

Diarrhoea Dialogue

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DIARRHOEA NEED NOT KILL

The diarrhoeal disease scenario

Diarrhoeal disease has long been recognized as the greatest killer of infants and young children in the developing world. Well over 500 million episodes of diarrhoea in children under five are estimated to occur annually in Asia, Africa and Latin America. At least five million children die.

Diarrhoeal disease is a major contributory factor to malnutrition. Recurrent diarrhoea coupled with inadequate feeding results in impaired body defence mechanisms. Malnourished children have up to a 50% higher incidence of diarrhoeal disease and suffer more severe attacks than normally nourished children.

Although diarrhoeal diseases are most often lethal among the very young, they are a major cause of ill health and of death among children and adults of all ages, adding to the huge burden of the many communicable diseases prevalent in the developing world.

Long term and short term remedies

Diarrhoeal diseases are usually transmitted by faecal contamination of food and water, so a vital long term objective is improvement of water supplies and sanitation. The global improvement of nutrition is as essential to break the link between diarrhoea and malnutrition. More urgently, measures can and must be adopted to enable prompt treatment and control of diarrhoea. All diarrhoeas lead to dehydration and if untreated, progressive dehydration is fatal. It has been known for decades that replacement of salt and fluid losses in sufficient quantity can prevent diarrhoeal deaths, but, until about 1970, conventional treatment was rehydration by intravenous infusion, which is expensive and requires skills and facilities found only in well staffed and equipped clinics and hospitals.

Fluids by mouth do work

Treatment by oral rehydration therapy (ORT) – a drink comprising glucose, sodium and potassium chlorides, sodium bicarbonate and water – was first used on a large scale among refugees from the 1971 India-Pakistan war. In the camps, the mortality rate dropped from 30% to 1%. Since then, ORT has been widely used with great success. The Infectious Diseases Hospital in Calcutta and the hospital of the International Centre for Diarrhoeal Diseases Research in Bangladesh now use only 20% of the amount of intravenous fluid previously used for diarrhoeal diseases treatment. Controlled studies in Indonesia, Pakistan, Costa Rica and the Philippines have all shown major reductions in diarrhoea-related deaths since the introduction of ORT. The main advantage of ORT is that as an inexpensive and simple procedure it can be prepared and given by primary health care workers or mothers, therefore avoiding the necessity of treatment in large hospitals.

Constraints to implementation

Although ORT has been shown to be effective, some constraints

have to be resolved before the treatment can be universally available. These include manufacturing and packaging the oral rehydration powder as cheaply as possible whilst maintaining quality and shelf life; the arrangement of efficient delivery systems to ensure continuity of supply, especially to remote rural areas; and the need to find the safest and most effective methods of treatment for mothers and health workers to use, when the complete oral rehydration formula is not available, or when a substitute is needed for an ingredient such as glucose which is expensive and hard to obtain in some countries. These problems of supply and delivery are inevitable but by no means insoluble and should not deter any country from implementing a national ORT programme.

Global interest in oral rehydration

Interest in the use of oral rehydration therapy has been growing rapidly on the part of numerous national governments (with the backing of the World Health Organization, which has a specific diarrhoeal diseases control programme, and the United Nations Childrens Fund); of many non-government organizations and voluntary agencies engaged in primary health care work; and of clinicians involved in research and teaching.

THE ROLE OF DIARRHOEA DIALOGUE

This newsletter is about the latest developments, new ideas and solutions to problems, the organization and results of controlled field studies and the establishment of new national and local programmes in diarrhoeal diseases control in developing countries. We hope to provide not just facts and news but also a forum for opinion and comment. The main article in this first issue of *Diarrhoea Dialogue* considers some of the controversial questions that are being asked about oral rehydration therapy. Please help us to answer them.

Diarrhoeal disease is not only treatable but largely preventable. This newsletter will also present some of the new ideas on water supplies and sanitation technologies which the forthcoming UN Water Decade is certain to provoke. The December 1980 issue will concentrate on the relationship between water and diarrhoea. Later issues will discuss the place of feeding in the management of diarrhoea, the role of drugs and traditional remedies in treatment and future possibilities for immunisation.

