

# CLINICAL AUDIT OF TREATMENT OF ACUTE WATERY DIARRHOEA IN PAEDIATRICS UNIT, HAYATABAD MEDICAL COMPLEX, PESHAWAR

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## ABSTRACT

**Objective:** To look into the treatment given to children with acute watery diarrhea by Trainee Medical Officers at the time of admission and to compare it with the standard treatment protocol as recommended by World Health Organization for the treatment of acute watery diarrhoea.

**Material and Methods:** This was a retrospective study conducted in Department of Pediatric Postgraduate Medical Institute, Hayatabad Medical Complex, Peshawar from June 15 to August 15, 2008. Treatment charts of children admitted with acute watery diarrhoea were studied for demographical findings, degree of dehydration and other clinical findings and treatment given at the time of admission. The data was statistically analyzed by SPSS version 10.

**Results:** Eighty children were included in the study. The age range was from one month to five years with mean age of 25.5 months. The majority were in the range of 1 to 3 years with male to female ratio of 1.4:1. Majority (68.75%) had bowel movements more than 6 times/24 hours. Blood in the stool was present in only five cases (6.25%). Thirty-five (44%) and 12 (28%) were presented with some and severe dehydration respectively at the time of admission. Analysis of drug treatment (antibiotics, anti-protozoal, anti-emetics, stool hardeners, probiotics) showed that 65 (81.25%) children received appropriate treatment as per recommendations of World Health Organization. All children were discharged uneventfully.

**Conclusion:** Continuous training and supervision of the Trainee Medical Officers is required to implement standard treatment of acute watery diarrhoea according to laid down World Health Organization guidelines. Such activities will help to reduce inappropriate use of drugs and wrong treatment for diarrhea.

**Key Words:** Acute watery diarrhea, dehydration, WHO guidelines.

## INTRODUCTION

Diarrheal disease continues to be a common problem for Pakistani children<sup>1</sup>. Diarrhea also accounts for a major proportion of hospital admissions when associated with dehydration<sup>2</sup>. Nearly 40% of all diarrhea cases and 26% of deaths due to diarrhea were in children less than 5 years of age<sup>3</sup>. Suboptimal prescribing for childhood diarrhea has been reported in many developing countries, with under use of effective measures, such as oral rehydration salts (ORS) and over use of marginally effective or ineffective drugs such as adsorbents and antimicrobials<sup>4</sup>. Inappropriate drug use leads to treatment failure, spread of disease,

increased antibiotic resistance, high health care costs, and side effects<sup>5</sup>. Since 1990, World Health Organization has disseminated guidelines throughout the world for the treatment of childhood diarrhea<sup>6</sup>. However, the doctors who do the prescribing are scarcely acknowledged officially, especially in the management of childhood diarrhea<sup>2</sup>.

Trainees of Paediatric department are expected to know these guidelines and to adhere to these protocols while treating these children. To gain an insight in the management of diarrhea by the first and second on call Trainees, we conducted an audit of the management of diarrhea at the time

## AGE AND SEX DISTRIBUTION OF THE STUDY POPULATION

Age-range	Children (No. %age)	Male (No. %age)	Female (No. %age)
1 month to 12 months	22 (27.5%)	13 (16.25%)	09 (11.25%)
13 months to 36 months	32 (40.0%)	20 (25%)	12 (15%)
37 months to 60 months	26 (32.5%)	14 (17.5%)	12 (15%)
Total	80 (100%)	47 (58.75%)	33 (41.25%)

Table 1

of admission in our department. The aim of the study is to estimate the frequency rate of inappropriate drug use and a deficiency in the knowledge and practice treatment protocols as lay down by World Health Organization.

### MATERIAL AND METHODS

This retrospective study was conducted in Department of Pediatric, Postgraduate Medical Institute, Hayatabad Medical Complex, Peshawar from June 15 to August 15, 2008 over the period of two months. Treatment charts of children admitted with acute watery diarrhoea were studied for demographical findings, degree of dehydration and other clinical findings and treatment given at the time of admission. All data were recorded on pre-designed proforma.

