WHO/UNICEF JOINT STATEMENT

CLINICAL MANAGEMENT OF ACUTE DIARRHOEA

WORLD HEALTH ORGANIZATION

unicef

Two recent advances in managing diarrhoeal disease – newly formulated oral rehydration salts (ORS) containing lower concentrations of glucose and salt, and success in using zinc supplementation – can drastically reduce the number of child deaths. The new methods, used in addition to prevention and treatment of dehydration with appropriate fluids, breastfeeding, continued feeding and selective use of antibiotics, will reduce the duration and severity of diarrhoeal episodes and lower their incidence. Families and communities are key to achieving the goals set for managing the disease by making the new recommendations routine practice in the home and health facility.

ACUTE DIARRHOEA STILL A LEADING CAUSE OF CHILD DEATHS

Though the mortality rate for children under five suffering from acute diarrhoea has fallen from 4.5 million deaths annually in 1979 to 1.6 million deaths in 2002, acute diarrhoea continues to exact a high toll on children in developing countries.

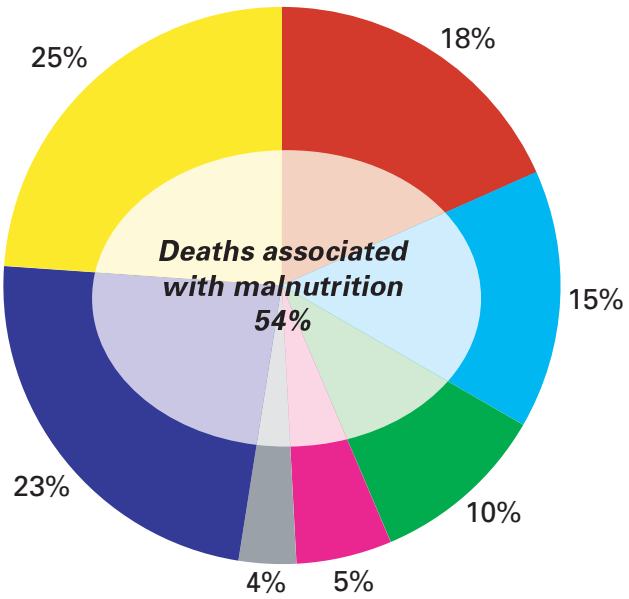
Oral rehydration salts (ORS) and oral rehydration therapy (ORT), adopted by UNICEF and WHO in the late 1970s, have been successful in helping manage diarrhoea among children. It is estimated that in the 1990s, more than 1 million deaths related to diarrhoea may have been prevented each year, largely attributable to the promotion and use of these therapies. Today, however, there are indications that in some countries knowledge and use of appropriate home therapies to successfully manage diarrhoea, including ORT, may be declining.

THE GOALS

The revised recommendations will help reduce mortality from diarrhoea, in line with global goals that aim to:

- Reduce by one half deaths due to diarrhoea among children under five by 2010 compared to 2000 ('A World Fit for Children', outcome document of the UN Special Session on Children)

- Reduce by two thirds the mortality rate among children under five by 2015 compared to 1990 (United Nations Millennium Development Goals)



Major causes of death among children under five in developing countries, 2002

Sources: For cause-specific mortality: *The World Health Report 2003,* WHO, Geneva. For malnutrition: Pelletier, D. L., E. A. Frongillo, and J. P. Habicht, 'Epidemiologic evidence for a potentiating effect of malnutrition on child mortality', *American Journal of Public Health,* vol. 83, no. 8, August 1993, pp. 1130-1133.

Note: The figures for proportional mortality related to children under five are currently under review by UNICEF and WHO.

JOINT STATEMENT

More than 1.5 million children under five continue to die each year as a result of acute diarrhoea. The number can be dramatically reduced through critical therapies such as prevention and treatment of dehydration with ORS and fluids available in the home, breastfeeding, continued feeding, selective use of antibiotics and zinc supplementation for 10–14 days.