Debate not dispute

Diarrhoea Dialogue is intended to be a place for debate rather than dispute. While detailed scientific arguments can be pursued in academic journals, this newsletter will focus on promoting the exchange of practical information and experience related to the effective prevention and treatment of diarrhoea. *Diarrhoea Dialogue* is meant for everyone who cares about unnecessary suffering and deaths. Your ideas, experience and constructive criticism are needed to make it into a genuine dialogue.

K.E. and W.A.M.C.

With this issue ...

- we introduce *Diarrhoea Dialogue*
- we outline and explore some of the main issues
- we look to you, the readers, for ideas, comment, questions . . . and more readers!

AHRTAG

Appropriate Health Resources &
Technologies Action Group Ltd

A study in Nigeria

"The pattern of infant feeding and attitudes of the mothers towards breast feeding, morbidity and mortality of a sample of the Nigerian Igbo tribe was studied. The result showed that:

- Ninety-four per cent of all mothers breast fed their infants for at least six months. The duration was longer among the non-educated than the educated mothers.

- The size of the family decreased with increases in educational attainment. Eighty per cent of the mothers gave their babies supplementary food between three and seven months of age. A special weaning diet was used by 49 per cent of the educated mothers and 27 per cent of the non-educated mothers.

- Twenty per cent of the children have at least one attack of diarrhoea before the age of six months. One out of every eleven children was admitted at least once to the hospital before the end of six months.

"The prevalence of diarrhoea, malnutrition and possible death could be attributed to a number of factors. These include: the introduction of supplementary food too early in unsanitary conditions, the ignorance of the mothers of what the weaning diet should constitute, the large number of children in the family, and the unhygienic environment."

From Kazimi L.J. and Kazimi H.R. (1979) Infant feeding practices of the Igbo, Nigeria. Ecology of Food and Nutrition 8 (2) - abstracted in Tropical Diseases Bulletin, February 1980.

Villagers can save their children

An important study was carried out in Bangladesh in which the diarrhoeal death rate in two similar rural communities was compared over 24 months, from January 1977 to December 1978. An oral rehydration (OR) programme was started in one village community, Shamlapur, using volunteer depot holders. They stocked oral rehydration salts (ORS) packets and were trained in the preparation and administration of the oral rehydration fluid. There was one depot holder for about every 800 people and his house was identified by a white flag. This service was well publicized locally.

The other community at Bordil did not



West African mother and baby Photograph by Dr Michael Reinhardt

ask for specific help because they already had access to a diarrhoea treatment centre only seven miles away, where ORS packets were available. The diarrhoea attack rates were similar in both groups, 123 and 118 per thousand person years respectively. However, the diarrhoeal case fatality rates were 0.5 per 100 episodes in Shamlapur, the OR village, and 2.4 in the control village, Bordil. The difference was most striking among children under one year of age. More than twelve times as many children in this very young age group died in the village without the programme.

For some years there has been good evidence that OR is effective treatment for diarrhoea in supervised clinical situations. This study suggests that following initial intervention by health personnel, trained lay volunteers can use the technique to significantly decrease deaths from diarrhoea, especially among infants and young children.

The Lancet 1979, 2: 802-812

Oral rehydration workshop

A workshop on the integration of oral rehydration therapy into community action programmes was held in Washington D.C. from March 19-21, 1980. The participants in this workshop were representative of American, private and voluntary organizations (N.G.O.'s) which sponsor programmes in the less

developed countries.

The history, development and current research into oral rehydration therapy was presented by Drs. Hirschhorn, Black and Merson. Ms. Sullesta, Dr Mahalanabis, Dr Sayaad and Mr Charkraborty related their experiences in using oral rehydration therapy in the Philippines, India, Egypt and Bangladesh.

The participants then worked in small groups to discuss the issues of home and village level distribution, training and community education.

The workshop was sponsored by USAID and organized by the Centre for Population Activities, the Pan American Health Organization and the National Council for International Health.

Requests for a copy of the workshop report should be sent to the Centre for Population Activities, 1717 Massachusetts Avenue N.W., Suite 202, Washington D.C. 20036, USA.

