

# Diarrhoea Dialogue



ISSUE No. 15

NOVEMBER  
1983

## Dangerous partners

The problem continues of how to make both sufficient food and good nutritional knowledge available to the many families who need this help.

Diarrhoea and malnutrition are dangerous partners, responsible for a vicious downward spiral of ill health which too often ends in death for millions of Third World children. The large number of watery stools that occur in diarrhoea cause dehydration which may in turn lead to failure of the blood circulation and fatal shock. Rehydration — replacement of the lost body fluids and salts — greatly reduces this immediate danger. Prompt oral rehydration will save the lives of many children.

Progressive malnutrition is a less obvious but equally serious risk among continually undernourished children for whom diarrhoea is a frequent illness. Among poor communities this kills as many children as does the more dramatic dehydration.

### Dialogue on nutrition

From the first issue of *DD* in May 1980 we have emphasized the crucial role of breastfeeding — both in preventing diarrhoeal infections and in reducing their ill effects. We have also discussed other important aspects of the feeding of children (see news page).

Readers' letters show us that reliable information is



UNICEF photo

Breastfeeding contributes greatly to the prevention of diarrhoea.

badly needed about when, how and with what types of food they should feed children who have diarrhoea. Local traditions about this important aspect of treating diarrhoeal diseases vary widely from good to harmful beliefs. We would like to hear more about the customs in your area.



Photo by Roger Whitehead

Cereal gruel, inadequate nutritionally, is given as weaning food in many places.

### Food for thought

Interesting new scientific evidence is now emerging about the extra value of enriched rehydration solutions (see page four). Equally, researchers are emphasizing the importance of ensuring that children are given adequate food both **during and after** diarrhoea to avoid unnecessary setbacks in growth and development. This issue of *Diarrhoea Dialogue* focuses on the significant relationships between diarrhoeal infections, malnutrition and feeding practices.

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

## In this issue . . .

- Nutritional value of ORT
- Weaning and diarrhoea
- Health education in North Yemen

## AHRTAG

Appropriate Health Resources &  
Technologies Action Group Ltd

## DD on nutrition and diarrhoea

Earlier issues of *Diarrhoea Dialogue* have looked at a wide range of issues connected with diarrhoea and feeding practices. For example:

- Breastfeeding problems (issues 1 and 2)
- Diarrhoea-malnutrition complex (issues 3, 6 and 12)
- Infant food and weanling diarrhoea (issue 2)
- Persuading children with diarrhoea to eat (issue 6)
- Feeding and chronic diarrhoea (issue 10)

We can supply copies of these articles if you have missed them. Write to *Diarrhoea Dialogue*, 85 Marylebone High Street, London, W1M 3DE, UK.



VHAI photo

Nutrition is a family responsibility

## “Power food”

The Mass Media and Health Practices Project in The Gambia (described in *Diarrhoea Dialogue* 14) has recently begun a rainy season feeding campaign. Evaluation from the first year of the project showed that the promotion of ‘feeding solid foods during diarrhoea’ had not been as well accepted as the oral rehydration message. It was thought that this was due to Gambian mothers’ understandable difficulty in feeding their sick children because of the anorexia associated with diarrhoea.

Since the beginning of the rainy season (and diarrhoea season) in The Gambia this June, the Mass Media staff have been promoting a different feeding message, emphasizing solid foods for a child recovering from diarrhoea. Specific energy-rich local foods such as boiled or steamed rice and millet with oil-based sauces — are being recommended. A slogan calling these dishes ‘power foods’ in the local Wolof and Mandinka languages is being used to popularize them in the campaign radio programme and graphic materials. The two main pictures being used are a poster for health workers and a handbill which health workers distribute, after explanation, to mothers. Project staff hope that these changes in the feeding messages will encourage the mothers to rely less on the watery paps




they often feed their children when they are ill and to concentrate more on energy rich solid foods.

