

# Diarrhoea Dialogue



ISSUE No. 12

FEBRUARY  
1983



The horror of cholera in Bangladesh in the early 1970's. Can we now control and prevent it?  
See pages five and six.

## Cholera tamed by ORT

This issue marks the 100th anniversary of the identification by Robert Koch of the organism responsible for the death of millions. A crucial part of the cholera story is the triumph of oral rehydration therapy (ORT) which began in Calcutta and Bangladesh just over 12 years ago.

*"They came in, carried or supported by their relatives and lay down . . . they voided their bowels where they lay . . . the cramps spread upwards from the calves to tighten the thin thighs and to knot the flaccid bellies . . . they gulped thirstily and, a minute later, would vomit up what they had drunk. They shrank as the substance was drawn from every part of the body and pushed out in those convulsions. Noses became pointed . . . skin wrinkled and had no resilience. When those signs came, they had neither fear of death nor will to live." Such was cholera in 1856 as described in a novel about Bengal by John Masters.*

No one has to die from dehydration caused by any diarrhoeal disease provided someone knows how to give enough oral rehydration correctly.

Prevention of cholera can be summed up quite simply with the saying 'You can drink cholera and you can eat cholera, but you cannot catch it'. Food and water must be kept safe from contamination with faeces or vomit and hands kept clean at all times. Health education can help to eliminate the causes of diarrhoeal diseases like cholera. Meanwhile ORT can prevent unnecessary suffering and deaths.

K.M.E.

## In this issue . . .

- Cholera: history, research and control
- The role of intestinal parasites in the chronic diarrhoea/malnutrition syndrome
- News and reviews

## AHRTAG

Appropriate Health Resources &  
Technologies Action Group Ltd

## The children's revolution

The recent announcement by James Grant, Executive Director of UNICEF, that the organization intends to put its resources even more firmly behind the promotion of oral rehydration therapy (ORT) and breastfeeding is welcome news. Collaboration between UNICEF and the diarrhoeal disease control programme of WHO is, of course, not new. The two organizations have promoted the use of ORT for several years, with WHO focusing more on training and management and UNICEF concentrating on production and supply of oral rehydration salts (ORS). Nevertheless, this new initiative, particularly in the whole area of communications and diarrhoeal disease control, will undoubtedly help to stimulate far more widespread use of ORT with far-reaching implications for child health in developing countries.

## Cooperating on communications

A crucial aspect of communications and diarrhoeal disease control is that different people working on programmes have the opportunity to meet and discuss the best ways of confronting the problem **together**. We report below on two meetings that have taken place recently to encourage this kind of cooperation:—

### Dominica: health education in schools

Two seminars were held recently in the Dominican Republic to look at ways of preventing typhoid and other diarrhoeal diseases — especially in schools. The seminars were sponsored by UNICEF, in collaboration with the Ministry of Health, and attended by principals of schools and health educators.

Typhoid is endemic in Dominica and research has shown that the disease is transmitted mainly by food. A health education drive stressing personal hygiene, therefore, could do much to reduce the high incidence of the disease.

Participants at the seminar discussed

the best way of promoting personal hygiene both at home and in schools. Constraints such as shortage of water and the best ways of overcoming these problems were also considered.

The importance of preventing diarrhoea in children was stressed by health educators. Participants practised preparing oral rehydration fluid using both UNICEF oral rehydration salts (ORS) and locally available ingredients.

A final technical session looked at the importance of breast-feeding and diet in the treatment and prevention of diarrhoea. School principals and health educators had not discussed these issues together and all the participants found the meeting very useful. They produced the following recommendations:—

- improvement of school facilities — especially water and sanitation
- wearing of official identification badges by all approved food handlers
- use of more printed materials on health issues in schools.

*Report sent to Diarrhoea Dialogue by Marese O'Dwyer, Health Education Unit, Primary Health Care Centre, Upper Lane, Roseau, Dominican Republic.*

### Rio de Janeiro: communications workshop

A workshop on communications and diarrhoeal disease control was held from 29 November to 10 December 1982 in Rio de Janeiro. Organized by the Pan American Health Organization (PAHO) and the Centro Latinoamericano de Tecnología Educativa para la Salud (NUTES/CLATES) the workshop was attended by participants from ten South American countries. Two people came from each country and they included paediatricians, public health staff, nurses, health educators and artists.