Antibiotic resistance to cholera

For the past decade, a representative sample of vibrio specimens collected from patients attending the Dacca Hospital and the Matlab Field Station of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR B) have been screened for antibiotic sensitivity. Recently, five of 28 isolates tested from the Matlab field area in the

previous six weeks were found to show multiple antibiotic resistance.

To confirm these initial observations, 167 additional vibrio specimens obtained from patients of the Matlab Field Station were tested. The percentage of isolates demonstrating resistance increased from 5% in the first month of the epidemic to 13%, 28%, 36% and 15% in the four subsequent months.

While antibiotics are not essential to the treatment of cholera, they shorten the duration and volume of purging, the duration of excretion of vibrios and the amount of fluid replacement required. Patients not responding to tetracycline will require more oral and/or intravenous therapy than other cholera patients.

Initial results from the study suggest that over-use of antibiotics is probably not responsible for the emergence of multiple drug resistance. It also appears that while this outbreak was first identified in Matlab, an area under intense microbiological surveillance, the organism is probably more widely spread. Further epidemiologic and microbiologic studies are underway.

From a paper released by members of the Matlab Field Station, the Disease Transmission Working Group, and the ICCDR B. January 31, 1980.

WHO photo by P. Almasy



Small hands to the pump in a Peruvian village. Clean water is essential if diarrhoeal diseases are to be avoided.

Water shortages

Public health authorities world-wide attribute much of the lower morbidity and mortality of the developed world to improved hygiene and sanitation. Adequate water supplies are an essential component of this and it is vital that we learn how to measure the volume of water necessary to promote health and, conversely, the adverse effects of in-

sufficient water.

During a severe drought, Port-au-Prince, Haiti, lost hydroelectric power for ten weeks, which led to water shortages in some areas of the city. In a study of the impact of water restriction on disease, 400 families were randomly selected from two urban areas differentially affected by the water shortage.

Diarrhoea rates were seen to be higher for children from homes using less than one can of water per person per day, as were rates of scabies, febrile illness and malnutrition. That diarrhoea, which is related to both water quantity and quality, occurred in the same pattern as the other illnesses – conditions related to only water quantity – suggest that a major determinant of illness in this study was a reduction in water quantity.

From The Lancet 1980, 1: 471-473

Viral diarrhoea – a big step forward

We know that a substantial percentage of acute diarrhoeal disease, especially in small children, is caused by viruses. Antibiotic treatment does not work against viruses and many children die. Vaccines are needed to protect them but to develop a vaccine, the infecting agent must first be grown under laboratory conditions. Viruses can only grow inside cells, unlike bacteria, so the culture medium must contain cells which the virus likes.

Ever since the discovery by electron microscopy of rotaviruses (wheel-shaped particles) in the faeces of young mammals, including babies, with acute diarrhoeal disease and the recognition of these as the cause of the disease, strenuous efforts have been made to cultivate them for thorough study. The success announced in *SCIENCE* on January 11, 1980, has taken us a big step forward in the fight against diarrhoeal disease.

Three laboratories in the USA announced that human rotavirus Type 2 (Wa) had been grown in cultures containing African green monkey kidney (AGMK) cells. Specimens of faeces from children known to have rotavirus diarrhoea provided the inoculum for a complicated series of laboratory procedures aimed at producing a viral strain that would grow successfully in tissue culture and retain the power to stimulate antibody production. Such a culture-

adapted human rotavirus now exists together with a test which demonstrates its antibody-producing capability. It should therefore be possible to manipulate the Wa strain *in vitro* in order to develop attenuated mutants for use in preventing a serious diarrhoeal disease of human infants.

From SCIENCE 1980, 207: 189-191



FAC-WHO photo

Clean utensils and the hygienic handling of food help to prevent diarrhoea, in adults as well as children.

Egyptian programme

A pilot oral rehydration therapy project was carried out in Egypt from May to October 1977 with the aid of WHO and UNICEF. The therapy was initiated at maternal and child health units and continued at home. It was found that most dehydrated children attending MCH units were mild to moderate cases which could be effectively managed with oral rehydration therapy. In 1978 it was decided to expand the oral rehydration programme nation-wide and there is now an extensive network in Egypt of some 3000 primary health care units administering the therapy. One rural health unit serves a population of 5-15000 and an urban MCH centre over 50000.

