Why is every country not primed to use oral rehydration therapy to treat cases of diarrhoea?

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In March 1971 civil war broke out in the then East Pakistan, which nine months later led to the birth of Bangladesh. Within months millions of refugees had crossed the Indian border and so by the conclusion of the war in December 1971, there were an estimated 10 million refugees. With such massive displacement of people it was inevitable that the strain on resources, especially water and sanitation, would lead to outbreaks of diarrhoea. As cholera was endemic to the region it was no surprise when major epidemics occurred in the refugee camps beginning in early June 1971.

In 1968 clinical trials at the Pakistan SEATO Cholera Research Laboratory in Dhaka (now the International Centre for Diarrhoecal Disease Research, Bangladesh—ICDDR,B) had demonstrated that an oral-glucose electrolyte solution (ORS) could maintain hydration in cholera patients and in other patients with severe dehydrating diarrhoea. Intravenous (IV) fluid requirements were reduced by 80% in patients treated with ORS. These results were subsequently confirmed at the Johns Hopkins Center for Medical Research and Training in Calcutta (now Kolkata) (JH-CMRT). The first large field trial carried out at Matlab Bazar, in then East Pakistan (now Bangladesh), confirmed the efficacy of ORS in a rural hospital setting when trained doctors, nurses or health workers administered the treatment. The ORS alone significantly reduced the degree of severe dehydration if given early in the course of illness.

In June 1971 a cholera outbreak began in the subdivisional area of Bongaon, about 50 miles from Calcutta (now Kolkata), the home to about 350,000 refugees and the site of a government hospital with 16 beds. Living conditions, including resources for water and sanitation were stretched well beyond the limit of local resources. Two teams were organized by the JH-CMRT to provide care to the local population. The ingredients for ORS packets were weighed and measured at the office in Calcutta (Kolkata) and taken to refugee camps. A simplified treatment plan was developed that called for IV for those admitted in shock, with ORS begun when the patient was out of shock and alert enough to take ORS (usually within one to four hours after initiating therapy). The case fatality rate was kept to 3.6% overall (n=3703 patients) and was less than 1% (n=1200) in the JH-CMRT demonstration ward. There had been

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estimates of cholera-related mortality in the camps of up to 30% before initiation of the new treatment protocols. The study was not quantitative, as records of IV volumes or oral fluids per case could not be kept, but a number of very important observations were made.4

It was clear that trained persons could dramatically reduce mortality in even the most basic of clinical settings under disaster conditions. Treatment with ORS, if begun early in the illness, could obviate the need for ORS in most patients. Even if the patient vomited, the ORS was continued as emesis soon stopped. Physicians and other health providers had to be convinced to give large volumes of ORS and not hold back. There were no cases of over-hydration in those treated with ORS. Family members and village health workers could be taught to be very effective in helping to treat patients.

A number of developments have since been added to the effectiveness and access of ORS. These include: the use of rice or cereal-based ORS; the use of community-based workers to deliver home-based ORS by packet or by the pinch-and-scoop method; and the demonstration that low-osmolarity ORS could reduce the volume of diarrhoea in non-cholera diarrhoeas. But the basic principle remains—stool fluid losses must be corrected and hydration maintained with a physiologically sound solution. The ORS and the therapeutic method known as oral rehydration therapy (ORT) have been widely promoted by WHO, national governments and nongovernmental organizations (NGOs), and are now widely available throughout the world for cholera and all other forms of dehydrating diarrhoea.

It is disheartening, therefore, to see that today, 40 years after the publication of a classic paper by Mahalanabis et al.,4 there is so much unnecessary morbidity and mortality from outbreaks of cholera in areas affected by natural and man-made disasters. In July 1994 over 40 000 people died from cholera and dysentery in the Rwanda refugee camps.5 An ongoing outbreak of cholera in Haiti in 2010-2011, following a devastating earthquake, is estimated to have led to over 7000 deaths and counting.6 Why have the lessons mentioned by Mahalanabis and colleagues not been applied to these and similar situations? Why is not every country primed to use ORT for all cases of diarrhoea, especially during outbreaks of cholera? Does our familiarity with ORT breed contempt? Has its simplicity led to its being set aside for fancier interventions in our high-tech world? In that case why the ingredients could not reach the Rwandan camps and the Haitians? Our inability to deal with these outbreaks represents a significant public health failure in affected countries.

Each year approximately 1.3 million children die of dehydration secondary to diarrhoea.7 It is estimated, however, that less than 30% children have access to ORT in developing countries. This calls for a renewed emphasis on the use of ORS globally for all cases of diarrhoea. It is important that international agencies ensure that ORS is part of the armamentarium of emergency preparedness kits everywhere in the world.

References

