

Dialogue on Diarrhoea

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The international newsletter on the control of diarrhoeal diseases

Time for action

It is dehydration (loss of water and essential body salts), caused by acute diarrhoea, that kills. Just two loose, watery stools will begin to cause dehydration, especially in young children. (This may be even more dangerous if the diarrhoea is accompanied with vomiting.) That is the time for families to take action, before the dehydration takes hold and becomes obvious.

ORT success story

The recommended treatment for obvious dehydration is a solution of oral rehydration salts (ORS) in water, and the use of ORS packets has helped save at least half a million children from death during 1986. UNICEF, the World Health Organization, national diarrhoeal disease control programmes and many other international and voluntary agencies concerned with child health, including the US Agency for International Development, Oxfam and Save the Children Fund, must all be congratulated on making ORS packets much more widely available.

DD has now been reaching people in many countries for seven years. Our recent readership survey showed that many have changed their approach to diarrhoea management. It is good to know that the ORT message is getting through so well.

Value of home fluids

Although ORS solution is effective in preventing as well as treating dehydration, families should seek to prevent



Photo by Arif Ahamed

Anyone with diarrhoea needs to drink more liquid than they are losing in the stools.

dehydration occurring and for this it may be easier for them to use other fluids such as cereal gruels, soups, or salt and sugar solutions, which can be made easily and quickly in the home from ingredients that are to hand.

Many traditional remedies for diarrhoea already exist along these lines and may be commonly given to children anyway as part of their diet, so they are readily accepted and require only slight modification in some instances, for example, adding extra water, or an appropriate amount of salt.

Feeding is important too

The immediate reaction at the very first sign of diarrhoea should be to give the child more to drink. It is very important for families not to stop giving both fluid and food, and breastfeeding should always be continued. Dehydration is much simpler to prevent than to treat. Extra fluids should be given until the diarrhoea stops.

A child with obvious dehydration needs ORS solution, but home fluids

will still help if ORS packets are not available. Anyone with diarrhoea, and this includes adults, needs to drink more liquid than they are losing in the stools. If there is vomiting, drinking must still continue (see page eight).

Looking to the future

Oral rehydration saves lives and preserves health. This issue shows that child survival in diarrhoea need not depend solely on the distribution and use of packets of ORS. Nevertheless, greater access to and use of packets is needed in every developing country. It should, however, not be forgotten that diarrhoea itself, as well as dehydration, needs to be prevented by improving water supplies, sanitation and environmental hygiene; by promoting breastfeeding, good weaning practices and child nutrition; by immunization against childhood communicable diseases such as measles; and by extending family health education.

KME and WAMC

In this issue . . .

- DD questionnaire results
- Early action to prevent dehydration — deciding on an appropriate home solution

AHRTAG

Appropriate Health Resources &
Technologies Action Group Ltd

ORT in practice: Egypt

The Diarrhoeal Disease Research and Rehydration Centre (DDRRC) at Babel-Sha'eya University Hospital in Cairo has been working 24 hours a day since May 1983. By the end of 1986 we estimated that over 15,000 children had been treated. Widespread promotion of ORT through the successful national diarrhoeal disease control project (NCDDP) has meant that mothers start giving ORT early on, at the onset of an episode of diarrhoea. While mothers still bring packets of ORS with them to the Centre, we have noticed that they stay for less time — an average of about two hours — than they did, and ORS consumption at the Centre has decreased. This is because mothers are more confident about giving ORS so they continue to give the treatment at

home once the child has stabilised in the Centre. Even more important, the degree of dehydration is becoming less severe in children presenting at the Centre, and the ratio of severe to moderate cases has changed from 1:9.7 in 1983 to 1:16.8 in 1985. It is presumed that this trend will have a great impact on mortality and long term morbidity. The credit is to the mothers. It is right and natural that the first person to manage a diarrhoeal episode is the mother, she is concerned and now has the proper knowledge and tools (ORS and food) to deal with most cases of diarrhoea. I am afraid that little is left to us!

Professor Mahmoud El-Mougi, Professor of Paediatrics, Principal Supervisor, DDRRC, Cairo, Egypt.

Hospital 'Friends'

Dr Anne Savage proposes to start a 'League of Friends' for overseas rural hospitals. It is hoped that the scheme will be able to match up such hospitals with groups or individuals in the U.K., U.S.A. and Europe, to provide the former with equipment and medical supplies. Anyone interested, either as a 'Friend' or as a potential recipient should write to *Dr Anne Savage, 12 Turner Close, London NW11 6TU, U.K.* It would be helpful if hospitals or clinics could supply the following details: name, address, type of hospital (i.e. government, mission), number of beds, type of work undertaken, whether a charge is made to patients. The name of an organisation which could provide a reference would be appreciated.