These new recommendations, formulated by UNICEF and WHO in collaboration with the United States Agency for International Development (USAID) and experts worldwide, take into account new research findings while building on past recommendations. Success in reducing death and illness due to diarrhoea depends on acceptance of the scientific basis and benefits of these therapies by governments and the medical community. It also depends on reinforcing family knowledge of prevention and treatment of diarrhoea, and providing information and support to underserved families.

PROGRESS AND CHALLENGES

NEW DEVELOPMENTS

Recent scientific advances have informed these revised recommendations. They are:

- Development of an improved formula for ORS solution with reduced levels of glucose and salt, which shortens the duration of diarrhoea and the need for unscheduled intravenous fluids[1]

- Demonstration that zinc supplements given during an episode of acute diarrhoea reduce the duration and severity of the episode[2], and

- Findings that zinc supplementation given for 10–14 days lowers the incidence of diarrhoea in the following 2–3 months[3]

Many more lives can be saved if these advances are used in conjunction with effective home treatment and use of appropriate health services. To be most effective, these revised recommendations **must become routine practice** both in the home and health facility. (See the Technical Annex on page 6 for additional details.)

BUILDING ON PAST SUCCESSES

ORS, ORT and other components of clinical management of diarrhoea have made a significant contribution to reducing deaths from diarrhoea. However, if the global goals are to be met, there is still much to do.

Family knowledge about diarrhoea must be reinforced in areas such as prevention, nutrition, ORT/ORS use, zinc supplementation, and when and where to seek care. Where feasible, families should be encouraged to have ORS ready-to-mix packages and zinc (syrup or tablet), readily available for use, as needed. Breastfeeding should continue simultaneously with the administration of appropriate fluids or ORS.

RECOMMENDATIONS

The revised recommendations emphasize family and community understanding of managing diarrhoea. When they become routine practice, caretakers will act quickly at the first sign of diarrhoea, rather than waiting before treating the child. The aim is that the recommendations become routine practice both in the home and health-care facility.

MOTHERS AND OTHER CAREGIVERS SHOULD

- Prevent dehydration through the early administration of increased amounts of appropriate fluids available in the home, and ORS solution, if on hand
- Continue feeding (or increase breastfeeding) during, and increase all feeding after the episode
- Recognize the signs of dehydration and take the child to a health-care provider for ORS or intravenous electrolyte solution, as well as familiarize themselves with other 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 six months old).

HEALTH-CARE WORKERS SHOULD[4]

- Counsel mothers to begin administering suitable available home fluids immediately upon onset of diarrhoea in a child
- Treat dehydration with ORS solution (or with an intravenous electrolyte solution in cases of severe dehydration)
- Emphasize continued feeding or increased breast-feeding 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 episodes.

Health-care workers treating children for diarrhoea are encouraged to provide caretakers with two 1-litre packets of the new ORS, 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.

COUNTRIES SHOULD

- Develop a 3–5 year plan to reduce mortality rates from diarrhoeal diseases
- Assess progress in controlling diarrhoeal diseases by monitoring usage rates of ORT/ORS, home-based treatment and zinc supplementation
- Using the media and face-to-face communication, promote and refine messages on diarrhoea prevention, home management of diarrhoea and appropriate care-seeking
- Prioritize improving the availability of the new ORS solution and zinc supplements through private and public channels
- Craft suitable strategies to educate health-care workers at all levels about using the new ORS and zinc supplements in treating diarrhoea
- Promote the availability of a zinc formulation that is cost-effective and easily administered to both infants and children
- Identify obstacles to the use of ORS, zinc supplements and home-based treatments in managing acute diarrhoea.

UNICEF, WHO AND OTHER PARTNERS WILL SUPPORT THESE ACTIONS BY

- Advocating, facilitating and investing resources to ensure country adoption and implementation of these revised recommendations
- Working with governments and the private sector, including non-governmental organizations and businesses, to rapidly disseminate these recommendations
- Supplying new ORS and zinc supplements to countries that cannot manufacture them to quality standards
- Helping with communication efforts aimed at enhancing prevention and management of diarrhoea, including promoting routine use of new ORS and zinc supplements.

