

Management of Acute Diarrhea: From Evidence to Policy

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Diarrhea remains an important contributor to childhood deaths in India, being one of the top 10 causes of deaths among infants and children of 0-4 year of age. About 10% of infants and 14% of 0-4 year children die due to diarrhea in India(1). Important interventions for reducing mortality due to childhood diarrhea include (i) appropriate diarrhea management; and (ii) promotion of personal and household hygiene practices. Two effective interventions have been introduced as part of the diarrhea management in the last two decades, namely low osmolarity ORS and zinc.

NEW TECHNICAL ADVANCES: LOW OSMOLARITY ORS AND ZINC

The WHO Meeting of Experts concluded in 2001 that there are programmatic advantages of using a single rehydrating solution globally for all causes of diarrhea in all ages. Evidence from large, well conducted, randomized controlled trials including those in India, showed that low osmolarity ORS with 75 mEq/L of sodium and 75 mmol/L of glucose, osmolarity of 245 osmol/L is effective in children with non cholera diarrhea and in adults and children with cholera(2). This new improved ORS was recommended by the WHO/UNICEF as the universal solution for all ages and all types of diarrhea(3). It was also included in the national policy by the Government of India in 2004. Subsequently, two Phase IV studies on more than 100,000 adults and children hospitalized with diarrhea (approximately 20% with cholera), reported no increased risk of symptomatic hyponatremia with low osmolarity ORS(4).

A number of trials in India and other low middle income countries have documented faster recovery and reduced severity from zinc supplementation during acute diarrhea(5,6). Zinc deficiency is common in children living in such settings due to low intake of animal foods, high dietary phytate content, and overall inadequate diets(7). This led to the WHO recommendation of supplemental zinc syrup or tablets (10 mg elemental zinc for infants <6 months and 20 mg/day for children ≥6 months for 10 to 14 days) during acute diarrhea(8). Addition of zinc to current case management strategy was evaluated in a cluster randomized study in six primary health centers in North India(9). Prevalence and hospitalization for diarrhea decreased significantly in the villages that received low osmolarity ORS and zinc as compared to the control villages. It is important to note that the prescriptions for antibiotics by care providers and use of unwarranted injections were significantly less, and the ORS use rates significantly higher in the intervention villages. Additionally, zinc given during an episode of diarrhea reduced subsequent diarrheal morbidity. Similar benefits on reduction of antibiotic use during diarrhea were seen in a large multicentre study done across India, Brazil, Ethiopia, Egypt, and the Philippines(10). Prompted by these results, Government of India included zinc in the National program for treatment of diarrhea in 2007.

REVISED GUIDELINES FOR MANAGEMENT OF DIARRHEA

The revised guidelines for management of diarrhea (*personal communication*) issued by the

Government of India and the Indian Academy of Pediatrics recommend low osmolarity ORS, zinc (10 mg elemental zinc for infants 2 to 6 months and 20 mg/day for children \geq 6 months for 14 days) and continued feeding of energy dense feeds in addition to breastfeeding(11). The guidelines emphasize the importance of home available fluids, hand washing and other hygiene practices. Antimicrobials are recommended only for gross blood in stools or *Shigella* positive culture, cholera, associated systemic infection, or severe malnutrition.

There is presently not enough evidence on either safety or efficacy of antisecretory drugs like racecadotril for its routine use in the treatment of diarrhea. There is no data from our settings. Methodology of most of the published studies on anti secretory drugs is questionable.

There is presently insufficient evidence to recommend probiotics in the treatment of acute diarrhea in our settings as almost all the studies till date are from developed countries. It is not possible to extrapolate the findings of these studies to our setting where the breastfeeding rates are higher and the microbial colonization of the gut is different. The effect of probiotics is strain related and there is paucity of data to establish the efficacy of the probiotics available in the Indian market. To recommend a particular species, it will have to be first evaluated in randomized controlled trials in Indian children. More clarity is required on strain standardization, their colonization, dose and duration of therapy, and interaction with other therapy (zinc) before probiotics can be considered for use during diarrhea in India.

CHALLENGES AHEAD

The current challenge in the diarrhea treatment program is an universal and more optimal application of the diarrhea management guidelines. Data from the National Family Health Survey (NFHS-3)(12) show that the ORS use rates have not changed in the last two decades; 18% in 1992-93 and 27% in 2005. The cause for concern is that the ORS rates continue to be below 20% for states of Jharkand, UP, Nagaland, Assam and Rajasthan. Additionally, only about 43% Indian children

suffering from diarrhea receive any oral rehydration therapy (ORT).

What is more alarming is that not more than 47% of prescriptions for diarrhea included ORS in a recent UNICEF survey of 10 Indian districts; while “tonics”, anti-diarrheal drugs and injections continued to be prescribed in the same proportion as for ORS(13). Although Government of India has initiated provision of zinc in addition to low osmolarity ORS through public health system under the National Rural Health Mission, the survey documented less than 1% of prescriptions for zinc. One of the main reasons for this is lack of knowledge and awareness amongst care providers on how to implement existing cost-effective interventions. The challenge is to achieve greater coverage of these interventions in low-resource settings.

IAP-UNICEF PROJECT TO IMPROVE EVIDENCE BASED MANAGEMENT OF DIARRHEA BY PROMOTING USE OF LOW OSMOLARITY ORS AND ZINC

IAP and UNICEF initiated a nationwide program in 2009 to promote rational diarrhea management among medical colleges, health providers across 8 states of the country, with specific focus in 32 districts with poor health indices. The aim is to improve case management of diarrhea in the targeted areas by increasing awareness amongst health providers through workshops conducted by trained pediatricians and physicians from the same area.

The on-going program that started in September 2009 is being conducted over three phases. In the initial phase, the IAP National Consultative Group prepared a training capsule on evidence based management of diarrhea in the form of power point presentations, posters (see pages 214, 290) and videos. This was followed by a National Training of Trainers meeting to train the Zonal and State Co-ordinators. Three zonal workshops for Heads of the Departments of Pediatrics of medical colleges from South, North, and East Zone at Chennai, Delhi, and Kolkata, were concluded in Phase 2. In addition, State workshops were held at Uttarakhand,

Chhattisgarh, Madhya Pradesh, Bihar, Odisha, Rajasthan, Uttar Pradesh and Jharkhand. Phase 3 will be initiated in March this year when 32 district level workshops will be conducted in the above mentioned eight states.

This program reaffirms the Indian Academy of Pediatrics commitment to find solutions for the rational management of diarrhea, a disease that continues to affect millions of children in the developing world.

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