Stop press

UNICEF's 1987 edition of **The State of the World's Children**, published by Oxford University Press is now available from UNICEF, price £4.25, US\$8.95. Readers should contact their regional or local UNICEF office.

Erratum

Apologies to Dr J P Ackers for omitting the 'Dr' from the credit for his article on amoebiasis in *DD 27*.

New ORT film

Sonamoni (Golden Pearl) is a colour 16mm film, 34 minutes in length, in Bengali, available with or without English subtitles. It was produced in Bangladesh in 1986 and is the third in a series of 'melodrama with a message' films produced in the commercial entertaining style enjoyed by Bengali audiences. Underlying the story is a message which promotes the use of oral rehydration therapy for diarrhoea and ways to prevent the disease. 16mm copies of the film are available from *DSR Inc., Box 281, Columbia, MD 21045, USA* at US\$450. All formats of video are available (for purchase or hire).

ORT in practice: China

While most large hospitals in China have routinely used IV fluids to treat diarrhoea, it seems that oral rehydration — using salt and sugar solution for diarrhoea — has been widely used in China for more than 20 years. Recent surveys in five counties found that over 90 per cent of 'barefoot doctors' use a simple sugar and salt solution. 34 per cent of mothers also said that they used an oral rehydration solution. Rice water, porridge and other liquids have also been used for diarrhoea in Chinese traditional medicine. In one province

DD translations

Translations of *DD* are available in French, Spanish, Portuguese and Arabic. If readers would like to receive *DD* in any of these languages, please write to AHRTAG, 85 Marylebone High Street, London W1M 3DE, U.K.

Disease diagnosis

The Diagnostic Technology for Community Health (DiaTech) project, funded by USAID, seeks to develop technologically appropriate assays for diagnosis of infectious diseases in developing countries, particularly for diarrhoea, acute respiratory infections and tuberculosis. All proposed studies should have an applied dimension and the potential for beneficial impact on community or individual health care. Proposals will be considered in two batches and should be received by DiaTech no later than June 1 or December 1 1987. Forms and guidelines from: *Program Administrator/DiaTech, PATH, 4 Nickerson Street, Seattle, Washington 98109-1699, U.S.A.*

ICORT II

Proceedings from the Second International Conference on Oral Rehydration Therapy, held in Washington D.C. in December 1985, and reported in *DD 24*, are now available free of charge to *DD* readers. For copies please write to *Robert Clay, Office of Health, Bureau of Science and Technology, Agency for International Development, Room 702, SA18, Washington D.C. 20523, U.S.A.*

carrot juice is a traditional treatment for diarrhoea. Although surveys have revealed high morbidity from diarrhoea in China, mortality figures were found to be very low. It is thought that early treatment using sugar-salt solution, rice water, porridge and other traditional fluids is the reason for the low mortality rates.

Oral rehydration in China. Carl E Taylor and Zu Zhao Yu, *American Journal of Public Health, 1986 76:187-9.*

DD readership survey

The editors would like to thank all readers who filled in and returned the *DD* questionnaire sent out with issue 23. One thousand of your replies have been analysed and these have provided us with many useful ideas for future issues and for improving *DD*, as well as much valuable information about the composition of the readership, about how *DD* is used, and the impact it has had.

It was especially nice to receive so many replies from among the many readers who have only recently joined our mailing list.

Readership profile

The largest proportion of readers is still comprised of doctors, nurses and health administrators (42, 14 and 10 per cent respectively), but there has been an encouraging increase in the range of people represented among the readership since our last survey in 1983. Many more village and community health workers, nutritionists, medical auxiliaries, teachers, now read the *Dialogue*.

It was also interesting to note a significant increase in the percentage of readers who work in clinics and dispensaries and in training schools.

Many respondents share their copy of *DD* with up to six colleagues. On that basis we estimate that *DD* may be reaching well over 250,000 people worldwide in English alone.

Impact of DD

Over two thirds of the respondents manage cases of diarrhoea themselves, and a similar proportion are involved on a day-to-day basis in training and teaching others about diarrhoea management. It is very encouraging therefore to note from the responses to the questionnaire that *DD* has had a significant impact on readers' attitudes and practices regarding diarrhoea management. 81 per cent have changed their management of diarrhoea with regard to feeding; 50 per cent their attitudes to medicine prescribing; and 80 per cent the advice they give to patients, as a result of reading *DD*. Of those readers who teach others about diarrhoea management, 82 per cent said that *DD* had influenced what they teach about rehydration; 46 per cent what they teach about medicine prescribing; and 73 per cent what they teach about feeding.