From the weekly Epidemiological Record 1979, 51/52: 393-395

Issues in oral rehydration

In this feature, Norbert Hirschhorn examines some of the most important issues in the planning and implementation of an oral rehydration therapy programme.

In an engineer's jargon, an answer to a problem is called "robust" if it can be applied in several variations or adapted to several contingencies; be secure from total failure because of failure at a single point; and show cost-effectiveness.

Glucose-electrolyte fluid, with a universal composition to be taken by mouth, has proved a far more robust product for rehydration in diarrhoea than intravenous fluids of varying compositions tailored by age, diagnosis, biochemical status of the blood, etc. But the development of an oral rehydration therapy (ORT) delivery programme requires considerable thought and research to discover the most robust methods.

I can tentatively identify the various components of a delivery system and suggest some areas where known opportunities and constraints make a potential delivery system more or less robust or indicate our lack of knowledge. Six components come to mind: selection (of ingredients), production, distribution, preparation, use and evaluation.

Selection

Sucrose or glucose? Sucrose is cheaper but is somewhat less effective than glucose, especially at higher concentrations. Sucrose absorbs less moisture, perhaps allowing use of non-foil packaging, but at humidity over 85% and in warm climates moisture absorption is substantial. Bazaar-bought sucrose is sometimes adulterated with water to increase selling weight, and during recent years sucrose prices have fluctuated dramatically.

How do glucose or sucrose and salts interact when stored as a powder together? If the extra cost of glucose (plus foil package) is the limiting factor to

a delivery system, then sucrose is a more robust product.

Potassium or no potassium? No potassium would be cheaper, but the cumulative effect of unreplaced potassium loss is known to be detrimental to appetite, behaviour, muscle and renal physiology. This is no longer a researchable issue, but much data can be obtained from earlier studies.

Bicarbonate or no bicarbonate? If renal function is quickly restored, perhaps there is no need for bicarbonate, yielding a cheaper product; but a number of cases will be detrimentally affected by prolonged, albeit mild, acidosis.

How much sodium? We now know that a single concentration of sodium – 90 meq/L – is suitable for all ages and most degrees of severity (except high output cholera in adults). This is the most robust level.

Production

Salts and sugar combined in packets at some central points, or procured individually at local bazaars? Packet combined chemicals allow for greater safety, as bazaar salt is likely to be coarse and sucrose may be adulterated. Bazaar-bought chemicals may be more often available (not always: shortages of salt and sugar occur in the poorest countries), or perhaps cheaper. Packeted chemicals are regarded more highly as "medicine" while salt and sugar are regarded as food. The quantity of "energy" required to teach, procure and use either set of chemicals and the quantity of "entropy" (loss of the message and actions) are not yet known.

Packets produced centrally, or regionally, or assembled at each health centre? A more robust answer has production decentralised and not dependent on a single source, but then some quality control is necessary.

High technology or simple technology of packaging? One person can manually measure out salts and sugar by spoon-measures to make up 100-300 packets per day. A \$5,000-\$10,000 mixing machine can dispense thousands of packets per day automatically.

Distribution

Hospital or health post? It can be argued that most of the deaths and cases of prolonged diarrhoeal illness are seen in hospital, that oral rehydration therapy will have the larger impact, and that illness presenting to health posts is generally mild and self-limited. However, oral rehydration therapy may have a longer-term preventive impact when given to milder cases. The greater cost of distributing through health posts can be offset by not using non-specific drugs and unnecessary antibiotics, but considerable retraining of staff and families is required.

Village health worker delivery scheme (government-employed), or village resident? Mothers tend first to go to neighbours for help. If one of them is a supply point for oral rehydration therapy, the trip to the health post may be averted, but if other things occur at a health post (education, weighing, immunisations), this short-circuit may be undesirable.

Commercial channels and over-the-counter sales? The private sector is brilliant at distribution, promotion and sales of drugs, but can the price be low enough to prevent the "two penicillin tablet" syndrome? The occasional packet bought over the counter is unlikely to cure and will bring the method into disrepute.

