J. Dhaka National Med. Coll. Hos. 2011; 17 (01): 22-24

**Original article**

# Prescribing Pattern of Antimicrobials in Acute Watery Diarrhea in Children below Five Years in the Tertiary Hospitals in Dhaka City

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**Abstract**

**This was a prospective type of baseline study and bas been conducted in Sir Salimullah Medical College and Mitford Hospital (SSMC & MH) and Dhaka Nation Medical College Hospital (DNMCH). The objective of the study was to observe the usual prescribing pattern of antimicrobials in outpatient department of the hospitals, in the hope of promoting rational use of drugs and there by improve patient-care. The Standard Treatment Guideline (STG) of diarrhea diseases advocated by World Health Organization (WHO) is available in Bangladesh since 1993. The study also revealed whether the successful implementation of STG in Acute Watery Diarrhea from outpatient department (OPD) of SSMC &MH and hundred from NNMCH were collated prospectively on a radon basis and were analyzed with the methods, suggested in International Network for Ration Use of Drug (INRUD) Manual. The study showed that average number of drugs per encounter was 1.84 and 2.1 in SSMC &MH and DNMCH respectively. Uses of antibotics in SSMC & was 52% in DNMCH outpatient department. Statistical analysis by Z-test showed that percentage of antibiotics-use was significantly higher in DNMCH in comparison ($p < 0.001$) to SSMC&MH. Uses of ORS were almost identical, 87% and 85% in SSMC &MH and DNMCH respectively.**

## Introduction

Diarrhea is still a leading cause of children morbidity and mortality in developing countries, when poverty poor sanitation, lack of pure drinking water and increased exposure to infection are prevalent. According to WHO 1.3 thousand million episodes of diarrhea occur in children under five of age in Asia, Africa and Latin America. About 4 million children of this group die annually from diarrhea and 80% of death occur in first two years of line 1. Diarrhea accounts of 258,000 deaths of under-five children annually which is 17% of total childhood death in Bangladesh 2. Diarrhea is not only a problem of develop in countries but also a serious problem of industrialized worlds. A study in Western Europe and North America showed that diarrhea is the second common reason to be hospitalized 3.

Diarrhea causes dehydration and loss of salt and water from the body resulting electrolyte imbalance. Volume of fluid loss in 24 hours varies from 5 ml./g. to 200 ml./kg. or more[4]. In Southeast Asia the Infant Morality Rate (IMR) is higher in Indonesia, which is 70 per thousand live birth and 24% of this figure is from neonatal diarrheal disease.[5]

A nationwide study about childhood diarrhea among the under-five children in Uganda showed that 6 episodes of diarrhea occurred in a child during the year 1987. In rural Bangladesh girls are at 2.1 time greater risk of dying from diarrhea and 2.5 times more like to die from malnutrition resulting from diarrhea. A survey was carried out during 1986-1987 among the children under the age of five in rural Bangladesh and found hat acute watery diarrhea was associated with 11% of the death aged 1-11 month. 19% death among children aged 0-4 years due to bloody diarrhea and dysentery. In this age group persistent diarrhea accompanied by severe wasting was associated with 63% of diarrheal death and 34% of all deaths 6. The high rate of mortality and morbidity owing to diarrheal disease can be reduced by causing the drug appropriately and rationally along with socioeconomic improvement of the society. Owing the high mortality and morbidity in diarrheal diseases National Control of Diarrheal Disease (CCD) Proramme launched in collaboration with WHO in 1989. STG against diarrheal diseases

available in our country since 1993 but effective implementation was perhaps the greatest challenge.

A veryl limited study has been carried out to evaluate the impact of STG on the prescribing pattern of diarrheal diseases at primary level of health care system 7. So it was and attempt to obtain baseline information of appropriate prescribing parties in the two teaching hospitals in Dhaka City. It was also observed whether and y deviations form the STG, while prescribing. If any, how much it was deviated from the Standard norms or agreed treatment protocol of acute watery diarrhea. The overall aims were to detect baselines information regarding drug utilization, inappropriate or, irrational use of antibiotics, degree of poly pharmacy, and rational drug use and comparative study among the two hospitals, whether any significant difference were present in usual prescribing trends.