Content

Features in *DD* which readers have found most useful included information on management by rehydration; feeding and diarrhoea; news about research and scientific developments; and the practical advice pages. Requests for features to be included in future issues also covered a wide range of topics, including nutrition and diarrhoea, aetiology, use of drugs, feeding and diarrhoea, prevention of diarrhoea, approaches to treatment, diagnosis, hygiene and sanitation, and health education.

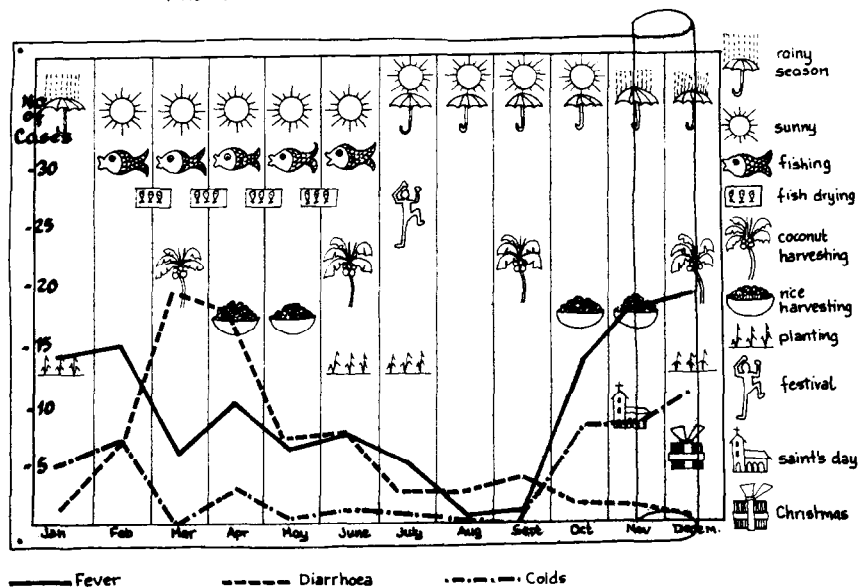
Use of DD

It was also very clear from the questionnaire results that many readers have reproduced material from *DD*, for teaching and training purposes mainly, but also in the media, for local use, and as reference material for diagnosis and treatment. We were also very encouraged by the extent to which material from *DD* has been translated into local languages. Well over 56 local languages were mentioned by respondents from all parts of the world. We hope that readers will continue to freely reproduce and translate material from the newsletter to ensure that the information reaches the widest possible audience and representatives from other disciplines such as agriculture.

Practical evaluation

A new manual, **Partners in Evaluation: Evaluating Development and Community Programmes with Participants**, by Dr Marie-Therese Feuerstein has been published by Macmillan. It is a practical handbook, based on extensive field research and the experience of many people in many parts of the world, designed for those with little formal training in evaluation methodology who want to monitor and evaluate their own work. **Partners in Evaluation** is written in clear, straightforward language, contains many illustrations, and the evaluation methods it describes are appropriate for use in a wide range of development and community programmes. The manual is available from TALC, P O Box 49, St Albans, Herts, U.K. Price £3.25 for single copies (including postage and packing) decreasing on a sliding scale to £2.05 per copy if 20 copies are ordered.

TITLE: OVERLAY SHOWING COMMUNITY SOCIO-ECONOMIC AND HEALTH PROFILE FOR ONE YEAR



Adapted from presentation in 'Research and Development (R&D) Project Carigara Catchment Area (CCA), Leyte, Philippines 1977-1982.'

Choosing an appropriate home fluid

Oral rehydration in the home

Roger Goodall of UNICEF outlines simple guidelines for formulating a national strategy for oral therapy.

Any strategy or recommendations must be based on an understanding of current customary approaches to treating diarrhoea — or failing to treat it — in the home. This ensures that strategies advocated are acceptable to families and communities and avoids confusing or conflicting messages.

When is a solution appropriate?

Recommended home available solutions for early oral rehydration therapy at the onset of diarrhoea must be:

- physiologically appropriate — that is contain a digestible starch or glucose and between 30 and 80 mmol/litre of sodium;
- cheap and readily available at all times;
- require the minimum modification of usual preparation methods. The more the solutions require complicated measuring techniques, the more unlikely they are to be used or prepared correctly. This is one reason why sugar-salt solutions have

often proved disappointing in uptake;

- culturally acceptable and relevant, for example, in keeping with beliefs about 'hot' and 'cold' illnesses. Cereal or vegetable based soups, rice congees, lentil dhals, or preparations equivalent to these examples are likely to be suitable for early home oral rehydration in many countries.

