# Implementing the New Recommendations on the Clinical Management of Diarrhoea

Guidelines for Policy Makers and Programme Managers









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## Introduction

Acute diarrhoea remains a leading cause of childhood deaths – despite the undeniable success of oral rehydration therapy (ORT) over the years. Since 1978, when the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) adopted ORT using oral rehydration salts (ORS) solution as the primary tool to fight dehydration, the mortality rate for children under the age of five suffering from acute diarrhoea has fallen from 4.5 million to 1.8 million deaths annually. However, in spite of this impressive achievement, acute diarrhoea remains a leading cause of death among children in developing countries.

WHO and UNICEF have released revised recommendations aimed at dramatically cutting the number of deaths due to diarrhoea. These new recommendations take into account two significant recent advances: demonstration of the increased efficacy of a new formulation for ORS containing lower concentrations of glucose and salt, and success in using zinc supplementation in addition to rehydration therapy in the management of diarrhoeal diseases. Prevention and treatment of dehydration with ORS and fluid commonly available at home, breastfeeding, continued feeding, selective use of antibiotics, and providing zinc supplementation for 10 to 14 days are the critical therapies that will help us achieve these goals.

This manual provides policy makers and programme managers with the information they need to introduce and/or scale up a national decision to introduce the new ORS formulation and zinc supplementation as part of the clinical management of diarrhoeal diseases.

## New recommendations on the clinical management of diarrhoea

The overall goals of this section are ----

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- To create a good understanding about the new recommendations made by WHO and UNICEF for the clinical management of diarrhoea
- To enable decision-makers in the health sector to make an informed choice on the adoption/ introduction of these new recommendations

### 2.1 What are the new recommendations?

Health care workers treating children for diarrhoea should be using the new low osmolarity ORS solution recommended by WHO and UNICEF in 2003. As before, they are encouraged to provide caretakers of children with diarrhoea with two 1-litre packets of the new ORS solution for home use until the diarrhoea stops.

Caretakers should also be provided with enough zinc supplements to continue home treatment for 10-14 days. Printed material (including text and illustrations) with advice on preventing and treating diarrhoea at home should accompany the ORS and zinc supplements.

Use of home fluids for preventing dehydration is still recommended, and the criteria for the selection of an appropriate home fluid remains unchanged. However, children with diarrhoea treated at home with home-based fluids should also receive zinc supplements for 10-14 days.

Success in reducing death and illness due to diarrhoea depends on acceptance of the scientific basis and benefits of these new therapies by governments and medical communities. It also depends on reinforcing family knowledge of prevention and treatment of diarrhoea, and providing information and support to underserved families.

Therefore, the revised recommendations emphasize family and community understanding of how to manage diarrhoea.

- Mothers and other caregivers should
  - □ Prevent dehydration through the early administration of increased amounts of appropriate fluids available in the home, including ORS solution, if on hand
  - □ Continue feeding (or increase breastfeeding) during the episode and increase feeding afterward
  - Recognize the signs of dehydration and take the child to a health care provider for new ORS or intravenous electrolyte solution, and familiarize themselves with symptoms requiring medical treatment (e.g. bloody diarrhoea)
  - □ Provide children with 20 mg per day of zinc supplementation for 10-14 days (10 mg per day for infants under the age of six months)

- Health care workers should
  - □ Counsel mothers to begin administering suitable available home fluids immediately upon onset of diarrhoea in a child
  - □ Treat dehydration with new ORS solution (or with an intravenous electrolyte solution in cases of severe dehydration)
  - □ Emphasize continued feeding or increased breastfeeding during, and increased feeding after, the diarrhoeal episode
  - □ Use antibiotics only when appropriate, i.e., in the presence of bloody diarrhoea or shigellosis, and abstain from administering anti-diarrhoeal drugs
  - Provide children with 20 mg per day of zinc supplementation for 10-14 days (10 mg per day for infants under six months old)
  - □ Advise mothers of the need to increase fluids and continue feeding during future diarrhoeal episodes

### 2.2 The scientific evidence supporting these new recommendations

The revised recommendations formulated by WHO and UNICEF, in collaboration with the United States Agency for International Development (USAID) and other experts worldwide, are based on elements of past recommendations (early administration of increased amount of fluids, continued feeding or increased breastfeeding, and recognition of signs of dehydration), and take into account two recent significant research findings.