Preparation

Measuring spoons or pinch-method for bazaar-bought chemicals? Marked variations exist in different parts of the world in the quantity of a "pinch" of salt. Cheap (plastic) measuring spoons are readily broken or lost. English mothers often used heaped spoonfuls of milk powder in making up bottle feeds, even when instructed to use level spoonfuls.

Manufactured standard container or locally used container for dissolution of chemicals? Marked variations in local containers exist and larger measures (litre) are generally less available or reliable than smaller measures. Cheap standard containers are easily available in some places or can be cheaply made.

Packets for one litre, half litre or

...opportunities and constraints

quarter litre solutions? One litre packets are cheaper, but more waste and bacterial overgrowth of standing solutions may occur. Quarter litre packets may be hoarded as readily as half litre packets by health workers, or fewer may be bought by the mother than needed (so treatment would be inadequate). A robust answer might be the manufacture of a sturdy plastic bag, containing the salts and sugar, which can then be filled to stretching point by an appropriate volume of water.)

Use

Who should get ORT? If every child with diarrhoea got oral rehydration therapy, the costs (either in packets or in interaction with the mother) would be astronomical (one thousand million children under five, one episode each annually, \$0.10/packet, three packets per episode = \$300 million). Alter-

description of what does happen is needed. What is the effect on a child with diarrhoea getting more contaminated water? The wider the use of oral rehydration therapy, the more this will occur.

What about the nutritive message? The message may be weakened or lost as delivery moves closer to the village level. Food may be seasonally scarce in any case. The salt-sugar solution may be viewed magically and the food message overlooked. If the child is on cow's milk, should cow's milk be stopped? Or only in those over one year old? **There is no excuse to stop breast feeding.** Glucose and electrolytes neutralise the bad effects of lactose.

How are cultural blocks overcome? In many cultures, sugar and salt are thought to be bad for diarrhoea; packets of sugar and salt, however, gain remarkably rapid acceptance even in highly traditional societies.



A village worker giving out a packet of ORS. *Reproduction courtesy of UNICEF news*

natively, should only those coming to a health post or health worker – 10-50% of total episodes – get oral rehydration therapy? Or, only those under three years of age? Who makes the choices? It seems a difficult area of design, the decisions being not entirely medical, or even controllable.

How much is given on the first visit? If packets are used, should mothers be required to return daily? If not, how many packets should be given at a time? Bazaar-bought chemicals overcome this problem. However, will the mother need daily reminders, especially when by day three, the salts have not “cured” her child?

What water is used to mix the chemicals? Boiled? But what if fuel is pitifully scarce? In tea, perhaps? Or in just whatever is available? Some useful

The major cultural block impeding use of oral sugar-electrolyte fluids and feeding in diarrhoea is from the Western-based training of paediatricians. “Health education” of government decision-makers may be as necessary as “education” of mothers.

Evaluation

Should it be done? It may be necessary that at least bedside demonstration of ORT takes place at teaching hospitals to convince professors. Evaluation of impact at a community level is difficult, costly and confounded by numerous selection, diagnostic and seasonal variables. A double-blind control study is impossible and a closely surveyed control group (getting no therapy) may be unethical.

Evaluation should be based on certain

operational indicators. Remember that there are two parameters of a delivery system: one, the system is rational, and two, it is being properly executed. Five rational indicators may be listed as follows:

● **Access** Can children in need get to where the therapy is? Excessive cost is considered a block to access.

● **Availability** Are the ingredients and means of mixing them properly available (and not rationed)?

● **Acceptability** Do mothers and children accept oral rehydration therapy? (Good data for standards are now available.)

● **Awareness** Do mothers need to know scientific medical physiology to use oral rehydration therapy effectively? (Data from the Philippines suggest **not**.)

● **Adequacy** Spot checks of how preparations are taught, how made up and how given and whether children are being fed will be good indications of how the delivery system is working.

Conclusions

A robust approach Flow diagrams of the likely combinations of selection-production-distribution-preparation and use will help establish a few choices, especially when existing cost and effectiveness data from around the world are used. Necessary data that must and can be easily obtained relate to stability, moisture absorption, interactions and simplest packaging for sugar-electrolyte salts. A robust approach will employ two or three means of manufacture and delivery of oral rehydration therapy to high-risk groups with operational evaluation of each. Leadership from WHO should continue.