Unfortunately sugar-salt solutions have been promoted as appropriate for home use in many settings where this is not appropriate — for example, where sugar is either unavailable or expensive, where resources for training parents are inadequate, and where no reinforcement of messages concerning continued feeding is undertaken.

Continued feeding

Proper case management of diarrhoea consists not only of giving an appropriate home available fluid (oral rehydration therapy) at the onset of the illness to prevent dehydration, but also of

promoting continued and increased feeding of children and breastfeeding of infants, both during and after acute diarrhoea, to prevent weight loss and development of malnutrition.

If dehydration does occur

It is essential that parents can recognise when a child has become dehydrated. At this point it needs oral rehydration salts (ORS) solution to treat the dehydration. Home prepared solutions are not fully adequate for treatment of actual dehydration and should only be used where formula ORS is not available. Those children whose condition deteriorates still further and who are suffering from severe dehydration, or are in shock and are unable to drink, need to be given rehydration fluids intravenously as a lifesaving measure which can only be administered by a trained person in a health facility. Every effort should be made to discourage the unnecessary use of antidiarrhoeal drugs and inappropriate antibiotics (except in certain cases of dysentery and in cholera).

Roger Goodall, Essential Drugs Adviser, UNICEF, 866 UN Plaza, New York, NY 10017, U.S.A.

What drinks to give: carrying out a survey

William Cutting describes the steps to take at community level.

To decide what drinks to give requires finding the answers to several questions (see page 5). Most of these can be found by health workers with the help of local people. Always explain to the community why these questions are being asked and how the information will help children suffering from diarrhoea.

Collecting information

Various methods can be used such as:

- Interviews with key people, such as government officials, community and religious leaders, teachers, health practitioners, opinion leaders amongst women. It is important to enlist the support of such people. A check list of questions should be prepared before the interviews. One point to remember is that these people may belong to a different socio-economic group from most of the people, may be biased in their responses, and may not give rep-

resentative answers.

- Household surveys to find out what ingredients are available, and about utensils for mixing, measuring and storage of the drink. A representative sample of homes, rich and poor, and covering all ethnic and cultural groups, should be visited or the survey will not give an overall picture.
- Informal or spontaneous discussions with small groups of people, for example local health workers, or a group of women at the local well or market. These may produce more frank answers about beliefs and practices than answering a more formal questionnaire. One limitation is that the groups may again be unrepresentative and it is difficult to measure the answers in a quantitative way.
- Practical trials to test out whether, for example, a particular drink is acceptable to infants and young children with diarrhoea, or if the method of

mixing the fluid is easy and easily remembered. Again it is important to make sure that there is no bias; for example, getting only the most educated mothers to mix the drink will not indicate how those who have not been to school will cope with mixing and measuring.

Drawing conclusions

Finally, the answers to all the questions asked will have to be assembled for the authorities to use as the basis for deciding on the most suitable home rehydration drink for that area. The method of mixing it must be clear and this message must then be widely communicated by every possible means. Expert help may be needed to arrive at the decision and with communication, but ordinary field workers can collect together the necessary background information without which treating diarrhoea at home will not work effectively.

Dr William A M Cutting, Department of Child Life and Health, University of Edinburgh, 17 Hatton Place, Edinburgh EH9 1UW, U.K.

WHO decision-making guidelines

While ORS solution may be used to prevent (as well as treat) dehydration, it may be more convenient, less costly, and nearly as effective to use other fluids. An ideal home fluid is safe, effective in preventing dehydration, available, affordable, easy to prepare and likely to be used. Giving such fluids to children as soon as diarrhoea starts should prevent most cases from becoming dehydrated.

Identify fluids which may be suitable by considering what potentially suitable food-based fluids are commonly prepared and what containers, measuring devices and ingredients are widely available. Assess each fluid, to see which best meets the criteria for an ideal home solution. In countries where differences in culture, availability of ingredients, or other characteristics exist, separate recommendations may be needed for different regions. A policy for home therapy can be based on food based fluids, sugar-salt solution or ORS. Before establishing a policy it may be useful to ask the following questions.

Food based fluids

- Are there commonly prepared cereal gruels, soups or other food based fluids that may be appropriate for preventing dehydration? What are they? Which are made most frequently in the home? Which in most parts of the country?
- Which fluids, if any, are already used in times of illness? Are any unsuitable because of customs that would prevent them being given to young children with diarrhoea? Which fluids have ingredients that are available throughout the year? Which are the cheapest?
- Which involve boiling? Would the time and fuel needed for cooking make mothers less likely to prepare the fluid? Which fluids will spoil least quickly?
- Which are most likely to be made with a safe sodium concentration? Which contain a source of glucose in an appropriate amount?
- If none have a suitable composition made in the traditional manner, would some be suitable if modified slightly? How difficult would it be to get people to change the preparation method? Would confusion result from use of two preparation methods — one as a food, and one as a fluid for treating diarrhoea?

