THE TREATMENT OF DIARRHOEA

A manual for physicians and other senior health workers

World Health Organization

Department of Child and Adolescent Health and Development

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CONTENTS

1. INTRODUCTION

Diarrhoeal diseases are a leading cause of childhood morbidity and mortality in developing countries, and an important cause of malnutrition. In 2003 an estimated 1.87 million children below 5 years died from diarrhoea. Eight out of 10 of these deaths occur in the first two years of life. On average, children below 3 years of age in developing countries experience three episodes of diarrhoea each year. In many countries diarrhoea, including cholera, is also an important cause of morbidity among older children and adults.

Many new microbial causes of diarrhoea have been discovered during the past three decades. Research laboratories can now identify a microbial cause in over three quarters of children presenting at health facilities with diarrhoea. Information about the most important diarrhoea-causing pathogens is given in Annex 1.

Many diarrhoeal deaths are caused by dehydration. An important development has been the discovery that dehydration from acute diarrhoea of any aetiology and at any age, except when it is severe, can be safely and effectively treated in over 90% of cases by the simple method of oral rehydration using a single fluid. Glucose and several salts in a mixture known as Oral Rehydration Salts (ORS) are dissolved in water to form ORS solution (Annex 2). ORS solution is absorbed in the small intestine even during copious diarrhoea, thus replacing the water and electrolytes lost in the faeces. ORS solution and other fluids may also be used as home treatment to prevent dehydration. After 20 years of research, an improved ORS solution has been developed. Called reduced (low) osmolarity ORS solution, this new ORS solution reduces by 33% the need for supplemental IV fluid therapy after initial rehydration when compared to the previous standard WHO ORS solution. The new ORS solution also reduces the incidence of vomiting by 30% and stool volume by 20%. This new reduced (low) osmolarity ORS solution, containing 75 mEq/l of sodium and 75 mmol/l of glucose, is now the ORS formulation officially recommended by WHO and UNICEF. In this revised document, when ORS/ORT is mentioned, it refers to this new reduced (low) osmolarity ORS solution.

Bloody diarrhoea (dysentery) and persistent diarrhoea with malnutrition are also important causes of death. Repeated attacks of diarrhoea contribute to malnutrition, and diarrhoeal diseases are more likely to cause death in children who are malnourished. Research has shown, however, that the adverse effects of diarrhoea on a child's nutritional status can be lessened or prevented by continuing feeding during the illness.

Diarrhoea morbidity is increased in HIV positive children. However, the treatment of diarrhoea for HIV positive children is generally the same as for HIV uninfected children, although lactose and monosaccharide intolerances are more frequently present in these children.

Essential elements in management of the child with diarrhoea are the provision of oral rehydration therapy and continued feeding to all, and the use of antimicrobials only for those with bloody diarrhoea, severe cholera cases, or serious non-intestinal infections. The caretakers of young children should also be taught about feeding and hygiene practices that reduce diarrhoea morbidity.

This manual describes the principles and practices of treating infectious diarrhoea, especially in young children. It is intended for physicians and other senior level health workers. Other publications are available to assist in the training of other health staff, including community health workers[1].

This fourth revision of the manual reflects recent clinical experience and research findings in diarrhoea case management. Compared to earlier versions, it includes revised guidelines on the management of children with acute diarrhoea using the new reduced (low) osmolarity ORS formulation and using zinc supplements, which have been shown to reduce duration and severity of diarrhoeal episodes, and revised guidelines for the management of bloody diarrhoea. Guidelines in the manual are based on the revised WHO chart that are included at the end of this document.

[1] Diarrhoea Treatment Guidelines (including new recommendations for the use of ORS and zinc supplementation) for Clinic-Based Healthcare Workers. MOST, WHO, UNICEF , IZiNCG. 2005 (http://www.who.int/child-adolescent-health/Emergencies/Diarrhoea_guidelines.pdf)

2. ESSENTIAL CONCEPTS CONCERNING DIARRHOEA

2.1 Definition of diarrhoea

Diarrhoea is the passage of unusually loose or watery stools, usually at least three times in a 24 hour period. However, it is the consistency of the stools rather than the number that is most important. Frequent passing of formed stools is not diarrhoea. Babies fed only breastmilk often pass loose, "pasty" stools; this also is not diarrhoea. Mothers usually know when their children have diarrhoea and may provide useful working definitions in local situations.

2.2 Clinical types of diarrhoeal diseases

It is most practical to base treatment of diarrhoea on the *clinical type* of the illness, which can easily be determined when a child is first examined. Laboratory studies are not needed. Four clinical types of diarrhoea can be recognized, each reflecting the basic underlying pathology and altered physiology:

· *acute watery diarrhoea* (including cholera), which lasts several hours or days: the main danger is dehydration; weight loss also occurs if feeding is not continued;

· *acute bloody diarrhoea*, which is also called *dysentery*: the main dangers are damage of the intestinal mucosa, sepsis and malnutrition; other complications, including dehydration, may also occur;

· *persistent diarrhoea*, which lasts 14 days or longer: the main danger is malnutrition and serious non-intestinal infection; dehydration may also occur;

· *diarrhoea with severe malnutrition* (marasmus or kwashiorkor): the main dangers are severe systemic infection, dehydration, heart failure and vitamin and mineral deficiency.

The management of each type of diarrhoea should prevent or treat the main danger(s) that each presents.

2.3 Dehydration

During diarrhoea there is an increased loss of water and electrolytes (sodium, chloride, potassium, and bicarbonate) in the liquid stool. Water and electrolytes are also lost through vomit, sweat, urine and breathing. Dehydration occurs when these losses are not replaced adequately and a deficit of water and electrolytes develops.

The volume of fluid lost through the stools in 24 hours can vary from 5 ml/kg (near normal) to 200 ml/kg, or more. The concentrations and amounts of electrolytes lost also vary. The total body sodium deficit in young children with severe dehydration due to diarrhoea is usually about 70-110 millimoles per litre of water deficit. Potassium and chloride losses are in a similar range. Deficits of this magnitude can occur with acute diarrhoea of any aetiology. The most common causes of dehydration are rotavirus, enterotoxigenic *Escherichia coli* (ETEC) and, during epidemics, *Vibrio cholerae* O1 or O139.