

Section **Pharmacology**

Original Article

Use of Generic Vs Branded Drugs in Enteric Fever – A Prospective and Comparative Study

Devesh Gupta¹, Arvind Kumar Gupta^{2*}

¹Assistant Professor,²Professor, Dept. of Pharmacology, World College of Medical Science and Research, Jhajjar, Haryana.

ABSTRACT

Background: The concept of generic prescription is widely accepted in various parts of the world. Nevertheless, it has failed to gain popularity in India due to factors such as non-availability and distrust on the product quality. **Aim:** To study cost-effective and cost-benefit analysis of antibiotic prescription in patients who had enteric fever and were given intravenous ceftriaxone. **Methods:** This was a prospective observational study conducted in a tertiary care centre at World College of Medical Science and Research, Jhajjar, Haryana. 65 patients who have been diagnosed with enteric fever and were prescribed ceftriaxone were studied and their prescriptions were analyzed. 5 brands of most commonly prescribed ceftriaxone injections were chosen to analyse cost effective and cost-benefit analysis. **Results:** Out of 65 patients, 40 were females and 25 were males, diagnosed with enteric fever. Maximum number of patients were seen between age group of 36-50 years (38) and minimum patients belonged to age group of more than 65 years. Analysis of prescriptions revealed that majority of the patients were prescribed Branded drugs 53 (82%) than were

prescribed generic drugs 12 (18%). The analysis of the cost of single dose of inj. ceftriaxone revealed that branded drugs were 8.52 % to 180.81% more in comparison with generic IV ceftriaxone. **Conclusion:** The cost of most commonly prescribed branded drugs was significantly higher than generic drug and prescribing branded drugs was associated with failure to take complete treatment as prescribed by treating physician.

Key words: Branded, Generic, enteric fever, ceftriaxone, Rational use of medicine.

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Corresponding Author

Dr. Arvind Kumar Gupta, Professor, Dept. of Pharmacology, World College of Medical Science and Research, Jhajjar, Haryana.

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INTRODUCTION

A majority of healthcare spending is utilized for purchasing pharmaceutical items. With upgrades and advances in our health care system this spending is relied upon to rise exponentially. Part of it is due to demographic changes and part of it is due to better diagnosis and screening of conditions like hypertension and diabetes etc.^[1] The use of generic medicines, compared to their branded counterparts, has the potential to substantially reduce out-of-pocket expenditure on drugs for patients with chronic diseases. In

many countries, like Australia, governments do economic evaluation before a drug is approved for reimbursement.^[2] Pharmacoeconomics deals actually with this aspect of the drug use.^[3] Rational prescription of drugs is impossible without the knowledge of pharmacoeconomics. The fact that the decision of choosing the drug is made by doctor and not the consumer (patients) makes it a matter of moral and ethical responsibility of treating physician to see it to that the treating doctor prescribe medicine consistent with the principles of pharmacoeconomics.^[4] In a country like India, where obliviousness and neediness is uncontrolled it turns into all the more applicable to underline the significance of pharmacoeconomics while recommending drugs. Given the fact that prescribing relatively expensive drugs is responsible for inability of taking complete treatment by

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patients or sometimes they have to continue taking treatment at the cost of other essential needs of life. This becomes all the more important in treatment of acute life threatening conditions like meningitis, encephalitis, enteric encephalopathy and acute severe asthma etc.^[5] Prescribing generic drugs can be one of the important steps towards making the prescription an affordable one. World health organization defines generic drug as “a pharmaceutical product, usually intended to be interchangeable with an innovator product, that is manufactured without a license from the innovator company and marketed after the expiry date of the patent or other exclusive rights”.^[6] Food and drug administration of USA defines a generic drug as “A generic drug that is identical—or bioequivalent to a brand name drug in dosage form, safety, strength, route of administration, quality, performance characteristics and intended use”.^[7] Though by definition generic drugs are equivalent to branded drugs in all respects including efficacy, safety, strength and quality many physicians are reluctant to prescribe these drugs because they are usually thought to be inferior to branded drugs.^[8] Other factors responsible for prescribing branded drugs are ignorance of difference of cost, unethical practice of giving gifts to doctors by pharmaceutical companies, peer pressure from other popular physicians and lack of quality control in some cases of generic drugs.^[9] To encourage prescription of generic drugs by treating physicians MCI in its states “Every physician should, as far as possible, prescribe drugs with generic names and he/she shall ensure that there is a rational prescription and use of drugs.”^[10] Prescriptions of branded drugs were responsible for rise in the cost of complete treatment and this was responsible for incomplete treatment taken by many patients.

Therefore, we conducted this study in our set up for cost-effective and cost benefit analysis.