Sugar salt solution

- How expensive is sugar? Is it affordable?
- What measuring utensils and containers of a standard size are commonly available in homes? What are the difficulties of increasing availability of sugar and appropriate measuring utensils if they are not already

available?

- Can mothers be trained to make and use SSS properly? If so what are the costs? Do the costs (including regular reinforcing training) exceed the costs of providing sufficient ORS packets for use in preventing dehydration? Are mothers likely to use SSS as a therapy?

ADVANTAGES AND DISADVANTAGES OF POSSIBLE HOME FLUIDS FOR PREVENTING DEHYDRATION		
TYPE OF FLUID	ADVANTAGES	DISADVANTAGES
Suitable food-based fluids commonly prepared in homes	Variable but safe composition Widely available Mothers already know how to prepare May already be used during diarrhoea Often involves boiled (sterile) water Not dependent on a delivery system	Effectiveness may vary Spoilage (e.g., from fermentation of gruels) necessitates frequent preparation May lack 'appeal' as a therapy May be misunderstood to be a substitute for food Boiling takes time and consumes fuel
Food-based fluids made suitable with minor modification (such as adding salt or diluting)	Those listed above, plus: Effectiveness may be increased Modification may enhance 'appeal' as a therapy	Those listed above, plus: May be difficult to change a current preparation method Composition may vary more. If too much salt is added to the solution it may be dangerous (can cause hypernatraemia).
Salt-sugar solution (SSS)	Salt and sugar are often available in homes Has some of the appeal of a special therapy Not dependent on a delivery system No cooking needed	Requires three accurate measurements Widely variable and potentially dangerous composition due to inaccurate measurements: — Too much salt is dangerous (can cause hypernatraemia) — Too much sugar can lead to osmotic diarrhoea (and consequent hypernatraemia) Utensils may not be available for measuring correct amounts of salt, sugar, and water Sugar may be costly or unavailable Recipes are difficult to teach, learn, and remember
ORS solution	Easy to prepare, if there is an appropriate container Requires measurement of only one ingredient, water. Composition consistently safe unless water is incorrectly measured No boiling needed May be less expensive for families than currently used remedies Will probably prevent dehydration more effectively Has the appeal of a special therapy	Container for measuring an appropriate amount of water may not be available Requires instruction on how to mix and administer Must be obtained from a health worker or purchased, thus creating dependence It will be expensive to provide ORS for every case of diarrhoea There may not be enough ORS supplies nationally for use in prevention as well as treatment In most cases, is unnecessary for prevention of dehydration

available?

- How many packets of ORS are, or will be, available in the country? Are supplies sufficient for use in preventing as well as treating dehydration? What percentage of cases would be likely to use ORS for prevention if it is the recommended home fluid? Could more ORS be obtained to allow for its use in preventing dehydration? What would this cost the programme?
- Where would families be able to obtain ORS packets? What would it cost them?

ORS

- How many packets of ORS are, or will be, available in the country? Are supplies sufficient for use in preventing as well as treating dehydration? What percentage of cases would be likely to use ORS for prevention if it is the recommended home fluid? Could more ORS be obtained to allow for its use in preventing dehydration? What would this cost the programme?
- Where would families be able to obtain ORS packets? What would it cost them?

Are they likely to buy and store it for convenient use?

- Have mothers learnt to correctly mix ORS solution for treating dehydration? What would be the additional costs of teaching them to use OR solution for preventing as well as treating dehydration? Are containers for measuring correct amounts of water available in homes? Could they be made available?
- Would reliance on ORS for home therapy create an undesirable dependence on the health care system?

Taken from **A decision process for establishing policy on fluids for home therapy of diarrhoea** WHO 1987, WHO/CDD/SER/87.10. Copies of this document are available from CDD, WHO, 1211 Geneva 27, Switzerland.

Problems with home ORS

Lessons from Africa

Ron Waldman highlights some of the difficulties which may hinder effective use and acceptance of sugar-salt solution.

Since 1982, the African Child Survival Initiative Combatting Childhood Communicable Diseases (ACSI-CCCD) programme has helped to implement disease control activities in diarrhoeal diseases; vaccine-preventable diseases; and malaria, in Guinea, Liberia, Ivory Coast, Togo, Nigeria, Congo, Central African Republic, Zaire, Rwanda, Burundi, Malawi, Swaziland, and Lesotho. The main focus of the diarrhoeal disease component, in accordance with WHO strategy, has been on establishing widespread use of oral rehydration salts (ORS) by health providers in health facilities, together with promotion of continued feeding during diarrhoea.

