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## International Perspectives

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# Oral Rehydration Therapy: An Oasis of Hope in the Developing World

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A miracle of modern medicine is rippling through the developing world, so quietly and so free of media turbulence as to nearly escape our attention here in the United States. For a few cents a day, oral rehydration therapy (ORT) of diarrhea offers the hope of life to the five million children who die each year of dehydration in rural villages and septic urban fringes.<sup>1</sup> Quite appropriately, its early success and future promise were

first brought to our attention by a constellation of public health luminaries from the far corners of the world who gathered in Washington, DC, in July 1983 under the auspices of the First International Congress on Oral Rehydration Therapy. Sponsored by the Agency for International Development, the World Health Organization, and UNICEF, the congress raised the curtain on a new era in world health.

From Malaysia to Honduras, the story was the same: If one can get a few cents' worth of salt solution into the patients, lives will be saved. The central concept, of course, is that children do not die from diarrhea, they die from dehydration. The official formula recommended by the World Health Organization and distributed by UNICEF is 3.5 g of sodium chloride, 2.5 g of sodium bicarbonate, 1.5 g of potassium chloride, and 20 g of

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glucose, all to be added to 1 L of water. This yields an electrolyte composition in milliequivalents per liter of 90 mEq sodium chloride, 20 mEq potassium, 80 mEq chloride, 30 mEq bicarbonate, and 110 mmol/L glucose.<sup>2</sup> The physiology that underlies this simple but effective therapy is still being investigated in the laboratory; it seems clear, however, that glucose somehow facilitates the intestinal absorption of sodium chloride, which in turn causes absorption of water.<sup>3</sup>

Some of the most compelling data on the efficacy of ORT presented at the congress came from Dr. Jon Rohde. Rohde described his work in a Haitian hospital that had only limited capacity for serum electrolyte determinations and a budget that could not support intravenous fluid therapy for a multitude of critically ill patients. He said that before his arrival, there was a 46 percent mortality rate among children hospitalized with diarrhea, but that after the introduction of ORT on the wards, the rate dropped to less than 1 percent. In what proved to be a chilling reminder of the importance of programmatic rigor, however, when he went on a two-month vacation, the mortality rate went up to 26 percent. After he returned, the rate promptly came down again under his watchful eye.<sup>4</sup>

Such testimonials dramatize the importance of the ORT movement. It is certain to be the subject of much activity and interest over the next few years. The first issue of a new journal entitled *Oral Rehydration Therapy and Diarrhea* is in preparation; and encouraged by the reports presented in Washington, many Third World physicians and health agencies plan to introduce ORT in their communities. As anyone experienced with innovations in health care knows, however, the full spectrum of problems facing those who battle to eradicate diarrhea as a killer of children has not yet revealed itself, nor should anyone feel that the struggle will be anything less than challenging and protracted.

For one thing, logistic problems threaten to be substantial, since even though packets of salts are available from UNICEF for a few cents each, the distribution of such things to people without roads is a hit-or-miss undertaking. After a series of radio and television spots in the cities of Honduras, for example, one group could not get the packets out to villagers on a regular basis despite having per-

suaded mothers to use these salts to save their children's lives. Not only were the mothers very unhappy indeed, but worse yet (having been disabused of their traditional folk beliefs for treating diarrhea), they were left without any coping mechanisms at all.

To circumvent such basic supply problems, the Institute of Child Health in London, under the direction of Dr. David Morley, has produced an inexpensive two-headed plastic spoon, one head of which is filled with sugar and the other with salt—both from the normal household supply. Added to a cup of water, these two substances provide the right basics for successful oral rehydration therapy. Even though the resultant solution lacks bicarbonate and potassium, it has been found workable in Morley's African field studies. (Since the spoons themselves are sometimes broken and are alien to many cultures where things are measured in pinches, bottle caps, or acorns, experienced field workers now suggest the identification of local measures that closely approximate the volume of the plastic spoons.)

Several other important issues were raised at the Washington congress. It was pointed out, for example, that while prepackaged salt solutions (analogous to Pedialyte in the United States) are available to the affluent in Third World cities, the quality of water in rural settings is often questionable. How effective any ORT substances can be if mixed with dirty water is still uncertain, but some reported that even dirty water can be lifesaving and that if persuading people to boil their water is a problem, it is better not to worry. Finally, it was mentioned that in some areas of the world, it might be advisable to use ORT substances that not only are cheaper than the prepackaged salts but also have a traditional base. In Egypt, Pakistan, and Bangladesh, for example, mothers often treat infant diarrhea with rice water. Rice water contains carbohydrates and, with a pinch of salt added, might well prove to be more readily acceptable and available than the UNICEF electrolyte packets.

The preceding discussion suggests that apart from the cost, which, minimal as it is, is still a problem in countries where the per capita income is but a few hundred dollars per year, changing people's behavior is likely to be difficult. It must be remembered, for example, that in parts of Mex-

ico not far from the US border, where infant mortality rates approximate those in rural Ghana, it is believed that the best treatment for diarrhea is to eliminate all oral intake of any kind. Clearly, there is still much work to be done in making ORT acceptable to those who are only vaguely or not at all aware of the germ theory of disease, and who are perhaps accustomed to approaching diarrhea as something that requires incantation by the village sorcerer rather than dietary intervention.

A tragic occurrence during the author's preliminary efforts to introduce oral rehydration therapy to Tarahumara Indians in a Mexican setting described elsewhere<sup>5</sup> is illustrative. A 15-month-old infant with diarrhea whose parents had been instructed in ORT was not brought back for a 24-hour checkup as requested. The health team was concerned but did not know how to find the child's home among the myriad ravines and cliffs inhabited by this widely dispersed indigenous people. Several weeks later it was learned that the child had died 48 hours after being seen, but before he died, the parents had discontinued oral rehydration therapy. They explained that they had felt that a simple sugar and salt solution made in their own home was not "medicine," and they had called in a local shaman instead. As a result of this event,

the health care team made efforts to educate the shaman about ORT and substituted an herbal tea traditionally used for diarrhea for the plain water called for in the ORT solution.

Examples such as these show that ORT, to be successful, must draw on a combination of medical science, public health, and applied medical anthropology that is wholly germane to the endeavors of family physicians in the Third World. Thus, as the International Society of Teachers of Family Medicine looks forward to its second international meeting in Panama in August 1984, it seems certain that oral rehydration therapy will enjoy considerable attention. Family physicians who find their calling in trying to lighten the burdens of their fellow man in the developing world will find in ORT the promise of life for millions. Mothers accustomed to losing one of every three infants to diarrhea may soon have enough faith in their survival to consider having fewer children. Thus, in many senses, we are embarking on a bright new era for the Third World, and it seems likely that family physicians will be in the vanguard of those bringing this new technology to the less fortunate. All of us, whether we ourselves venture afield or whether we watch from afar, can take heart from the promise of a new chapter in medical history.

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