**Materials and Methods**

Study places were selected SSMC&MH and DNMCH in Dhaka City purposively, because both the hospitals are situated in old town and over populated areas. Most of the people in these areas belong to low and middle socioeconomic status and the children attending these hospitals may reflect almost he total scenario of the country regarding diarrheal diseases. A total of 200 prescriptions of under-five children were taken for the study and out of these 100 from each hospital's outpatient department randomly. It was a cross-sectional prospective type of study and the diagnoses were made by the registered medical gradates according to WHO clinical criteria of acuter watery diarrhea. Total time for the study was six months (July 2009-December 2009[1]) and the results were analyzed by using INRUD drug use indicators such as – total numbers of drugs per encounter, percentage of prescription contain antibiotics, different types of antibiotics used, drugs prescribed in generic names, and percentage of prescriptions according to STG.

**Observation and Results**

The following observations were made from the INRUD drug use indicators (prescribing indicators and patient care indicators). The prescriptions contained antibiotics in acute watery diarrhea, were 52% and 75% in SSMC&MH and DNMCH outpatient departments of the respective hospitals. The use of antibiotics was statistically significant ($p < 0.001$) in DNMCH compared to SSMC&MH.

The average number of drugs per encounter is 1.84 and 2.1 in government and private hospitals respectively. Table 1 is showing prescribing errors. Prescriptions contain metronidazole 15% ad 20% in SSMC&MH and DNMCH. Prescriptions adhering to STG were 60% and 30% in govt. and private hospitals respectively. Use of ORS was almost identical in both the hospitals in OPD. Use of zinc suspension was prescribed more than 90% cases in both hospitals.

| **Indicators** | Average | |
|---|---|---|
| | SSMC&MH | DNMCH |
| **Prescribing** | | |
| No. of drugs per patient | 1.84 | 2.1 |
| No. of prescription contain antibiotics | 52 | 75 |
| No. of prescription contain metronidazole | 10 | 15 |
| Prescription adhering to STG | 60% | 30% |
| **Patient-care** | | |
| Mean consulting time per patients (minute) | 2 | 5 |
| Patient examined | 20% | 40 |

Table 01: Prescribing pattern in acute watery diarrhea in govt. and private teaching hospitals

**Discussion**

This study revealed that none of the prescription in either of the hospitals showed polypharmacy, which causes high level of irrational/inappropriate drug consumption[8] and badly affects the rational prescribing[9] that increases the risk of adverse rug reaction. The uses of antibiotics in two teaching hospitals were 52% and 75%, which were not identical. The uses of generic names were relatively lower in DNMCH and comparatively higher in the government hospital. Generic prescription has got special importance for rational use of drug as regards to cost safety and in acuter watery diarrhea was compatible to STG. According to STG no antimicrobials are indicated cortrimoxazole, erythromycin, nalidixic acid, pivmecellinum and cirprofloxacin have been used. Metronidazole which account for most of the antimicrobials used in spite of fact that STG circulated in Bangladesh advises against the use of drugs in case

of acuter watery diarrhea, and it was not compatible to SGT. ORS, the main stay of treatment of a acute watery diarrhea, has bee used widely as indicted in STG.

**Conclusion**

Though diarrheal diseases is one of the leading cause of death for under-five children in developing countries[10] but mortality and morbidity can be reduced by following the STG of WHO. The study shows that existence of STGs is not sufficient to ensure good prescribing habit for common illness. Prescription should be more rational in acute watery diarrhea and inappropriate or, irrational use of antibiotics should be stopped for the benefit of the patient as well as for the society. For more compliance to STG, further efforts must be made to improve the therapeutic practices of health professionals with out irrational prescription will no be avoided even in he reaching hospital like these.

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