Home fluids

The use of fluids easily prepared at home is an essential part of the strategy, especially where death rates from diarrhoeal diseases are high and access to health services or ORS packets is limited. Because no known home-available solutions in Africa contain sufficient potassium, these are not as effective or as safe as packet ORS for treatment of dehydration. However, home-available solutions are usually adequate both to *prevent* dehydration from occurring, and to maintain hydration in a child who has been rehydrated as long as sufficient quantities of fluid are consumed. They are certainly better than nothing for treating dehydration.

Evaluating sugar-salt solution

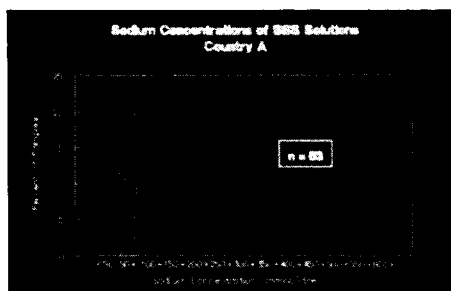
The home available solution so far most thoroughly investigated in Africa is sugar-salt solution (SSS). Where SSS has been promoted, it has been assumed that:

- a culturally acceptable and easy to prepare recipe can be widely disseminated in a way that ensures correct preparation at home;
- both sugar and salt (sodium-chloride) are readily available to most families;
- these ingredients are cheap enough to be used as a remedy for a frequently occurring condition; and
- the necessary measuring devices

(spoons, cups and containers) are available.

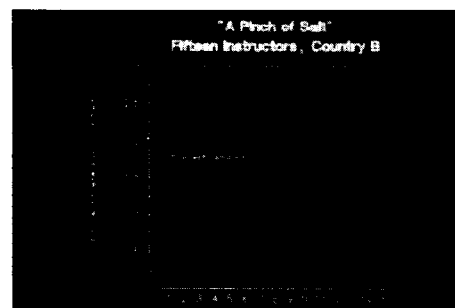
Several countries in the project have carried out surveys to evaluate the effectiveness of SSS. These have shown that sugar is not always readily available and can be expensive. Water is sometimes also expensive in terms of time and labour. The word 'spoon' may sometimes mean only one of several instruments of widely varying size, or there may be no container to which a single volume of water in the recipe for SSS can be tailored. Where a standard container does exist, a recipe may have been promoted which calls for a different sized container. The lessons to be learned are that:

- well-designed research is necessary before a national recipe for SSS can be formulated;
- continuous monitoring should be carried out; and
- promotional messages should be modified as new data becomes available.



The wrong concentration

In one country (A) (see table 1) nearly half the women surveyed prepared SSS containing more than 150 mmol/litre of sodium (current WHO recommendations suggest a safe range of between 30 and 80 mmol/litre). Here, promotion of several recipes had undoubtedly contributed to the variability of SSS preparation. In another country (B), instructors being trained at an ORT training centre were asked to prepare SSS according to the national recipe. The wide range of results shown in Table 2 speak for themselves. In a third country (C), where a major health education effort using carefully prepared and pre-tested mass media messages had been implemented, a post-cam-



Ron Waldman

paign evaluation showed that 54 per cent of women cited recipes with over 100 mmol/litre of sodium, and 12 per cent with more than 142 mmol/litre. A further study (in country D), where women were trained to prepare SSS in a clinic to which they had brought their children for treatment of diarrhoea, showed that a third of solutions collected from their homes a few days later had sodium concentrations above the recommended level.

New strategies

Other studies have found similar results. It would seem sensible to investigate new strategies for home-prepared solutions. What could these be?

First, SSS should not be discarded, at least not until acceptable alternatives are locally available. While SSS is still being used, improved training and health education techniques need to be tested, including perhaps the development of a simple colour test for sodium concentration to provide trainers with instant feedback.

Second, if appropriate fluids traditionally used in childhood diarrhoea can be identified, they should be promoted with particular attention paid to the amount of fluid administered. Most traditional remedies are given in quantities too small to prevent dehydration.

Third, encourage families to give any available fluid in adequate quantities to prevent dehydration, while simultaneously teaching them to recognise the signs of dehydration and when to seek treatment at facilities offering proper case management with ORS packets.

Finally, more work is necessary in social marketing and involving the private sector, especially pharmacists and merchants, to improve access to packaged ORS and to information about appropriate usage.

Dr R Waldman, Centers for Disease Control, Atlanta, GA 30333, U.S.A.

Seawater for OR solution?