#### Inclusion criteria:

1. Children with acute watery diarrhea.
2. Children with age 1 month to 5 years.

#### Exclusion criteria:

1. Children with age less than 1 month and above 5 years.
2. Children with persistent diarrhoea
3. Children with other associated medical problems like pneumonia, sepsis, meningitis or other systemic illnesses.

Data collected were analyzed and compared with the recommendations lay down by the World health organization for acute watery diarrhoea. The Audit was submitted to the Institutional Research and Ethical Board and approved.

**Operational definitions:** The following definitions were adapted based on World Health Organization diarrhea treatment guidelines<sup>6</sup>.

**Diarrhoea:** Passage  $\geq 3$  loose stools per 24 hours. Loose stool is defined as the stools that adapt the shape of the container in which it is passed.

**Acute watery diarrhea:** Diarrhea that starts acutely and persists for less than 14 days.

**Dysentery:** Diarrhoea that has fresh visible blood.

**Appropriate use of antimicrobials:** It is defined as prescribing antimicrobials for managing an invasive bacterial, bloody diarrhea or not prescribing antimicrobials for managing a watery type or non bloody diarrhea.

**Inappropriate use of antimicrobials:** It is defined as prescribing antimicrobials in a watery, non-bloody diarrhea or not prescribing antimicrobials for an invasive bacterial type or bloody diarrhea.

**Statistical Analysis:** All the collected data was analyzed in SPSS 10. Frequencies and percentage of categorical and numeric variables like age, stools per day, duration of diarrhea, blood in stools, signs of dehydration and treatment was computed and the results was presented in the form of tables.

### RESULTS

Among 80 children, 47 (58.75%) were males, dominating in all age-groups (Table 1). The majority of children were in the range of 1 month to 36 months with male to female ratio of 1.4:1. The mean age was 25.5 months, 27.5% were aged 1-12 months, 40% aged 13-36 months and 32.5% aged 37 to 60 months. Stool characteristics are shown in Table 2. Majority of children (63.75%)

### STOOL CHARACTERISTICS

Characteristics		Findings (No. %age)
Duration of diarrhea	1-5days	25(31.3)
	6-10 days	33(41.2)
	11-13 days	22(27.5)
Stool frequency	3-5/day	29(36.2)
	5-9/day	26(32.5)
	$\geq 10$ / day	25(31.3)
Blood in stool	Yes	05(06.3)
	No	75(93.7)
Consistency	Watery	57(71.3)
	Semi-solid	23(28.7)

Table 2

had a stool frequency of more than 5 /day. Only 5 (6.25%) children had fresh visible blood in their stools. Fifty-seven (71.25%) children were presented with some or severe dehydration. Thirty-three (41.25%) children received intravenous fluids. Seventy-three (91.25%) children received antibiotics either orally or parentally (Table 03). Forty-nine (61.25%) children had anti-protozoal treatment in the form of metronidazole. Zinc was given in only sixteen (20%) children with acute watery diarrhea.

## DISCUSSION

Indiscriminate use of drugs in childhood diarrhea even by professionals is serious concern. Even neonates are exposed to irrational and dangerous preparations which are freely available in the market<sup>1</sup>. The majority of common childhood illnesses are caused by viruses which do not require antibiotics. Moreover, multiple drugs in the form of binding agents, antimotility preparations and probiotics, etc. are prescribed in acute watery diarrhea even by qualified doctors, thus leading to harmful side effects of these drugs<sup>2</sup>.