METHODS

This was a prospective observational study conducted in the Pharmacology and Medicine department at World College of Medical Science and Research, Jhajjar, Haryana. A total of 80 prescriptions, of both outpatients and inpatients diagnosed with enteric fever and were given antibiotics were analyzed during the 5-month study period (January 2017-May 2017). Out of 80 patients, only 65 patients completed our study. These prescriptions were analyzed for cost minimization analysis as intravenous ceftriaxone is the most prescribed antibiotic for the patients of enteric fever. Top three of the commonly prescribed branded ceftriaxone were compared with generic ceftriaxone and their cost difference and whether patients have taken complete treatment or not were analyzed. The cost of most commonly prescribed branded ceftriaxone was taken from the printed maximum retail price printed on the injections. The prices of the generic versions of these antibiotics were obtained from the official price list of generic medicines put up by the department of pharmaceuticals, government of India, on the website [http://janaushadhi.gov.in/list_of_medicines.html].

RESULTS

Out of 80 patients who were diagnosed to be having enteric, only 65 patients (20-65 years) completed the study. In 65 patients, majority were female (n=40) than male patients (n=20) [Table 1]. Paediatric patients were not included in the study as the doses are variable in pediatric age group. Maximum number of patients were seen between age group of 36-50 years and minimum patients were seen between age group of more than 51-65 years. 5 most commonly used branded drugs were analysed. For our convenience, these brands were re-named as Brand D1, D2, D3, D4 and D5. Whereas generic ceftriaxone 1 gm was re-named as G. Out of these 65 patients, 8 patients were prescribed D1, 22 patients were prescribed D2, 11 patients were prescribed brand-D3, 8 patients were prescribed brand-D4, 4 patients were prescribed brand D5 and 12 patients were prescribed Ceftriaxone named as G [Table 2].

Table 1: Age-wise distribution of patients.

Age	Male	Female	Total
20 - 35	8	8	16
36 - 50	12	26	38
51 - 65	5	6	11
Total	25	40	65

The dose of ceftriaxone used in all patients was intravenous ceftriaxone 1 gm BD. The usual duration was 5 days. The patients who were given any dose other than 1gm IV BD or any duration other than 5 days were excluded from the study to bring uniformity to the cost-effective analysis.

Table 2: Generic Vs Branded prescribed drugs.

Branded Drugs Label	No. of Patients
D1	8
D2	22
D3	11
D4	8
D5	4
Generic Drug Label	
G	12

As the first step towards cost-effectiveness and cost benefit analysis the rates of 1 vial of branded ceftriaxone and generic ceftriaxone was compared. The analysis of the cost of single dose of injection ceftriaxone revealed that the cost of single dose of branded IV ceftriaxone was approximately 8.52 % to 180.21 % more in comparison with generic IV ceftriaxone. Analysis of cost of 1 day of treatment with IV ceftriaxone 1gm revealed that the cost of generic IV ceftriaxone was less than 180.21 % of the branded IV ceftriaxone with highest Maximum retail price and 8.52 % less than brand with lowest maximum retail price. The total duration for which IV ceftriaxone was prescribed was usually 5 days. After which generally patients were switched to oral antibiotics like Cefixime or Cefodoxime. The analysis of total cost of treatment of IV antibiotics when

compared was significantly more in branded drugs than generic drug.

Total cost of the treatment was very high in case of branded prescription in comparison to generic. Due to this, patient compliance was less in cases of treatments given by branded drugs because of increase in cost of the treatment.

DISCUSSION

In spite of encouragement from policy-makers, generic drug use in India is yet to gain widespread popularity, and the practice so far has remained confined mostly to institutional settings in small pockets of the country. The economic benefits of generic drug use are however well-known and undisputed.

As the healthcare area is broadening day by day, there is definitely going to be an increase in the prescription of drugs. With the advent of newer techniques and health awareness and availability of specialists at grass root levels and in small towns more and more non-communicable diseases like diabetes, hypertension, requiring prolonged treatment are being diagnosed at an early age. Early diagnosis means prolonged treatment and prolonged treatment means increase cost of medications. Pharmacoeconomics has done a great job in this regard that deals precisely with this aspect of drug prescription. It not only deals with the actual cost of a drug but its efficacy in treating a disease with respect to its rates. Generic drugs by definition are equivalent to branded drugs in terms of bio-equivalence, strength, safety and efficacy.^[11] Generic drugs are relatively cheaper than branded drugs. Despite this being the case many treating physicians hardly prescribe generic medicine.^[12] Reasons why physicians usually doesn't prescribe generic drugs include Physicians' and sometimes even patients' perception that the cheaper drugs means less effective drugs.^[13] Differences in size, shape, colour and name of the drug may lead to patient confusion this is specially the case where a patient has already been on a drug since many years like antihypertensive or anti diabetic drugs.^[14] And there are sometimes a genuine requirement of continuing one specific brand of a drug like phenytoin when change of brand can lead to difference in bioavailability and consecutively there can be change in serum levels of the concerned drug which is not desirable.^[15] Nonetheless it is important to use generic drugs whenever feasible specially in acute conditions. Use of generic drugs may reduce the cost of treatment. The apprehensions of the patients can be reduced by educating them about the generic drugs.

CONCLUSION

As recommended by Medical council of India in code of ethics regulations 2002 all physicians should make a conscious effort to prescribe drugs by their generic names only.

Therefore, strict measures should be taken to enhance the rational prescribing habits of doctors.

Patients' needs to be educated about the meaning of generic drugs. They should be aware that there are substitutes to brand drugs at a lower cost.

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