I am working in Papua New Guinea in a district that consists of many islands and where the people mainly live on the coast. In this district few people ever buy salt because they use seawater to salt their food. Even families living a few kilometres from the sea collect seawater in bottles to use as salt. Can seawater be used directly along with fresh water to make up sugar-salt solution for the treatment of diarrhoea? Or is the concentration of salt in seawater too variable, due to the influence of rain and run off fresh water, for it to be used directly? If seawater can be used as it is, rather than first evaporating it to obtain the salt, can you tell me how much seawater should be used to make up 1 litre of sugar-salt solution?

Mary Byfield, Nutritionist, Nisima District, Bwagaoia Health Centre, Division of Health, P O Box 5, Bwagaoia, Milne Bay Province, Papua New Guinea.

Editors' note: A breakdown of the main constituents of seawater shows that oceanic water has a concentration of sodium of approximately 458 mmol/litre. This means that about 200 ml of seawater made up to a litre by adding tap/fresh water would give a concentration of about 90 mmol/litre of sodium. However, the concentration of sodium in seawater can vary considerably depending on dilution by rain, or river water, or following a tropical storm, or may be more concentrated in shallow pools. Depending on its concentration it is also possible that seawater may be contaminated with pathogenic vibrios.

We have not seen any data on the use of seawater in making oral rehydration solution, and would welcome comments from other *DD* readers.

Acceptance of ORS solution

I have the following comments to make in connection with the letter entitled 'taste and temperature' from Pakistan, published in *DD* 26. We are fully convinced about ORS, and, while an occasional child may show some problems in accepting ORT, overall acceptance is very good. Flavoured ORS packets are available but they are very expensive. I wonder whether the problem of excessive intake has been considered in the case of flavoured ORS*.

As regards the availability of ORS packets in remote areas, the government is making efforts to popularise ORS in every part of the country. A health education campaign has been started and all media: radio, newspapers, TV are being used to disseminate knowledge about ORS. The Pakistan Paediatric Association gives due importance to diarrhoea, and considers it to be one of the major causes of morbidity and mortality in children in Pakistan.

Dr S M Insikar Ali, Assistant Professor of Paediatrics, Secretary General Pakistan Paediatric Association, Dow Medical College, Karachi, Pakistan.

*Research is required to determine whether flavoured ORS is over-consumed. The editors would welcome comments from *DD* readers.

Ready-made solution?

I am presently working in Western Iran in the province of Ilam. The Ministry of Health, which is providing copies of *DD* to all doctors concerned, is playing a strong role in preparing doctors to fight diarrhoea and dehydration. ORS is being promoted in place of intravenous rehydration and we always prepare the ORS solution in front of the child's parents and give the solution to the child there and then. This serves not only to rehydrate the child but also convinces the parents about the dramatic effects of ORT.

However, diarrhoea is most prevalent in the rural areas where lack of proper sanitation facilities and open sewers are major problems and illiteracy makes it extremely difficult to convince people about the use of ORS in dehydration. Would it not be better to provide ORS in the form of a prepared solution rather than in packet form, which in my opinion would be more acceptable to the general public? This is especially important in rural areas where even safe drinking water is not available.

Dr Syed Javeed Zaheer, P O Box 69314-349 Ilam, Islamic Republic of Iran.

Editors' note: Ready-prepared oral rehydration solution is available in some countries but is usually much more expensive and needs careful storage.

Treating dysentery

Diarrhoea is one of the most common illnesses among children in India, and yet there are still many misconceptions about its management. Many practitioners use antibiotics indiscriminately and ORT is used only sparingly for treatment of diarrhoea. Our own experience with ORT at one of the Oral Rehydration Centres in Bombay has been very gratifying and we are managing almost all cases of diarrhoea with ORT only. Antibiotics and other medications are used rarely.

I found the article in *DD* 25 about dysentery very informative but have one query — whether antibiotics and/or metronidazole are necessary for the treatment of dysentery? Seeing the encouraging results of using ORT in acute diarrhoeas with watery stools, we decided not to use antibiotics and metronidazole in any case of dysentery. Our results have been very encouraging and most of the children with dysentery improved after five to seven days without any antibiotics. Even in the few cases where drugs were prescribed the children took the same length of time to show an improvement. But one question we have is, if drugs are not used in dysentery, will chronic dysentery develop, even though the acute attack may subside within a few days. I would be very grateful for your comments on this question. Perhaps criteria should be established for using antibiotics for dysentery cases, especially where it is not possible to differentiate between amoebic and bacillary dysentery by laboratory examination of stool specimens.

Dr M B Bhagat, 16 Jawahar Nagar, S.V. Road, Goregan (West), Bombay 400062, India.

Editors' note: We suggest that cases of clinical dysentery (i.e. blood in stool) be treated with drugs if there is high fever (more than or equal to 101°F) or if the patient is malnourished. In children, dysentery is usually caused by shigellae, so an appropriate antibiotic (based on the local antibiotic-sensitivity pattern) should be chosen. Amoebic dysentery occurs primarily in adults. It requires microscopic examination of stools for diagnosis before drug therapy is given.

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Vomiting and ORT

The importance of oral rehydration therapy cannot be overemphasised especially in a country like Nigeria. I have, however, been coming across the problem of mothers complaining that their children, especially those under one year of age, usually vomit the OR solution whenever they are given it, including those suffering from diarrhoea only. The OR solution is usually prepared by adding ten level teaspoons of sugar and one level teaspoon of cooking salt to one litre of water. I have been tempted to give parenteral largactil to stop the vomiting but I need further explanation as to the possible cause of vomiting immediately after giving ORS.

Dr A M Ahmed, Alfijir Clinic, P O Box 2428, Sokoto, Sokoto State, Nigeria

DD asked Dr Norbert Hirschhorn to respond to these questions:

From your description I can suggest several causes of the vomiting, any of which could occur in any particular child. They are as follows:

- The majority of children brought to a clinic for treatment have already vomited (this is what usually alarms the mother) and will vomit a few more times in the first hour or two of treatment. I do not get concerned unless it is over four times an hour.
- Sometimes the solution is given too quickly. One teaspoon (5cc) a minute is actually quite leisurely (time it for yourself) and usually works to prevent vomiting. One can space giving the fluid out to 5cc every two minutes. Often the child is thirsty at the start and demands more, and although vomiting can be alarming, the amount vomited is usually less than the amount absorbed, so patience helps.
- A sugar-salt solution without bicarbonate will prolong the vomiting as acidosis is corrected (by the kidneys) a bit more slowly.

- Table sugar, in the amount you use, tends to cause more vomiting (an osmotic effect in the upper intestine). You could try using seven level teaspoons to one litre of solution.

Mostly I would avoid anti-emetics like largactil as they make children too drowsy to drink. I find in difficult cases that a slow drip by naso-gastric tube is effective.

Dr N Hirschhorn, John Snow Incorporated, 1100 Wilson Boulevard, 9th Floor, Arlington, VA 22209, U.S.A.

Sorai storage

I have just noticed the report in *DD* 26 about the reduction in transmission of cholera if water is stored in a sorai — the narrow-necked earthenware vessel. I have also just read recently that one problem with storing water in sorais is that they are very difficult to clean and hence often harbour amoebic dysentery cysts. It would be useful if *DD* readers were made aware of this possible problem with water storage in sorais and similar narrow-necked vessels.

Carrie Osborn, 25 Hercules Street, London N7 6AT, U.K.

Diarrhoea in the U.K.

As a medical officer for Environmental Health in the United Kingdom, I have quite a number of cases of food poisoning and dysentery reported to me. The city of Leeds has a population of approximately three quarters of a million and in the average year I receive 600 notifications of an illness presenting as diarrhoea. For every case that is officially notified there are many which are not brought to my attention.

I have to express concern that the management of patients with diarrhoeal illness appears to be better conducted in Bangladesh than it is in the U.K. Many patients are advised to stop eating and quite a number go on to a very restricted amount of fluids. Advice is frequently given to cut things

out of the diet with no indication of when the normal eating pattern should be resumed. Lack of understanding about the gastro-colic reflex which produces bowel motions when food is taken, particularly after a period of starvation, is common.

Diarrhoeal illness accounts for quite a number of lost school days in children and lost work days in adults in a city this size. We urgently need to find ways of communicating good practices learnt in developing countries to the U.K.

Dr Martin Schweiger, Specialist in Community Medicine, Leeds Eastern Health Authority, Meanwood Park Hospital, Tongue Lane, Leeds LS6 4QD, U.K.

Editors' note: *DD* 29 will focus on the important role and influence of doctors in diarrhoea case management in both developed and developing countries. The editors would welcome comments from readers for publication in *DD*.

Using a nasogastric tube

I would like to comment on the article by Christine Candy on 'Using a nasogastric tube' in issue 26. Is it really necessary to include mothers' saliva as a lubricant when water can do the job well? Are there other advantages that are not stated? Please clarify.

Mrs Modupe Ojo, Paediatric Nurse Practitioner, Institute of Child Health and Primary Care, College of Medicine, Idi-Araba, Lagos, Nigeria.

Christine Candy has made the following comments: I suggested using maternal saliva for use under field (e.g. emergency famine relief) conditions as an alternative to water. The glycoprotein content of saliva is similar to a water soluble lubricant such as K-Y jelly; it is also possible that maternal saliva would contain fewer enteropathogens than a heavily contaminated water supply.

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