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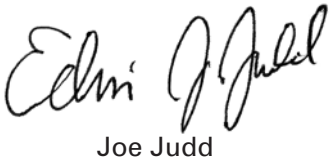

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1. Department of Child and Adolescent Health and Development, World Health Organization, 'Reduced osmolarity oral rehydration salts (ORS) formulation – Report from a meeting of experts jointly organized by UNICEF and WHO' (WHO/FCH/CAH/01.22), New York, 18 July 2001 <http://www.who.int/child-adolescent-health/New_Publications/NEWS/Expert_consultation.htm>.

2. Bahl, R., et al., 'Effect of zinc supplementation on clinical course of acute diarrhoea' – Report of a Meeting, New Delhi, 7-8 May 2001. *Journal of Health, Population and Nutrition,* vol. 19, no. 4, December 2001, pp. 338-346.

3. Bhutta Z.A., Black, R.E., Brown K. H., et al., 'Prevention of diarrhoea and pneumonia by zinc supplementation in children in developing countries: Pooled analysis of randomized controlled trials', Zinc Investigators' Collaborative Group, *Journal of Paediatrics,* vol. 135, no. 6, December 1999, pp. 689-697.

4. For more details on the management of acute diarrhoea, consult 'The Treatment of Diarrhoea – A manual for physicians and other senior health workers', WHO/CAH/03.7, World Health Organization, Geneva.

PHOTO CREDITS: **Cover:** A young Bangladeshi mother helps her healthy baby to stand, © UNICEF/HQ93-1880/Shamsuz Zaman;
Page 3: A health-care worker spoon-feeds an ORS solution to a sick infant in the paediatrics ward of Kaduna Hospital, Nigeria, © UNICEF/HQ97-1147/Giacomo Pirozzi

TECHNICAL ANNEX

ADVANCES IN MANAGING DIARRHOEAL DISEASES

NEW AND IMPROVED ORS WILL SAVE MORE LIVES

For more than 25 years, WHO and UNICEF have recommended a single formulation of glucose-based ORS to prevent or treat diarrhoeal dehydration, no matter the cause or affected age group. This solution has played a major role in dramatically reducing global mortality due to diarrhoea. During this time, researchers sought to develop an 'improved' ORS formulation that was as safe and effective as the original in preventing and treating diarrhoeal dehydration but also reduced stool output or offered additional clinical benefits, or both.

One research effort focused on reducing the osmolarity of ORS solution to avoid possible adverse effects of hypertonicity on net fluid absorption. Reducing the concentrations of glucose and salt (NaCl) in the solution accomplished this goal. Studies of this approach show that decreasing the sodium concentration of the ORS solution to 75 mEq/l, the glucose concentration to 75 mmol/l, and the total osmolarity to 245 mOsm/l improved the efficacy of the ORS regimen for children with acute non-cholera diarrhoea.

The need for unscheduled supplemental intravenous therapy in children given the new ORS fell by 33 per cent. An analysis of this and

RECOMMENDED FORMULATION

Because of the improved effectiveness of reduced osmolarity ORS solution, especially for children with acute, non-cholera diarrhoea, WHO and UNICEF are recommending that countries manufacture and use the following formulation in place of the previously recommended ORS solution.

COMPOSITION OF REDUCED OSMOLARITY ORS

Reduced osmolarity ORS	**grams/litre**
Sodium chloride	2.6
Glucose, anhydrous	13.5
Potassium chloride	1.5
Trisodium citrate, dihydrate	2.9
Total weight	**20.5**
Reduced osmolarity ORS	**mmol/litre**
Sodium	75
Chloride	65
Glucose, anhydrous	75
Potassium	20
Citrate	10
Total osmolarity	**245**