The aim of the workshop, the first of its kind, was to suggest an approach to planning and implementing a health education programme for diarrhoeal disease control. Work included discussions on adapting the 'social marketing' approach to health education (looking at analysis of target audiences, message formulation, pre-testing of materials and selection of media etc); production of some health education materials;

and the development of guidelines to encourage participants to prepare a national workplan for a communications programme for diarrhoeal diseases.



Photo by Denise Ayres

Discussing posters produced at the workshop

The workshop was organized so that participants worked in both small groups and plenary sessions. Many people had already been involved in health education programmes and had much useful experience to share. Great emphasis was laid on the pre-testing and evaluation of materials — frequently left out of health education programmes. Participants at the workshop will now develop programmes in their own countries, supported by PAHO. It is hoped that they will meet again at the end of 1983 to compare progress achieved. During the year, the representatives from each country will also keep in touch with their counterparts elsewhere to share experiences as they develop their programmes.

The communications workshop could well be of use in other parts of the world and the diarrhoeal disease control programme of the World Health Organization is considering whether this might happen.

## Two-way radio newsletter

Ned Wallace, of Development Technologies Ltd, has told us about a newsletter his organization is starting this spring. The new publication will contain information about use of two-way radio for rural health care in developing countries. There will be information on equipment and the newsletter will also offer an inquiry service. If you would like to be put on the mailing list write to: Marshall Cook, Editor, TWR Newsletter, 4337 Felton Place, Madison, WI 53705, USA.

# Intestinal parasites

## Causes or contributors?

Previous issues of *Diarrhoea Dialogue* have looked at the diagnosis and treatment of some intestinal parasites. Andrew Tomkins now considers their real significance in the chronic diarrhoea/malnutrition syndrome in children.

Many children in developing countries excrete parasites. Some are easily visible, for example the adult worm of Roundworm (*Ascaris lumbricoides*) looks like an earthworm. Others such as *Giardia lamblia* can only be seen by microscopic examination. Most children in areas with inadequate sanitation experience an infection with *Entamoeba*, *Ascaris*, *Giardia* or *Trichuris* during early childhood. Since many children also have diarrhoea and are underweight it is tempting to blame the parasites. However, we should ask whether they really cause disease.

Parasites can react with the intestine in several ways:—

**Damage to the intestinal mucosa** *Giardia lamblia*, *Strongyloides stercoralis*, *Capillaria philippinensis* and *Cryptosporidium* destroy cells of the intestinal mucosa so that nutrient malabsorption occurs leading to deficiencies of protein, energy, Vitamin A and folic acid. Mucosal damage causes secondary lactase deficiency which makes diarrhoea worse if milk feeds, other than breastfeeding, are continued. It seems that intestinal damage is most severe during the first infection; the intestinal effect in subsequent infections is milder, suggesting the development of some immunity. When immunity becomes weak, as in children with marasmus or kwashiorkor, the parasites multiply. This is especially

dangerous with *Strongyloides* which actively invades the intestine.

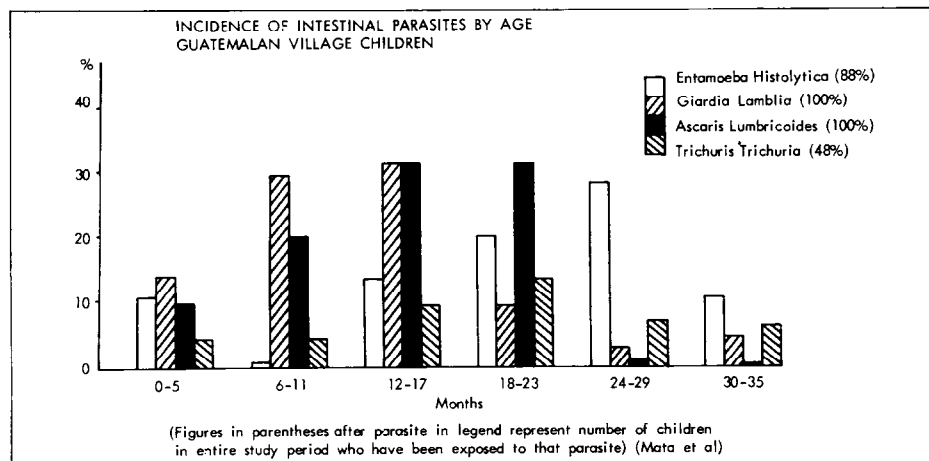
**Decreased digestion** Increased faecal losses of nitrogen and energy occur in children with heavy *Ascaris* infections (though light infections have little effect). *Giardia* interferes with the process which makes dietary fats soluble. A further problem is that bacteria colonise the upper intestine during some intestinal infections. They may also decrease digestion of nutrients.