The unnecessary prescription of antibiotics seen in industrialized nations has also been documented in many developing countries, particularly in cases of acute infantile diarrhea and viral respiratory infections<sup>5</sup>. This practice has been observed in our study, as 73/80 (91.25%) children received antibiotics at the time of admission. The high level of antimicrobial prescriptions in this study were similar to the studies reported from Bangladesh<sup>7</sup> (99%), Indonesia<sup>8</sup> (94%), Mexico<sup>9</sup> (79%), Pakistan<sup>1</sup> (65%), India<sup>2</sup> (64%) and Peru<sup>10</sup> (58%). The 28.75% prevalence of appropriate use of antimicrobials in our study was lower than the 73.8% figure reported by Osatakul and Tangadullart<sup>11</sup> (1999), who reviewed the medical records of 529 children with 749 acute diarrheal episodes at Songklanagarind Hospital, a teaching hospital in Southern Thailand.

Countries differ in the most commonly prescribed antimicrobials and employ different drugs as first-line treatments<sup>1,2,7-10</sup>. This might depend on drug resistance features which differ between countries. The most commonly prescribed antimicrobial in our study was ceftriaxone (42.5%) as equivalent popularly prescribed drug in Mexico<sup>9</sup> was ampicillin (20%).

Our study also found a trend toward prescribing quinolons in childhood diarrhea. The reasons might be due to the problem of drug resistance to commonly prescribed antibiotics in childhood diarrhea. Moreover, the physicians may prescribe antimicrobials to prevent secondary infection and because of uncertainty about the diagnosis of the child's underlying condition<sup>12</sup>.

Metronidazole, anti-protozoal, is not indicated in acute watery diarrhea in children unless stool examination shows trophozoites of Entamoeba histolytica or Giardia lamblia and diarrhea is not responding to 2 antibiotics given separately for 48 hours in appropriate doses<sup>6</sup>. In our study 49 (61.25%) children received metronidazole either orally or parentally. Since amebiasis and giardiasis are uncommon in acute watery diarrhea, this shows inappropriate use of this drug at the time of admission in this study. Nazami et al<sup>1</sup> documented that 15% of their study population received anti-protozoal. In Thailand<sup>5</sup>, metronidazole is used little, (1%), but its use is markedly higher in Bangladesh<sup>7</sup> (65%), and Mexico<sup>9</sup> (28%).

Only 26 (32.5%) children received zinc supplementation in this study. Majority of Trainee Medical Officers and general practicing physicians are still unaware of the recommendations of World Health Organization of zinc in acute watery diarrhea.

An incorrect approach to diarrheal management through various groups of

## DEHYDRATION STATUS AND TREATMENT GIVEN TO THE POPULATION STUDY

Hydration status*	Children No. %age	Hydration fluids		Antibiotics***		Anti-protozoal (Metronidazole)		Micro-nutrients			Probiotics etc	
		ORS**	IV	Oral	Parental	Oral	Parental	Zinc	Vitamin A	Vitamin D	Yes	No
No	23(28.7)	21	02	02	14	02	09	10	03	07	03	20
Some	35(43.8)	26	09	03	32	04	17	15	00	03	04	31
Severe	22(27.5)	00	22	00	22	00	17	01	00	01	03	19

\* No, some & severe dehydration

Table 3

\*\* ORS as initial and sole treatment

\*\*\* Antibiotics used: IV Ceftriaxone (31), IV Cefotaxime (18), IV Fortazime (07), IV Ciprofloxacin (12), Naladixic acid (02), Cefixime (03)

practitioners may lead to many iatrogenic hazards in children and in emergence of multi-drug resistant strains of micro-organisms<sup>12</sup>. So a great emphasis is needed for creating a rational and scientific approach towards diarrheal disease by restricting un-wanted drugs, by maintaining uniform ingredients of ORS sachets and proper reconstitution of ORS.

## RECOMMENDATIONS

It is high time that the professional bodies should take up the project of increasing awareness about indiscriminate use of drugs in childhood diarrhea among the practicing physicians to dispel the inappropriate information caused by pharmaceuticals and initiate necessary steps to deliver the latest advances of the knowledge to every practicing physician through academic activities in order to check over this emerging problem. Refresher workshops with diarrhea training and treatment units could be very useful in educating practicing physicians and Trainee Medical Officers.

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