Gresham's Law applied to diarrhoea control This basic law of economics states that bad money drives out good money. In medicine, insisting that all report forms be filled out will guarantee that the **really** necessary ones will be done as badly as the rest. In diarrhoea control, insisting to Ministries of Health that all elements must be pursued with equal vigour (surveillance, sanitation, water supply, education, nutrition, fluid therapy) will guarantee that those things which can be undertaken **now** will be neglected both at the central and peripheral levels.

Norbert Hirschhorn, The John Snow Public Health Group, Inc., Boston, Mass., USA.

Diarrhoeal diseases control programme

Acute diarrhoeal diseases have long been recognised as one of the major causes of infantile and childhood mortality and morbidity in the developing countries. In 1978, responding to the rising concern of its member states about the problem and as part of the Organization's overall commitment to primary health care, WHO launched a global Diarrhoeal Diseases Control (CDD) Programme, with the support and continued cooperation of UNICEF.

The development of this global programme has been motivated by significant recent developments in the treatment and control of diarrhoeal diseases. These include the recognition of the role of new viral and bacterial agents of diarrhoea, an understanding of the pathogenesis of acute diarrhoea and the demonstration that dehydration in all diarrhoeas except the most severe can be safely and effectively treated by oral rehydration therapy with a single glucose/salts solution. In addition, it has been found that early oral rehydration together with proper feeding contributes to better weight gain in children, thus reducing the ill effects of diarrhoea on nutritional status.

As an immediate objective, the CDD programme seeks to reduce diarrhoea related mortality and malnutrition in children by widespread implementation of oral rehydration therapy and improved feeding practices. A major reduction of morbidity is an important long term objective to be achieved through the improvement of child care practices, the provision and use of water supply and sanitation (linking the programme closely with the International Drinking Water and Sanitation Decade), epidemiological surveillance and epidemic control.

The programme has two main components. Firstly, an implementation component to incorporate existing knowledge on diarrhoeal disease into national primary health care programmes, and secondly a research component to support both field and laboratory research in the development of new methods and ap-

proaches of treating and preventing diarrhoeal disease.

Implementation

National CDD programme formulation In this area, activities have been focused on cooperation in the development of national CDD programmes. As a global target, it is hoped to make oral rehydration salts (ORS) accessible to at least 25% of children under five in the developing countries by 1983. To date, some 70 countries have shown interest in developing national CDD programmes as an integral part of primary health care. Initially, these programmes stress oral rehydration therapy as a means of reducing diarrhoea-related mortality. WHO is providing information to country programme managers about activities in other countries and recent technical advances.

Composition of oral rehydration mixture recommended by WHO.

Sodium chloride (table salt) 3.5 grams
Sodium bicarbonate (baking soda) 2.5 grams
Potassium chloride 1.5 grams
Glucose 20.0 grams
Dissolve in one litre of potable water

Training A management course and operations manual are being developed to strengthen national CDD programmes, especially as regards planning and evaluation. Technical training manuals are also being prepared on the treatment and prevention of diarrhoeal diseases, the control of cholera epidemics and simplified procedures for laboratory diagnosis of enteric infections. Also, with the support of the United Nations Development Programme (UNDP), a number of Asian institutions are to be strengthened to provide a nucleus of training centres in that region.

Logistics A major problem in the development of national CDD programmes has been organizing adequate supplies of oral rehydration salts (ORS). With the support of the United Nations Children's Fund (UNICEF) a major

international effort is being made to meet requirements through the provision of pre-packaged ORS and help with national production. It is estimated that 13 developing countries are now undertaking large-scale production of ORS and guidelines for local production are being prepared.

Research

The research component of the programme is linked to the needs of the national CDD programmes. Several meetings have been held over the past two years, in which scientists from 27 countries have reviewed available knowledge and recommended research priorities. Global Scientific Working Groups are soon to be established to coordinate and guide the programme's basic research activities. Also, operational research on health services delivery, environmental health and child care practices is to be carried out. Research on vaccine and drug development and related epidemiological aspects is being supported by UNDP, in collaboration with the World Bank.