**Loss of body fluids** Many types of diarrhoea cause loss of body salts and minerals but certain parasites, *Entamoeba* in particular, also cause loss of blood and proteins from the damaged intestinal mucosa.

**Loss of appetite** Food intake may be reduced by over 30 per cent during the prolonged diarrhoea caused by some parasites. In severe giardiasis there is abdominal distension and discomfort due to the malabsorption. In heavy infection with *Ascaris* there may be abdominal colic. *Strongyloides* can cause abdominal pain and irritant skin rashes. *Trichuris* may cause painful rectal prolapse. All these factors make a child miserable and unless he can be persuaded to eat he will lose weight.

### Effect of treatment

There are several factors to be considered:—



First, the nutritional status and diet. If the child is moderately well nourished and fed, it is unlikely that treatment will be followed by weight gain. However, if he is clinically malnourished and on an inadequate diet, the same degree of parasitic infection is more serious and treatment can improve nutritional status.

Second, the dose of infection. It is difficult to measure this accurately but, in *Ascaris* infection, it is only children with heavy infection who show significant improvement in growth after infection has been treated. Similarly, children with severe diarrhoea and many trophozoites of *Giardia* show a more striking improvement in growth after treatment than those children who are merely cyst carriers.

### Who should be treated?

However desirable it is to treat all infected children, mass treatment is unlikely to be cost-effective. It is probably best to target treatment towards specific groups of children. These would include those with clinical malnutrition or those with severe growth faltering, those with obvious clinical symptoms of giardiasis (prolonged diarrhoea) or amoebiasis (dysentery), any child with *Strongyloides* and those with especially heavy infection with *Ascaris*.

### Unanswered questions

The introduction of oral rehydration therapy has drastically reduced mortality from acute diarrhoea but many children are still dying from the protracted diarrhoea/malnutrition syndrome. There are many unanswered questions about the role of intestinal parasites in this syndrome. Perhaps you have some answers. *Diarrhoea Dialogue* would be pleased to hear from you.

**Dr Andrew Tomkins, Senior Lecturer, Department of Human Nutrition, London School of Hygiene and Tropical Medicine, U.K. Formerly at M.R.C. Laboratories, Fajara, The Gambia, W. Africa.**

*Mata LJ et al 1977 Effect of infection on food intake and the nutritional state: perspectives as viewed from the village. American Journal of Clinical Nutrition 30:1215-1227.*

# Confronting a killer: 100 years of research

## The devastating disease

**Abram Benenson reviews the history of cholera and those who discovered its cause.**

Cholera was first reported in the Indian subcontinent in the 17th century and, as far as we know, remained mostly in the Bengal area until 1817 when it began to spread to other parts of the world in 'pandemics'.\*

The first pandemic began in 1817 and spread throughout Asia. The second began in 1829 and cholera spread into the West, entering Russia in 1830, England in 1831, and crossing the ocean to Canada and the United States in 1832. Cholera was a new disease, causing consternation and havoc as it spread. In some communities, as many as 15 per cent of the population died in cholera epidemics. Many considered the disease to be a divine infliction, correctable by appropriate devotions and proper living.

### Hunting the organism

More scientific thought, however, was given to the problem when a second wave of disease hit Europe. In 1849, John Snow published the famous pamphlet in which he argued that the disease was transmitted by faecal wastes in water. During the third pandemic, which hit England in 1853-54, Snow was able to prove the association between drinking faecally contaminated water and the development of cholera. He claimed the disease was caused by 'morbid matter' which entered the body through the mouth and multiplied during the incubation period. In 1849, Budd claimed that a distinct species of fungus, when swallowed, would cause the disease. Pacini reported from Italy in 1854 the presence of curved organisms in the intestinal contents of cholera victims. These organisms had a darting motility far surpassing that of Brownian movement.\* He called the organisms *Vibrio cholerae*, but his publication of these findings rested quietly in the Italian literature. Subsequently other workers

observed and described such organisms but the scientific world remained unconvinced.

### The fourth pandemic

The fourth pandemic started in 1863 and killed half a million people in Europe over the next ten years. The cause of this devastating disease needed to be clearly defined. Distinguished scientists, such as Pettenkofer, maintained that cholera was caused by airborne emanations from suitable soils. Macnamara, a British ophthalmologist who was convinced that a specific aetiological agent was causing cholera, was refused permission to go to India for further studies. However, Robert Koch headed a German Commission and Roux a French Commission which went to seek the aetiological organism in Egypt, which had been invaded during the fifth pandemic in 1881. The French group tried to isolate the organism by animal inoculation. Koch used the bacteriological techniques which he had developed and succeeded in isolating a suspect organism.

When the disease disappeared from Egypt, Koch went to India and demonstrated that the suspect organism was present in the stools of all the cases and in the intestines of every cholera victim he examined. He did not find it in samples taken from healthy people or from those with other diseases. Although Koch could not satisfy his own postulates, since he failed to produce cholera in animals with the guilty organisms, he reported that he was successful in identifying the aetiological agent.

### Convincing the scientists

Thus, Pacini had antedated Koch's findings and this has been now recognized by calling the organism by the

name he gave it (*Vibrio cholerae*). Snow had identified the faecal-oral transmission of the disease, and the important part played by faecally-contaminated water. But Koch was the one who succeeded in convincing the scientific world of these truths, and put to rest the conflicting and false concepts supported by very influential scientists.

It is 100 years since the issue has been settled. Since then there have been two pandemics. The sixth lasted from 1899 to 1923, largely in Eastern Europe. The seventh, and current, pandemic started in 1958 in Sulawesi and spread to reach Europe by 1965. It has provided the impetus for the initiation of exciting studies by many scientists on the pathogenesis, immunology, treatment and prevention of cholera. Out of these studies have come the techniques for successful management of the disease, especially oral rehydration therapy, described in previous issues of *Diarrhoea Dialogue*, the effectiveness of appropriate antibiotics in eliminating infectivity, and the role which can be played by available vaccines. These studies, largely centred in the Pakistan-SEATO Cholera Research Laboratory (now the International Centre for Diarrhoeal Disease Research, Bangladesh), have converted a terrible disease with a case fatality rate among hospitalized cases of 20 per cent and higher to an easily managed illness with death occurring in less than one per cent.

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**Professor Abram Benenson, Head, Division of Epidemiology and Biostatistics, Graduate School of Public Health, San Diego University, USA.**

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### Further reading:

- Snow J *On the Mode of Communication of Cholera*. 2nd edition, (much enlarged.) London, John Churchill, 1855; reprinted 1965, New York and London, Hafner Publishing Co, 1965.
- Pollitzer R *Cholera*. Geneva, World Health Organization, 1959.
- Van Heyningen W E and Seal J R *Cholera, The American Scientific Experience, 1947-1980*. Boulder, Westview Press, 1983.

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\*Disease prevalent over the whole of a country or the world

\*Random to-and-fro movement of particles in any liquid observed through a microscope.

## Recent developments

**The treatment of cholera has progressed considerably since the first pandemic spread out of India in 1817. Charles Carpenter highlights the key advances.**

The central key to our current understanding of cholera was the 1959 demonstration, by S. N. De in Calcutta, that the massive intestinal fluid losses in cholera are directly related to the action of an enterotoxin, caused by cholera vibrios, on the intestinal cell wall. Subsequent studies have:

- demonstrated that the same enterotoxin is produced by all pathogenic strains of *V. cholerae*
- defined the chemical structure of the enterotoxin
- identified the molecular pathways by which the enterotoxin causes fluid secretion by the intestine.

There is no other bacterial infection in which pathogenetic events have been so precisely defined.

### Vaccine research

However, despite this, no effective vaccine has yet been developed. Carefully controlled field trials, carried out in Bangladesh and the Philippines in 1963, clearly demonstrated that conventional whole-cell vaccines, consisting of killed microorganisms, provide only limited (40 per cent to 70 per cent) protection for a relatively short period of time (6 to 18 months). More recent studies have demonstrated that a toxoid prepared from the cholera enterotoxin likewise provides only limited protection for a short time. Although considerable research is now being directed toward developing an oral vaccine, no solid data exist to indicate that oral vaccines will provide either more effective or more lasting immunity than the conventional whole-cell vaccines.

### Rapid advances in treatment

The most remarkable advances have occurred in the treatment of cholera, and have shown that:

- adequate intravenous fluid therapy should result in the survival of all cholera patients.
- tetracycline (and other antibiotics) cause a dramatic decrease in both

the duration and volume of intestinal fluid loss and therefore in the volume of fluids required for treatment.

- **oral administration of properly prepared glucose- (or sucrose-) electrolyte solutions will alone provide adequate treatment for the great majority of cholera patients in all age groups.**

Studies in Bangkok in the late 1950s established two important facts which were essential to the rapid advances during the 1960s:

- the clear demonstration that the structure of the intestinal mucosal wall is **not** damaged during cholera.
- the precise description of the nature of intestinal fluid losses in cholera.

Over the next few years, studies in India and Bangladesh clearly demonstrated that virtually all patients would survive if they received adequate quantities of the proper intravenous fluids throughout the two to five day course of cholera.

### Oral rehydration therapy

Only four years after the demonstration of the effectiveness of antibiotics, another far more important and radical advance in therapy occurred, which has made it possible to treat cholera effectively anywhere, with inexpensive, locally available ingredients. This development was the demonstration, in Dacca and Calcutta, that oral administration of glucose-electrolyte solutions can effectively restore the intestinal fluid losses in most cases of cholera.

The development of the oral rehydration solution (ORS) was based on the fact that glucose greatly facilitates sodium absorption by the mammalian intestine. Since the intestinal wall remains intact during cholera, the mechanism by which glucose enhances sodium absorption is undisturbed, and the oral administration of glucose-electrolyte solutions can restore fluid balance even in actively purging cholera patients.

### WHO: ORS solution

A number of glucose-electrolyte solutions have proved to be effective, but the one which is currently most strongly recommended is the WHO oral rehydration salts solution (ORS), which consists simply of 3.5 grams of NaCl (table salt), 2.5 grams of NaHCO<sub>3</sub> (baking soda), 1.5 grams of potassium chloride and 20 grams of glucose (or 40 grams of the more readily available sucrose or table sugar) per litre of water. This single solution, when given orally in quantities equal to 1½ times the volume of intestinal fluid losses, has proved to be effective in both the initial and maintenance treatment of virtually all cholera patients. Occasionally patients who are already in hypovolemic shock\* may still require an initial intravenous infusion of fluids when first seen by a health worker. However, most patients can be treated adequately with ORS throughout the course of cholera.

Subsequent studies have demonstrated that ORS is also effective in the treatment of other acute infectious diarrhoeal illnesses, caused both by other bacterial (e.g. enterotoxigenic *E. coli*) and by viruses (e.g. rotavirus).

### Universal treatment

Now that an effective treatment of acute diarrhoeal disease has been developed, every effort must be directed towards:

- 1) Ensuring that village health workers everywhere are familiar with the preparation of ORS, or alternatives using locally available ingredients and measuring techniques.
- 2) Educating the community, especially mothers, in developing countries about the necessity for beginning oral rehydration as soon as diarrhoea begins and maintaining the administration of ORS throughout the episode of diarrhoea.

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**Professor C. C. J. Carpenter, Chairman, Department of Medicine, University Hospitals of Cleveland, Ohio, USA.**

*\*Hypovolemic shock – circulatory failure due to rapid fall in blood volume through dehydration.*

### Further reading:

*Pierce N F, Hirschhorn N 1977 Oral fluid – a single weapon against dehydration in diarrhoea. WHO Chronicle, Vol 31, 87.*

## Control strategies

Although many questions remain about the epidemiology of cholera, there is little doubt about the most effective control measures. Dhiman Barua reviews the key strategies.

Cholera control can best be achieved through a national CDD programme that ensures adequate training, proper treatment, community involvement, uninterrupted supplies of ORS, laboratory and other back-up facilities, regular surveillance, and measures to improve water supply, excreta disposal, personal hygiene and food safety. The important strategies for cholera control are described below:—

1. **Early detection of epidemics** through continuous surveillance.
2. **Active case-finding** with the help of community elders, religious leaders and teachers, and through home visits by local health workers reinforced by mobile teams, if necessary.
3. **Provision of early and proper treatment of cases.** This includes the establishment of temporary treatment centres if the permanent facilities are not within easy reach, so infected people travel as little as possible.
4. **Extremely thorough disinfection** of the clothing, utensils, excreta, vomit, and environs of cholera cases (by boiling, or with disinfectants like lysol, cresol or lime, as appropriate). The dead bodies of cholera victims should be disposed of with the minimum of transportation and rites, which can spread the disease.
5. **Health education**, properly carried out, can achieve a great deal, even in the most desperate situations. All health workers should provide health education while providing services. All appropriate media should be used and special attention given to densely populated areas. Simple explanations of *factors* helping the local spread of disease and the ways in which the population can help interrupt transmission will secure community involvement and minimise panic.

Emphasis on personal hygiene (especially hand-washing with soap and water) and on food and water safety is essential. The necessity for eating only cooked food while still hot and drinking only safe water (boiled, treated, or collected from a safe source and stored properly) should be explained. The need to protect all water sources from contamination must be emphasized; infection is acquired not only by drinking water, but also by bathing or washing articles at contaminated sources. The population should also be informed about the dangers of:

- community feasts and gatherings of any kind, particularly funerals, where safe food and water and proper excreta and waste disposal cannot be assured;
  - visiting sick relatives and eating/drinking in the homes of cases;
  - contaminated foods e.g. fish and especially shellfish collected from suspect waters, vegetables irrigated or freshened with sewage-contaminated water.
6. **Epidemiological investigations** to determine how transmission is occurring should be undertaken by health workers. In most instances, several factors are involved because of the complex socio-cultural customs of intimate mixing and free exchange of foods/drinks etc, but there are instances when a common source/vehicle (like a well, shellfish, vegetables) has been detected by epidemiological investigations, in which case the outbreak can be quickly controlled by specific interventions.
  7. **Provision of safe water** is very important, as the boiling of water is not practical in many situations. Numerous simple and innovative methods are available for the supply and treatment of water. Special attention should be paid to the proper protection, storage and use of water in the home.

8. **Proper disposal of excreta** is vital to protect water sources and the environment. In the absence of any facilities, burial of all excreta, specially those of cholera cases, is essential. Refuse disposal by burning, burial, or other methods should be ensured to prevent fly breeding.

9. **Chemoprophylaxis** i.e. the administration of antimicrobials to healthy persons who are suspected of carrying *V. cholerae* and are likely to become sick or spread the infection is theoretically a sound measure. Yet many countries have experienced that mass chemoprophylaxis does not produce the desired results mainly because the infection spreads faster than the time it takes to reach and treat all members of the community. Moreover, by inducing drug resistance, it deprives the actual cases of an effective drug for their treatment.

Therefore, chemoprophylaxis only of *close contacts* in the home of a case was recommended. Recent experience has shown, however, that in many areas the custom of intimate mixing of members of the community and of visiting and sharing foods with extended families makes it difficult to identify close contacts; the recommendation thus becomes unpractical. Chemoprophylaxis may still be effective in situations where everybody in the affected community can be treated *quickly* and *simultaneously* e.g. a refugee camp.

10. **Vaccination** is no longer seen as an effective weapon for cholera control because of its low efficiency in preventing disease and almost total ineffectiveness in preventing the carrier state. Vaccination is still undertaken in some situations, mainly because it is demanded by an uninitiated public. This should be countered by proper health education explaining the limitations of the vaccine and the risks of mass vaccination (e.g. hepatitis).

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**Dr Dhiman Barua, Programme for the Control of Diarrhoeal Disease (CDD), WHO, Geneva, Switzerland.**

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**For further reading on this subject contact Dr Barua at the above address.**

● **Community-based health and family planning**

Kols A J and Waver M J *Population Reports 1982 X.6 (Series L No 3) pp79-109*

● **Oral rehydration therapy: an assessment of mortality effects in rural Egypt.**

Tekce B  
*Studies in Family Planning 1982 13:11 pp315-327.*

Involvement of local people, readily available supplies and cultural acceptability are all reasons why community-based distribution (CBD) of health resources should be effective. If essential supplies can be obtained nearby there is less difficulty and cost to poorer families. Communication is easy and items will be more readily accepted if they are stocked by members of the community who understand how to use them and can explain how they suit health needs and beliefs. A number of programmes are using CBD for contraceptives, nutritional supplements, simple treatment for intestinal parasites, malaria and oral rehydration for diarrhoea.

However, operating CBD programmes is demanding. Local depot holders must be trained, supervised and given regular supplies. Parents need motivation and education to use the materials correctly. Repeated personal instruction and contact is necessary to remind people about the availability of supplies and to refresh memories about the right way to use the facilities.

Treatment of acute diarrhoea with oral rehydration therapy (ORT), is an important technique that can be taught and applied through CBD. However, ORT is time and labour intensive. Instruction also has to overcome fears and doubts about the method. Some of these are associated with traditional beliefs and remedies, while others are the result of resistance and routine practices of doctors and health workers.

Several studies of ORT in CBD in Egypt have shown that it can be effective in lowering the death rate due to diarrhoea in communities. In one study the diarrhoea mortality was decreased with Oralyte, sugar-salt packets or household fluid programmes.

**EGYPTIAN PROJECT, STRENGTHENING RURAL HEALTH DELIVERY**

*Deaths per 1,000 children 1 month to 5 years of age in two periods and with various services*

	1976-79	1980
Oralyte, home distribution	18.9	11.2
Oralyte, commercial source	19.9	16.9
Home prepared sugar-salt	17.7	10.3
Prepackaged sugar-salt, home distribution	23.4	9.3
Control area 1	19.4	17.3
Control area 2	21.5	18.8

Such improved death rates were not found universally, and in the Menoufia programme there was no lowering of the diarrhoea death rates in a community in which mothers were given two Oralyte packets and taught how to use these for their children in cases of diarrhoea. Apparently in most instances ORT was used too little or too late.

Both these reports emphasize the need for repeated personal instruction and suitable ongoing support for effective impact from oral rehydration programmes.

● **Evaluating the role of health education strategies in the prevention of diarrhoea and dehydration**

Iseley R B  
*Journal of Tropical Pediatrics October 1982 Vol. 28 pp253-261*

Health education can interrupt the lethal diarrhoea-dehydration cycle at three points: prevention of diarrhoea; management of diarrhoea when it occurs; and the management of dehydration. However, ways to evaluate the impact of health education strategies are badly needed.

Experienced field workers suspect that community organization is a key element in bringing about behavioural change and this cannot be achieved through the mass media alone without local involvement. Village-based health workers are the most effective carriers of educational messages at household level but they need cooperation from both the mass media and community leaders in setting up local programmes to deal with diarrhoeal disease control. Such programmes should include not only environmental improvements but also the provision of resources for effective oral rehydration therapy, together with the encourage-

ment of prolonged breastfeeding and better weaning practices.

Measuring behavioural change is not easy. This article describes a 'health belief' model which can be adapted to a traditional culture to provide a framework out of which evaluation questions can be selected for use. Some form of relevant, local evaluation is essential if health education services are to be effectively designed to maximize scarce resources by combining the use of mass media with various types of local interventions to prevent diarrhoea and dehydration.

**Journal of Diarrhoeal Diseases Research**

The International Centre for Diarrhoeal Diseases Research, Bangladesh (ICDDR,B) (originally known as the Cholera Research Laboratory) is soon launching a Journal of Diarrhoeal Diseases Research with the encouragement and support of the Canadian International Development Research Centre (IDRC). The Journal will be a quarterly publication with an annual index. Contents will include original research articles, short communications and letters dealing with all aspects of diarrhoeal diseases.

There will be special emphasis on the Asian region and each issue will include an annotated bibliography of current Asian literature on diarrhoeal diseases. The scientific editors of *Diarrhoea Dialogue* are both members of the Editorial Advisory Board and the first issue of the Journal will be fully reviewed in the appropriate issue of this newsletter.

Contributions to the new Journal will be welcomed by its Managing Editor, Mr Md. S. I. Khan, Journal of Diarrhoeal Diseases Research, ICDDR,B DISC, GPO Box 128, Dhaka 2, Bangladesh.

# letters... letters... letters... letters...

## Saving lives

I am the coordinator for the National and Child Health Clinics in this region.

We've recently had an extensive epidemic of diarrhoea and dysentery in Tanzania. In your issue No 11, November 1982, I was pleased to read about oral rehydration therapy (ORT), as we taught it repeatedly to the women who attend our clinic. Medicine for diarrhoea is almost nil here and ORT was the means to save the lives of many of the children.