Mark Rasmuson and Nigel Taylor




## Teaching mothers

The Voluntary Health Association of India (VHAI) has produced a small booklet for health workers who teach mothers about prevention of diarrhoea and the use of oral rehydration therapy. The booklet, called **Better care during diarrhoea**, describes what

**How to prevent Diarrhoea ?**

1. When your child is four months old, start giving her porridge. By the time she is six months old, she should be having at least four meals a day besides your breast milk. Mixed food is better than just one kind. Add some fruits and vegetable oil to your child's food.
 
2. Always keep food and drinking water covered. Keep special pots only for drinking water. Never put your hand into the water pot. Keep flies away from the food.
 
3. Keep that place clean from where you get your drinking water. Even ponds, lakes and rivers that look clean may cause diarrhoea. Keep animals away from the place where you get your water. See that there is a fence around the place.
 

**How to prevent Diarrhoea?**

4. Do not let anyone pass stools, spit or throw garbage near the place where people get their drinking water.
 
5. Wash your hands well after passing stool and also after cleaning your child who has had a stool
 
6. Cut your nails short and keep them clean. Wash your hands before feeding the children.
 

Illustrations from VHAI booklet

diarrhoea is, why it is dangerous and what mothers should do about it. It also explains clearly at what point a mother has done all she can and should take her child to the health centre. It has pictures for discussion and questions and answer pages to develop better understanding about oral rehydration therapy and the prevention of diarrhoea.

If you would like to see the booklet write to VHAI, C-14 Community Centre, SDA, New Delhi 110016, India.

## Reviews

● **Diarrhea and malnutrition: Interactions, Mechanisms and Interventions**

Chen L C and N S Scrimshaw (editors)  
Plenum Press, New York, 1983

● **Acute Diarrhea: Its nutritional consequences in children**

Bellanti J A (editor)  
Nestlé Nutrition Workshop Series,  
Vol 2, 1983, Raven Press, New York

These two recent publications emphasize the current interest in nutritional aspects of diarrhoeal disease. The first reports a workshop held in Bellagio in May 1981, and the second a

workshop held in Washington a year later. There is a considerable overlap in the participants and material, but the Chen and Scrimshaw workshop invited more Asian participants while the Bellanti meeting contained mainly scientists from North and Latin America. Both books review the pathophysiology and mechanisms of the interaction between nutrition and diarrhoea, but Chen and Scrimshaw also consider possible interventions with a view to policy planning and implementation under the following four headings: diarrhoea and nutrient requirements; therapeutic interventions; prevention and control of diarrhoeal diseases; and diarrhoea and malnutrition. These chapters are a valuable source of ideas for both research and action.

## Commonwealth meeting in 1984

Paediatricians from Australia, Bangladesh, Canada, India, Malaysia, Nigeria and Singapore are planning a meeting to be held in London on 5-7 November, 1984. The aim of the meeting is to promote a closer dialogue about diarrhoea and malnutrition in childhood; to catalyse further research collaboration; and to encourage a greater exchange of ideas and expertise to improve child health throughout the Commonwealth — and the world. It is hoped that the published proceedings will become an effective guide for better treatment and prevention at all

levels. The model below is proposed for the meeting and the idea is to test the validity of each link.

### Contributions welcome

As well as 12 main speakers, a number of short papers (10 minutes) will be scheduled for the ample discussion times. Membership will be limited to 150. Commonwealth citizens interested in contributing on any aspect should send two copies of their abstracts to the address below by 2 January 1984. Dr J. A. Walker-Smith, Reader in Paediatric Gastroenterology, Academic Department of Child Health, Queen Elizabeth Hospital for Children, Hackney Road, London E2 8PS, UK.

## Dr Cicely Williams

Dr Cicely Williams celebrates her 90th birthday on December 2nd, 1983. Her biography has just been published by Green College, Oxford, UK and costs £12.50 (\$25.00). Famous for her identification of kwashiorkor (protein energy malnutrition) in West Africa