Some of the priority operational research areas will be:

- determination of the epidemiological patterns of the known aetiological agents of diarrhoeal disease and identification of new agents.
- comparisons of different methods of preparation and packaging of ORS and delivery systems at the primary health care level.
- comparisons of alternative compositions of sugar/salt mixtures for oral rehydration with the WHO formulation of already proved effectiveness (ORS).
- identification of infant feeding and child care practices that can best reduce diarrhoea-related malnutrition and mortality.
- determination of the best methods of environmental intervention to reduce the transmission of diarrhoeal disease agents.

A special effort is now being made to identify suitable research workers and institutions in the developing countries and to provide them with appropriate support. Continuing support is going to the WHO Collaborating Centres and to other internationally recognized centres such as The International Centre for Diarrhoeal Diseases Research, Bangladesh. The periodic distribution of annotated bibliographies and summaries of new research is also planned.

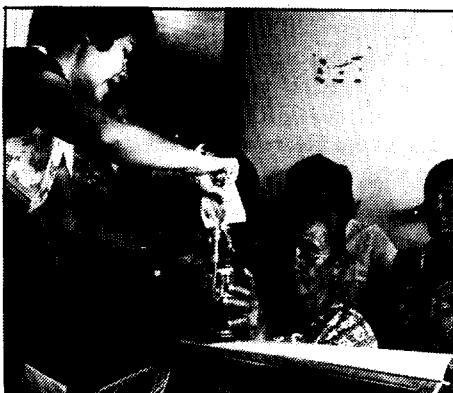
A national experience in oral rehydration therapy

In the Philippines, diarrhoeal disease is the main cause of death among children under five. The Philippine government and the World Health Organization collaborated in field studies to test the effects of oral rehydration therapy (ORT) when administered in health centres and at home. On the basis of the encouraging results received from the studies, a national programme was developed.

Field studies

In the urban study, the WHO glucose-electrolyte solution (Oresol) was given at home to 464 children with diarrhoea. A greater average weight gain was observed both during an attack and over a seven month period when compared to a control group. The longer term effect on weight was more pronounced in children with recurrent diarrhoea. The Oresol was dispensed from health centres where diarrhoea patients were first seen by a doctor. Assistant health workers then collected the necessary data, discussed treatment with the mothers and followed up cases in the home.

The seven villages selected for the rural study had no easy access to the organized health delivery system and one village was only partially accessible to transport. Meetings were first held with local officials to obtain their approval. Later, community talks were held about oral rehydration and the villagers then selected their own OR deliverers who were given basic training by project staff.



Village health worker demonstrating the use of Oresol

Findings

There was a high acceptance rate of ORT in both studies. Mothers were enthusiastic about the treatment, sought it out and claimed it had improved the general state of health and appetite of their children. They also realized the value of continued feeding during diarrhoea.

Both studies showed a highly significant decrease in morbidity and mortality rates. In the rural study, the local delivery system was well accepted and worked effectively. A key factor in the success of this type of system is selection of sympathetic and responsible deliverers.

One problem was finding an easily available measuring device. This was resolved when everyone agreed that local beer bottles were to be found in almost every home. Later, a drinking glass, originally the container for a popular coffee brand, was found to be more practical. Incorrect mixing of Oresol by mothers occurred throughout the year.

National programme

Encouraged by these results, WHO, UNICEF and the Ministry of Health sponsored a two day national seminar workshop. Participants discussed the obvious value of ORT in treating diarrhoeal diseases and national pilot projects were planned. A four member national team was created to coordinate and monitor these. Inevitably, coordination problems increased with the nationwide implementation of the programme. One major difficulty was that the team could not rely on getting enough regular and accurate incoming reports to make a valid evaluation of the programme.

ORT outside the Ministry of Health

● **International Institute for Rural Reconstruction (IIRR)** In IIRR communities, traditional healers carry out ORT, reporting back to the medical officer at headquarters about once a month.

● **Institute of Maternal and Child Health (IMCH)** Under the direction of a

prominent national paediatrician, the IMCH encourages ORT at its hospital and community projects, using a more diluted solution for infants and malnourished children.

● **National Nutrition Council of the Philippines (NNCP)** The NNCP receives 12,000 packets of Oresol each month which are distributed by "barangay nutrition scholars" throughout the country. Some critics doubt whether these extension workers have enough training in ORT, and their poor record-keeping makes evaluation difficult.