I will be particularly interested to read issue No 12 as we are presently treating cholera. Thankfully, the cases are under control and declining steadily.

**Sister Katherine Taepke, Makiungu Hospital, P.O. Box 56, Singida, Tanzania.**

## Local foods

Dorothy Francis has written an excellent article on the necessity for continued feeding during diarrhoea to avert the onset or increase of PEM. Locally available multi-mixes are rightly commended (*Diarrhoea Dialogue* 10, page 6).

Our Nepal-wide multi-mix (½ roast pulse, ¼ roast grain 'a', ¼ roast grain 'b') and Kathmandu Valley multi-mix (½ roast soya bean, ¼ roast maize, ¼ roast wheat) – both called 'Sarbotam Pito' or Super Flour, include soya or other legumes roasted and ground. Contrary to Dorothy Francis's point of view, we do *not* find that legumes (roasted and finely ground by the *local traditional* process) cause additional digestive problems.<sup>(1)</sup>

'Sarbotam Pito' can be used very satisfactorily for young children of five months upwards, or even three months if mother's milk is *genuinely* not available. The soya and cereal mix provides a good combination of amino acids, necessary potassium and other essential nutrients.

I regret that many of the foods listed in Miss Francis's Table 'A' – chicken,

rabbit, beef, lamb (or indeed *any* meat), egg, arrowroot and often even oils are scarce and expensive in this developing country. However, our multi-mix provides needed calories too, and the recipe may be a useful basis for other similar areas to provide appropriate local diets.

**Ruth Angove, Nutrition Adviser, UMN Health Services Board, United Mission to Nepal, P.O. Box 126, Kathmandu, Nepal.**

<sup>(1)</sup> *Bomgaars Mona R 1976 Undernutrition – Cultural Diagnosis and Treatment of 'Punche'. JAMA, Nov 29 1976, Vol 236, No 22, p.2513.*

## Sarbotam Pito

2 parts by volume of one pulse (soya-bean is the best)

1 part each by volume of two cereal grains

- Clean and roast each of the ingredients separately and grind into flour.
- Mix the resulting fine (sifted) flours.
- Store in a closed clean container.
- To prepare the child's feed: boil sufficient water, add the powder, and stir while boiling briefly. Cool, add a little salt if needed, and use as a weaning or supplementary food.

## ORT for adults

Thank you very much for your issues of *Diarrhoea Dialogue*. I would like to continue receiving it.

I have closely followed your discussions on oral rehydration therapy and enjoy reading them very much. We in Fiji are recipients of the UNICEF salts packages, which have gone a long way in controlling our diarrhoeal diseases. But one issue concerning these packages really concerns me.

I have often seen my fellow colleagues issuing these packages to adults suffering from diarrhoeal diseases.

I should be very grateful if in a future issue of *Diarrhoea Dialogue* you could discuss the following:

1. Should adults be prescribed these

UNICEF packages?

2. If no, are there any special adult preparations of salts packages?

3. Will an early replacement therapy be of any use to adults?

Please accept my appreciation for the task you are undertaking on educating and keeping us abreast (particularly



UNICEF photo

Spreading the ORT message to everyone.

those of us from developing countries) of developments in the world of diarrhoea. Yours in health,

**Dr A W Khan, Medical Officer, Tavua Hospital, Tavua, Fiji Islands, South Pacific.**

## Editors' note:

*This letter demonstrates the need to spread the ORT message more widely and more clearly. Anyone who has diarrhoea needs early oral rehydration therapy, regardless of age or size. Because dangerous dehydration occurs so quickly in small children, they must be the first to benefit from the special UNICEF packets. The formula also works for adults but they can, as an alternative, be advised to drink large amounts of water to which glucose or sugar and a little salt has been added. If packets are not available, children may also be given similar home made oral rehydration mixtures as described in earlier issues of **Diarrhoea Dialogue**. Not more than a pinch of salt should be used to a cupful of water or a teaspoon to a litre; too much salt is not good for children.*

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**Executive editor:** Denise Ayres With support from **WHO, UNDP, UNICEF, GTZ and SIDA**

**Diarrhoea Dialogue**

*Diarrhoea Dialogue* is produced by AHRTAG at 85 Marylebone High Street, London W1M 3DE. Tel. 01-486 4175.