- Development of an improved formula for ORS solution with reduced levels of glucose and salt (NaCl) that shortens the duration of diarrhoea, reduces stool volume and reduces the need for unscheduled intravenous (IV) fluids
- Demonstration that zinc supplements given during and just after an episode of acute diarrhoea reduce the duration and severity of the episode, and lower the incidence of diarrhoea in the following 2-3 months

### 2.2.1 Improved ORS formulation

For more than 25 years, WHO and UNICEF have recommended a single formulation of glucosebased ORS to prevent or treat dehydration from diarrhoea regardless of cause or age group affected. The ORS recommended until recently, which provides a solution containing 90 mEq/l of sodium with a total osmolarity of 311 mOsm/l, has proven effective and without apparent adverse effects in worldwide use. It has contributed substantially to the dramatic global reduction in mortality from diarrhoeal disease during the period.

For the past 20 years, numerous studies have been undertaken to develop an "improved" ORS. The goal was a product that would be at least as safe and effective as standard ORS for preventing or treating dehydration but would also reduce stool output or have other important clinical benefits. One approach has consisted in reducing the osmolarity of ORS solution to avoid possible adverse effects of hypertonicity on net fluid absorption. This was done by reducing the solution's glucose and salt (NaCl) concentrations.

Studies to evaluate this approach were reviewed at a consultative technical meeting held in New York (USA) in July 2001. Technical recommendations were made to WHO and UNICEF on the efficacy and safety of reduced osmolarity ORS in children with acute non-cholera diarrhoea, and in adults and children with cholera.

These studies showed that the efficacy of ORS solution for treating children with acute noncholera diarrhoea is improved by reducing its sodium concentration to 75 mEq/l, its glucose concentration to 75 mmol/l and its total osmolarity to 245 mOsm/l. The need for unscheduled supplemental IV therapy in children given this solution was reduced by 33%. In a combined analysis of this study and studies with other reduced osmolarity ORS solutions (osmolarity 210-268 mOsm/l, sodium 50-75 mEq/l) stool output was also reduced by about 20% and the incidence of vomiting by about 30%. The 245 mOsm/l solution also appeared to be as safe and at least as effective as standard ORS for use in children with cholera.

The reduced osmolarity ORS containing 75 mEq/l sodium, 75 mmol/l glucose (total osmolarity of 245 mOsm/l) is as effective as standard ORS in adults with cholera, and therefore can be used in place of standard ORS for treating adults with cholera.

Because of the improved effectiveness of reduced osmolarity ORS solution, especially for children with acute, non-cholera diarrhoea, WHO and UNICEF now recommend that countries use and manufacture the following formulation in place of the previously recommended ORS solution with a total osmolarity of 311 mOsm/l.

Reduced osmolarity ORS	grams/litre	Reduced osmolarity ORS	mmol/litre
Sodium chloride	2.6	Sodium	75
Glucose, anhydrous	13.5	Chloride	65
Potassium chloride	1.5	Glucose, anhydrous	75
Trisodium citrate, dehydrate	2.9	Potassium	20
		Citrate	10
		Total osmolarity	245

Although this single ORS formulation is recommended, WHO and UNICEF have previously published criteria that remain unchanged for acceptable ORS formulations. These criteria are listed below; they specify the desired characteristics of the solution after it has been prepared according to the instructions on the packet.

- The total substance concentration (including that contributed by glucose) should be within the range of 200–310 mmol/l
- The individual substance concentration

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