kidney and liver disease were excluded from the study.

The data was collected from the out-patient record and was entered in a proforma. The demographic details, drugs prescribed, dose, duration of therapy, cost of drug therapy were all recorded and the data was analysed. The cost of individual drug was analysed and the health economic analysis of drugs were performed.

3. RESULTS

During our study period, 150 prescriptions were analyzed. The maximum number of children was in the age group of 1-5 years (n = 81, 54%), followed by less than 1 year (n = 48, 32%). No children were found in the age group of more than 10 years. Male children were found to be predominant (n = 88, 58.7%).

The prescribing indicators among the children was given in table.1. The average number of drugs per encounter was found to be 2.01.

The list of drugs prescribed to the children were grouped into analgesics and antipyretics, antihistamines, antibiotics, cough syrups and miscellaneous. The prescribed drugs and the prescribing frequency were depicted in table.2. This table indicates that antibiotics were used minimally in children. Antihistamines were prescribed commonly.

The cost of individual drug was analysed and the health economic analysis of drugs prescribed was given in table.3. The drugs were grouped into the same as in table.2. Antihistamines cost more compared to other drugs followed by cough syrups.

DISCUSSION

Audit studies are methods of improving job satisfaction of the health care professionals and it serves as a means of education for them, rather than being considered as a threat or another bureaucratic burden. In our study, the majority of children were in the age group of 1-5 years. This was similar to the study conducted by Nandimath and Ahuja, 2012.

The average number of drugs per prescription was 2.01. The lower number of drugs noted is a welcome sign and needs to be encouraged. There may be a rise in adherence, minimal cost of therapy and minimized risk of drug interactions when lesser number of drugs is prescribed.

In our study, most of the drugs were prescribed by brand name. This was similar to the study conducted by Oshikoya, 2006.

In this study, antihistamines were found to be the most frequently prescribed drugs. As the under-five group constituted the major proportion of patients with URTI for whom antihistamine was prescribed, this implies that a huge amount of costly drugs were unnecessarily prescribed. Similar result was observed in various studies (Nandimath and Ahuja, 2012; Shankar, 2006). Cough syrups play an important role in the prescriptions. Antibiotics were used only for 3.31% of children. It was similar to the study conducted by Shankar, 2006. Antibiotic resistance is the most common emerging problem in the health care field. Inappropriate and abundant use of antibiotics is a major contributor to this ever growing problem. The majority of childhood URTI is caused by viruses which do not require antibiotics. Hence the minimal use of antibiotics show a positive sign of rational prescribing. Moreover, prescribing an antibiotic or an antihistamine for URTI may reinforce the parent's belief in the necessity of such treatment every time the child develops such symptoms. The decreased prescribing of antibiotics cannot be linked only to our intervention. Many publications in the medical literature and in the public media have alerted physicians to the unwanted effects of antibiotic overuse and have led to a worldwide decrease in antibiotic prescription for paediatrics.

On an average, two drugs was prescribed per child. There was no drug duplication in any prescription. Most of drugs were not prescribed from essential drug list. The low rate of prescribing of essential drugs is a matter of concern. The use of anti-histamine, cetirizine which is not on the essential drug list may be a contributory factor for increased cost.

Irrational prescribing is a habit that is difficult to cure (De Vries, 1995). However, prevention is possible by short problem based training course in pharmacotherapy and rational use focused workshop interventions (Thomas, 1997). It is essential to increase doctors' awareness of the lack of proven benefits, the definitive cost and side effects

of many prescriptions for the self-limiting illness. Doctors should be trained and educated on the most appropriate and cost effective use of antibiotics. There have been many forum aimed at altering physician's prescribing behaviour. These have included audit studies, group discussions and feedback, introduction of hospital formulary and guidelines for antibiotics. The benefits of the intervention studies, namely the use of fewer and cheaper prescriptions are shown to disappear overtime, which suggests the need for repeating the intervention at frequent intervals. Rational prescribing messages should be promoted at national and local medical meetings.

Table.1. Prescribing indicators among outpatients

Parameter	Number
Total number of patients prescriptions analyzed	150
Total number of drugs prescribed	302
Average number of drugs per encounter	2.01

Table.2. List of drugs prescribed along with prescribing frequency

Drug Categories	Prescriptions	
	n = 302	%
Analgesics & Antipyretics	35	11.59
Antihistamines	129	42.72
Antibiotics	10	3.31
Cough syrups	99	32.78
Miscellaneous	29	9.60

Table.3. Health economic analysis of drugs prescribed

Drug group	Average cost of the drug per dose per child (INR)
Analgesics & Antipyretics	0.54
Antihistamines	1.82
Antibiotics	0.16
Cough syrups	1.20
Miscellaneous	0.19

4. CONCLUSION

Medical audit is effective in improvising the prescribing pattern. Long-term interventional studies are needed to enhance the rational prescribing.

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