Mother giving her child Oresol to drink

photographs courtesy of *Enriqueta O. Sullesta*

Recommendations

The success of a national programme depends on the coordination and supervision of education, training, distribution and supply. The system of education and training should reach everyone involved in the delivery of health care and the enthusiasm of a national coordinator is crucial.

The Philippine experience in oral rehydration therapy revealed strengths and weaknesses which could benefit other countries, not as a model, but as a reference on which to base the strategies for their own national programmes.

Enriqueta O. Sullesta, Supervising Public Health Nurse, Bureau of Quarantine, Ministry of Health, Manila, Philippines.

letters...letters...letters...letters...

Points

Feedback and discussion In future issues, your letters and comments will be welcome on this page and we anticipate that it will become a lively forum. While we shall have to bear availability of space in mind when considering letters for publication, every effort will be made to include as much as possible.

Teaching and training Do you know of any developing countries where teaching and training materials about oral rehydration therapy are available in the local languages? If so, please tell us—and, if possible, send us samples.

Safe keeping We suggest that as soon as you and your colleagues have read your copy of *Diarrhoea Dialogue* that you punch the spine and file it. In this way, the information it contains will always be easily accessible.

The next issue

- is planned for July/August 1980
- will contain a main feature by Dr Jon Rohde on different ways of measuring and delivering ORS ingredients (recipes and methods)
- will (we know!) have plenty of news, ideas and comments which you have sent us.

Future issues

In each issue of *Diarrhoea Dialogue* we plan to highlight one major area in the fight against diarrhoeal disease. Probable future topics will include water, feeding, health education, drugs and therapy, immunisation, sanitation, nutrition and chronic diarrhoea. Both within these main features and throughout the rest of the newsletter, we shall try to explore as many questions related to diarrhoeal disease control as possible. We list below some that have already occurred to us but look forward to receiving many more suggestions from you.

- what treatment can be given if the special packets of oral rehydration mixture are not available?



- why is glucose and salt in water better than plain water for severe diarrhoea?
- is it important to have boiled, purified or clean water for rehydration?
- if glucose and sugar mixed with salts are good, what about other sugars like honey?
- what is the role of other food items, for example starches used with salt solutions?
- is there a case for using different mixtures in different circumstances?
- how can the risks associated with contaminated water be reduced?
- which cases should be referred to health facilities—i.e. what are the dangerous signs in diarrhoea?
- what are the local beliefs about the causes and treatment of diarrhoea? These are very important as regards acceptability of a technique like oral rehydration.
- are there any traditional remedies that have been shown to be effective?
- when diarrhoea is related to other diseases such as measles, malaria and middle ear infection, should it be treated differently?

- which drugs are really of proven value against diarrhoea?
- how much or how little food should be given to children with diarrhoea?
- breast milk (fed directly) cannot be easily contaminated. Is this the only, or most significant reason why breastfed babies have less diarrhoea?
- “rest the bowel” is a traditional treatment for diarrhoea. Is this necessary?
- which aspects of hygiene are most important in preventing diarrhoea?

AHRTAG

The Appropriate Health Resources and Technologies Action Group (AHRTAG) came into being in London in 1977 as a sister organization to the Intermediate Technology Development Group (ITDG). AHRTAG is a WHO Collaborating Centre for Appropriate Technology for Health; and the many and varied aspects of diarrhoeal disease control call for development of much appropriate ‘hardware’ and ‘liveware’ to assist in diminishing the problem. We hope that the pages of *Diarrhoea Dialogue* will reflect AHRTAG’s role as a meeting place for the ways and means to better health.

AHRTAG serves as an information centre and clearing-house for materials relating to primary health care and health-related technologies. AHRTAG is interested in both health care people and health care tools. The Group works with other international organizations, shares in overseas projects, produces information sheets, bibliographies and other publications, and helps to identify unmet needs and possible answers to such needs.

AHRTAG is one of the recognized fixed points in an informal world network which links individuals and institutions interested in the exchange of ideas about health care at neighbourhood or village level. If you would like to learn more about AHRTAG you can indicate this on the *Diarrhoea Dialogue* mailing list form inside.

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