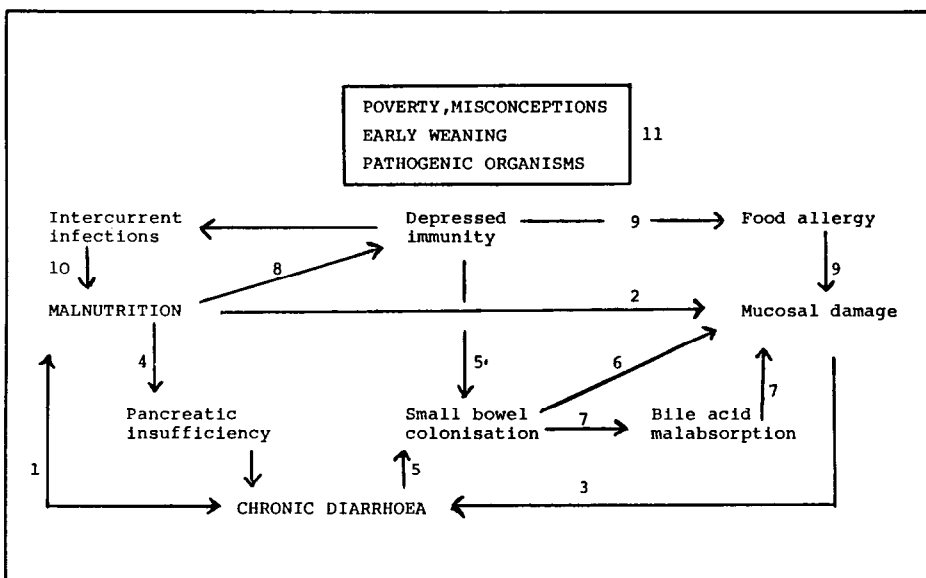


India 1950: Cicely Williams with a severely malnourished child.

fifty years ago, Cicely Williams has never ceased to promote the cause of mother and child health and is known and loved throughout the world. Appropriately, this issue of *Diarrhoea Dialogue* re-examines the importance of good family feeding practices in relation to diarrhoea. Many of our readers will undoubtedly wish to join in a special birthday greeting and congratulations to someone who believes that 'mother and the mother's lap are the best accompaniments to oral rehydration' (*Diarrhoea Dialogue* 3, page 8).

## In the next issue . . .

*Diarrhoea Dialogue* will look at the relationship between measles and diarrhoea in childhood. Vaccination against measles has many benefits if given correctly. We will therefore also consider the practical problems of carrying out immunization programmes.



# Food is good for diarrhoea: when and

## Enriched ORT

**Bert Hirschhorn considers the nutritional value of oral rehydration therapy.**

Mothers and doctors alike have long believed that to feed a child with diarrhoea makes the condition worse. Those who insisted that malnourished children ought not to be starved did so apologetically, accepting a lesser risk. Now we are told that continued feeding is good even for the adequately nourished. Why such a change in advice? It was oral rehydration therapy (ORT) with the full formula that made this feeding possible. Contrast the considerations before and after ORT was introduced:

and electrolyte balance in spite of continuing losses. The formula was effective, despite being hypertonic\* and with a large imbalance between sodium and glucose concentrations, conditions normally causing more diarrhoea and fluid loss.

Modern understanding of intestinal physiology suggests that it was the addition of casein (milk protein) that made the difference. Casein is easily digested to tri- and di-peptides and amino acids. Each of these molecule types stimulates sodium and water absorption by



WHO photo

**Child with kwashiorkor.**

a sugar and an amino acid (glucose and glycine), or starch and protein (rice powder and breastmilk) with electrolytes. In each study, stool output was actually reduced by about half and duration of diarrhoea shortened by one third. This is just what mothers and doctors have always wanted: a treatment that prevents dehydration, reduces stool output and, at the same time, provides the nourishment to hasten recovery. Certain foods, in an enriched ORT, may turn out to be

Before	After
<ol style="list-style-type: none"> <li>1. A child with diarrhoea feels sick and loses its appetite.</li> <li>2. Food, especially milk, increases diarrhoea through osmotic fluid loss due to incomplete digestion after damage to intestinal enzymes.</li> <li>3. If food is withheld, diarrhoea was thought to slow or stop. (This was only partly true, for diarrhoea results from intestinal secretion which occurs independently of the digestion of food.)</li> </ol>	<ol style="list-style-type: none"> <li>1. ORT reduces nausea and vomiting and restores appetite*, partly through rapid correction of acidosis, hypotension and potassium losses.</li> <li>2. Glucose-salt solution given as well as milk increases absorption and decreases osmotic fluid loss.</li> <li>3. With easy and rapid replacement of fluid loss by ORT, we are less concerned about stopping the diarrhoea immediately. Food is needed for recovery and to stimulate digestive juices and enzymes.</li> </ol>
<p>* Some decrease in appetite and absorption persists, but not enough to prevent adequate nutrition.</p>	

So now we can feed during diarrhoea and protect children from under-nutrition, without apologies.

### Another use for foods

In the course of clinical experience, however, another use for food has been suggested. As early as 1971, after initial rehydration of American Indian children suffering with diarrhoea, an artificial milk formula made up from starch, glucose, casein, with medium chain fats and electrolytes, could maintain fluid

pathways across the intestinal cell membrane which differ from pathways for glucose. Moreover, peptides, and amino acids are more easily digested than sugars if the intestine is damaged by diarrhoea or malnutrition. Children with kwashiorkor are known to have less diarrhoea or malnutrition when fed a glucose-starch-casein formula.

### Combining electrolytes with foods

Several recent clinical trials of enriched oral rehydration fluids have combined



Photo by William Cutting

**ORT: enriched versions could be even more effective.**

superior to antisecretory drugs, and have the advantage of being found in the home and not in the pharmacy. Research on optimal food-electrolyte combinations is now underway.

**Bert Hirschhorn, Diarrheal Disease Control Programme, 1053 Corniche El Nil Street, Cairo, Egypt.**

\* *Hypertonic* — over-concentrated (having a high osmotic tension.)

## Carry on feeding

**In communities where malnutrition is common, correct feeding is as important as rehydration for children who have diarrhoea. We report on studies from Bangladesh illustrating this point.**

A recent careful survey of young children in Bangladesh revealed that, on average, each child suffered 6.8 episodes of diarrhoea per year. Added up, this meant they had diarrhoea for 55 days or 15 per cent of the year<sup>(1)</sup>. Such children will end up severely deprived of nourishment if they are starved all the time they have diarrhoea. Although digestion is less effective during diarrhoea, there is still a significant amount of absorption of nutrients. The Dhaka work has shown that, in children given as much ordinary food as they will take, the amount of protein absorbed is reduced to about 50 per cent, the amount of fats to 60 per cent and the amount of carbohydrate to 80 per cent<sup>(2)</sup>. This fall in digestive efficiency varies to some extent with the cause and mechanism of the diarrhoea, but the figures show that, in spite of the disease, the children manage to absorb valuable amounts of essential nutrients.

### Breastmilk — energy value

Another Bangladesh study compared the normal dietary intake of small chil-

dren with diarrhoea with that of a group of matched controls. The energy intake of the ill children was reduced by 40 per cent, but among those children who were being breastfed, the energy intake from mother's milk showed very little decrease<sup>(3)</sup>. This suggests that the loss of appetite is mainly associated with supplementary foods. Breast milk is therefore a particularly valuable nourishment for children with diarrhoea, especially among deprived communities where it may be the main source of high quality protein. Every effort ought to be made to continue breastfeeding during diarrhoea, not least because breastmilk supplies depend on the stimulus of sucking. If breastfeeding is interrupted every time diarrhoea occurs, there will soon be much less of this important food available for the child at the time of greatest need.

### Which foods and when?

Despite recent studies, unanswered questions remain about what are the best foods to offer during diarrhoea and when to introduce them. In acute

diarrhoea, most foods can be given safely and soon. In chronic diarrhoea, feeding may be more of a problem (see *Diarrhoea Dialogue* 10 for Professor G. C. Cook's article on causes and control of chronic diarrhoea). Mother's milk is better tolerated than cow's milk and breastfeeding should continue during diarrhoea. Children with diarrhoea who are being bottlefed need to have the formula diluted with an equal volume of water while the diarrhoea continues.



Photo by Asem Ansari

**Children with diarrhoea must not be starved.**

The important point is to start giving small, frequent feeds of a familiar diet as soon as rehydration is complete, preferably mixed with a little extra vegetable oil to increase the energy content. Vitamin A supplementation is required in areas where xerophthalmia (night blindness) is common.

During convalescence after diarrhoea, children need extra food for 'catch-up' growth. This can be given as nutritious snacks between meals or as an extra meal every day for several weeks.

**Compiled by the Scientific Editors from information provided by A. and A. M. Molla, ICDDR,B, Dhaka, Bangladesh.**

<sup>(1)</sup>Black R E et al 1982 *Longitudinal studies of infectious diseases and physical growth of children in rural Bangladesh. I Pattern of morbidity. American Journal of Epidemiology* 115, 3: 305-314.

<sup>(2)</sup>Molla A et al 1983. *In Diarrhoea and malnutrition. Plenum Press, New York.*

<sup>(3)</sup>Hoyle B et al 1980. *Breastfeeding and food intake among children with acute diarrhoeal disease. American Journal of Clinical Nutrition*, 33: 2365-2371.



VHAI photo

**Correct feeding is as important as rehydration for children with diarrhoea.**

# Practical advice series

## Breast to family diet

**Weanlings are particularly vulnerable to infection. Michael Gurney considers how this important time can be made safer and more beneficial for the baby.**

Weaning does not refer only to the stopping of breastfeeding. It is the gradual process by which a baby becomes accustomed to semi-liquid and solid foods which increasingly complement breastfeeding. It is complete when the child is eating the regular family diet and breastfeeding has completely or nearly stopped. Phrases such as "*the baby should be weaned at six months*" can be very misleading.

Weaning is one of many changes that all take place together. The weaning child is becoming accustomed not only to new foods but to a new environment and to new physical and mental skills. He is very vulnerable to illness at this time.

### When should weaning start?

The best way to wean varies according to the circumstances of each family. If a mother has to go out to work she may have to start giving extra foods earlier than is best for the baby, while continuing to breastfeed whenever she is at home. Where sanitation and cooking facilities are poor, she may be wise to start weaning foods later than is ideal.

In general, breastmilk is perfectly adequate until the baby is at least four to six months old, or weighs about seven kilograms. Other foods need to be introduced about this time to complement breast milk. They are unnecessary, and can be dangerous, if given earlier.

### What makes a good weaning diet?

**Texture:** At first, the baby needs liquid foods. These become thicker until, by his first birthday, he is able to chew pieces of food. A good practice is to start with a porridge or pap containing the food ingredients mixed together into a creamy consistency.

**Quantity:** Babies have very small stomachs and are growing very fast. They need small amounts of foods which are rich in dietary energy. *Little and often* is the rule. At first weaning food is extra to breastfeeding; as time

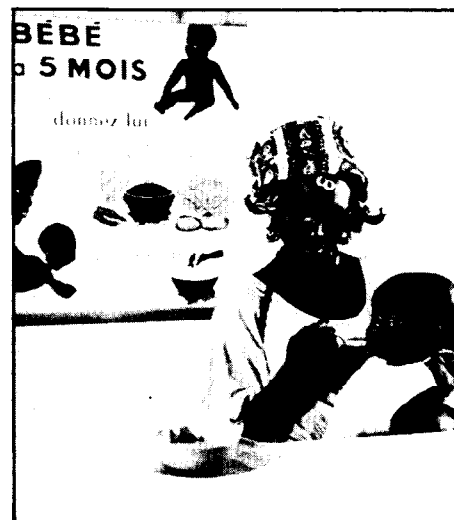
goes on it becomes the main food, and breastfeeding becomes less important. The frequency of feeding should increase rapidly until the baby is soon taking at least five meals a day plus breastmilk. Feeding should continue at this rate well into the baby's second year. Snacks, such as fruit, between meals are useful — as long as they are always clean.

**Quality:** Most weaning diets around the world are based on starchy staple foods such as rice, potatoes and cassava. This is fine as long as certain precautions are taken. Such staples are *not* nutritious enough in themselves. A porridge using the staple mixed with something extra is excellent. The best additions are peas and beans mashed with the skins removed; milk; meat (finely chopped) or other *animal foods*; plus dark green leafy vegetables or yellow-orange fruits such as papaya and mango. Suitable recipes and methods of preparing weaning mixes can be found and developed in most cultures.

**Energy supplement:** Many weaning porridges do not contain enough energy for the baby's needs. During cooking, the starch used in the porridge takes up water and becomes very bulky. Extra oil added to the porridge has two benefits: it adds energy (oil is very rich in calories); and the oil changes the consistency of the porridge, making it easier for the smallest babies to swallow. Oil should be incorporated in all weaning foods except where obesity is a problem.

Two other ways of reducing the bulkiness of weaning foods and making them better and easier for the infant are fermenting or roasting the staple grains. This is done in some parts of the world and can be of great benefit.

**Economy:** If people spend extra money to buy special weaning foods they are likely to give too little in order to make it last. Weaning foods made at home can be just as good as those bought from shops. In fact, some products sold for babies are very poor in nutritional



Small, frequent meals.

quality. It is usually best to rely on foods available from the *family pot*.

**Hygiene:** Contaminated food is one of the most critical problems during the weaning period. In poor, unsanitary environments it is very difficult to avoid diarrhoea in young children. Breastfeeding provides a major protection against diarrhoea. Good hygiene is essential in preparing weaning foods and keeping them until the next feed. But it is difficult to feed a baby five or more uncontaminated meals a day, when the mother can only afford to light the kitchen fire once. Local technologies need to be used to resolve the problem.

**Utensils:** Bottles and rubber teats are difficult to keep clean. Moreover, in order for a weaning porridge to pass through the teat it has to be very dilute; therefore the baby risks not getting enough food. *It is best to keep suckling from the breast*, not the bottle. When food is mashed for a baby, avoid using sieves which are difficult to clean. A cup and spoon are suitable for giving weaning foods; this allows the mother to change the food from liquid to semi-solid as the baby grows.

**Breastfeeding:** Breast milk is very nutritious and protects against infections. It also provides the close, loving contact that encourages secure development. As far as possible, breastfeeding should continue throughout the difficult process of weaning.

---

**Dr Michael Gurney, Nutrition Unit, WHO, CH-1211 Geneva 27, Switzerland.**

---

## Combining science with tradition

**Christine Ansell and Pauline Wright describe health education in North Yemen that combines new health practices with traditional beliefs.**

Diarrhoea associated with bottle-feeding is a major killer of young infants in North Yemen. Even in very remote areas bottle-feeding is widely advertised and used by mothers. The feeds are often made up incorrectly, with dirty water. In a situation like this, health education is obviously essential. However, it is wrong to think that as soon as people are given proper information about a health problem they will forget old beliefs and follow the new set of rules. One way of approaching this is to base a health education programme on both scientific fact and local health beliefs. We describe two examples of this approach below:

### Breastfeeding

Recently one of us watched 'one to one'

health teaching in a clinic for mothers of babies with diarrhoea, in which the nurse was emphasizing the superiority of breastfeeding. The usual routine was followed:

**Nurse:** Are you breastfeeding your baby?

**Mother:** No, bottle-feeding.

**Nurse:** You know that breast milk is better for your baby . . . it contains antibodies against diarrhoea . . . it does not cost money . . . it is from God . . . it is cleaner and easier . . . etc.

**Mother:** But I do not have enough milk.

The nurse then shows the mother a picture of a healthy fat baby feeding from the breast, and another of an undernourished baby lying next to a bottle.

The parents listened patiently to the nurse, but they had heard these messages before and it was clear that they were not convinced. By chance, another nurse came into the clinic and listened for a while. Suddenly, and quite without emphasis, she said 'you know, nowadays men are growing up without close bonds with their mothers, because they were not breastfed.' The couple responded to this with a very lively interest and were obviously giving the idea careful thought and consideration, and clearly thinking that it could be true.

The idea suggested by the second nurse has semi-magical overtones normally found in concepts about health common amongst people unfamiliar with western medicine. It might, therefore, have an appeal built into it which would be helpful in producing the right behaviour.

### Oral rehydration therapy

The second example occurred after a teaching session about oral rehydration therapy with primary health care trainees, who were then asked to teach the mothers in the clinic. