Oral rehydration therapy—from theory to practice

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Less than three years elapsed between the holding of the First International Conference on Oral Rehydration Therapy (ICORT I) and its successor ICORT II in December 1985, yet in that time enormous strides were taken in promoting acceptance of oral rehydration therapy and making this low-cost treatment available to millions of afflicted children, particularly in developing countries. The author, who heads the WHO Diarrhoeal Diseases Control Programme, delivered the summary address at the conclusion of ICORT II; this article is based on his address.

Progress report

Some 1200 participants from 100 countries attended the Second International Conference on Oral Rehydration Therapy, held in Washington, DC, on 10–13 December 1985.¹

The discussions highlighted the considerable experience and confidence gained by the participants in the implementation of oral rehydration therapy (ORT) since the holding of ICORT I in 1983. This was also reflected in a poster display presenting ORT activities and achievements in different countries.

Between 1982 and 1985 the number of countries with national diarrhoeal diseases control (CDD) programmes doubled, and more than 95% of the developing world’s population now live in countries that have such programmes. Access to oral rehydration salts (ORS) increased from 6% to 33% by 1984, and annual production of ORS rose from 110 million packets in 1983 to 270 million packets in 1985, with the great majority being produced in 42 developing countries—in itself an impressive testimony to the capacity of the developing world to achieve self-sufficiency. The inclusion of trisodium citrate in the ORS formulation² has made the product more stable, while use of polyethylene packaging material, where possible, has reduced costs. Many countries have established a national policy for home-prepared ORT solutions. Some 42 have evaluated their country programmes, and nearly as many have undertaken large-scale diarrhoeal disease mortality and morbidity surveys. In a few countries, diarrhoeal mortality has already been reduced by 40–50% by widespread implementation of ORT; in many more countries, mortality in hospitals has decreased by more than 50%.

This accumulated experience clearly shows that ORT can significantly reduce rates of hospitalization, case-fatality, and mortality from diarrhoea; when applied in the community it can reduce visits to health centres or other facilities; and when accompanied by instruction on proper feeding during and after diarrhoea it can reduce associated weight loss and malnutrition. ORT is remarkably cheap, and at the same time saves money by reducing the need for intravenous fluids and other costly hospital procedures. It is also a simple technology easily applied by mothers, who can see its results in a very short time.

Lessons learned

Different aspects of ORT were examined in depth in the course of six panel sessions. Their

¹ This conference, like ICORT I, was sponsored by the US Agency for International Development and organized in collaboration with the United Nations Children’s Fund, the United Nations Development Programme, the World Bank, WHO and the International Centre for Diarrhoeal Disease Research in Bangladesh.

conclusions—summarized below—were then presented to the meeting as a whole.

Communications and social marketing. The panel emphasized the importance of 
(a) using standardized messages and media capable of reaching those affected, and 
(b) focusing these messages on the specific information requirements of target audiences. Short-term, highly intensive efforts may be appropriate in some situations, but only if they are part of a longer-term strategy. In fact, current information activities in ORT in developing countries are transforming the health sector from one based exclusively on the extension of government services to one that makes use of a wider variety of channels.

Distribution and logistics. The government and private sectors will need to work hand in hand to develop uniform formulation and packet labeling and to estimate packet needs. Local production of ORS may be relatively simple, but adequate distribution of packets throughout the health care system requires careful planning and monitoring of supplies.

Health personnel training. The panel advised that training on ORT at all levels must include sufficient first-hand experience to give workers confidence that they can administer ORT and apply it even where it has not been well accepted. Also, mothers can and must be taught to prepare and administer ORT solutions in the home, even though this task is not easy. Experience shows that mothers do not mix and give salt and sugar solutions correctly unless they receive repeated encouragement and training.

Supervision and monitoring. Proper monitoring is possible only after precise determination of what should be monitored, and how and when. Such monitoring may be an unpleasant and difficult task for inadequately trained or poorly motivated supervisors, but is a task in which they must be competent if ORT use is to be effective. Innovative ways must be found to encourage and perhaps decentralize supervision to make it effective.

Evaluation and cost. The panel struggled hard to find indicators for the evaluation of ORT activities. Obtaining data on the use of both ORS and ORT is difficult but important. Novel approaches to measuring programme impact need to be developed, as well as ways of measuring effective ORT use. Measuring the cost and cost-effectiveness of ORT is important for determining optimal strategies for ORT delivery and for convincing health administrators of the economic and social benefits of this intervention.

Integrating ORT with other health activities. An overall programme can only be as strong as its individual parts. These parts must be selected according to existing public health problems and the feasibility and cost of methods to combat them. International and bilateral agencies must recognize that countries themselves need to make the difficult decision as to which programmes should be given priority; support can then be given to strengthen national capabilities in those programmes.

Keys to success in national CDD programmes

The Conference recognized that the following key elements have characterized successful national CDD programmes.

(1) A strong political commitment that results in the creation of a national plan of operation, under a national programme manager as a central focus for the CDD programme, and the provision of sufficient financial resources. None of the successful programmes is vertical; they need to be integrated into a wider health programme but with the clear recognition that CDD has a high priority for action, and is not just one more element added to an already overcrowded maternal and child health or primary health care programme.

(2) A clear strategy for the delivery and use of ORT in the home and in health facilities, including recommendations for feeding during diarrhoea. This strategy, when firmly supported by the medical profession, has made it possible to define the tasks required of mothers and health workers, and then provide them with appropriate practical training to carry out those tasks. It has also formed the basis for an improvement in the training of new physicians, nurses and other paramedical workers upon whom future health care depends.

(3) Ensuring the availability of adequate supplies of ORS packets when and where they are needed through government and commercial channels, and training pharmacists and traditional practitioners in the proper use of ORT. The design of a standardized ORS packet for national use should suit the size of a nationally available container. And national authorities must have the courage—and it takes courage—to take the necessary steps to limit or stop the promotion and routine use of antidiarrhoeal drugs and useless antibiotics in the treatment of childhood diarrhoea.

(4) Special attention to information activities oriented towards the needs of consumers, not just providers. These activities can be undertaken only after health workers, pharmacists and mothers have been trained through more traditional approaches and adequate supplies have been made available.

(5) Recognition of the importance of supervision, including the regular monitoring of both
the quantity and quality of programme activities. Such supervision is clearly required if ORT use is to be effective. Without it, high rates of access and reported use of ORT may well result in little programme impact. Similarly, a mere awareness of ORT without a genuine opportunity to transform that awareness into effective treatment will accomplish little.

(6) A plan for programme evaluation from the outset. This includes the establishment of realistic and quantified targets, the conducting of statistically valid baseline surveys, and the initiation or strengthening of routine or sentinel-based surveillance systems. Only evaluation can make it possible to demonstrate the impact of programmes with regard both to the reduction of diarrhoeal disease mortality and to the strengthening of national primary health care systems.

High-level commitment and focus, sound programme planning, careful attention to programme management, task-oriented training, well-researched communication activities, due emphasis on supervision and especially monitoring and practical evaluation—these are the keys to successful national programmes.

Challenges for the future

The Conference also reviewed new and exciting prospects for the development of an ORT solution that can reduce stool volume, diarrhoea duration, and fluid requirements. This would be invaluable in encouraging mothers to use ORT since they understandably want to lessen their children’s diarrhoea. However, such solutions are only in the initial stage of research and are thus not ready for public health application. Solutions containing defined additives such as glycine and glycyl-glycine may be costly and difficult to package, and could cause osmotic diarrhoea and consequently hypernatraemia if not properly formulated. Solutions containing rice or other cereal powders, whether prepared in packets or at home, have the potentially perilous consequence of being confused with weaning foods. Also, because they are made from cereals, they may discourage feeding during diarrhoea. It was emphasized that CDD programmes have achieved excellent results with what they have available to them now, and must guard against changing their present approach until the scientific and operational issues have been satisfactorily resolved.

An appeal was made to the Conference to look beyond ORT in respect of the sizeable proportion (probably one-third) of all diarrhoea-associated deaths that are due to shigellosis and persistent diarrhoea and cannot be prevented through ORT alone. Thus, prevention must be given more attention. Breast-feeding, proper weaning, use of safe water and latrines, good personal and domestic hygiene, and measles immunization are measures that constitute a cost-effective, complementary package of interventions to decrease diarrhoeal disease mortality and morbidity. Perhaps by the end of this decade rotavirus immunization and vitamin A distribution will be added. Because of the frequency of diarrhoea and the success of therapy, ORT offers an ideal entry point for educating mothers about these interventions. The challenge ahead is to define the technical and managerial components of each of these interventions so that their full impact can be realized.

Feeding during diarrhoea: a must!

“Many of you probably left ICORT I reasonably convinced that you should use and promote ORT but still doubtful of the benefits of feeding during diarrhoea. This was not surprising, given the number of years that medical schools had been teaching that feeding worsens diarrhoea. But, as we now know, feeding is not only possible—it is highly beneficial and should be recommended during diarrhoea and convalescence. Breast-feeding can shorten the duration of illness and decrease stool volume. Appropriate feeding of older infants and children is more likely to reduce the nutritional consequences of diarrhoea than to induce lactose malabsorption!”

—From the author’s summary address to ICORT II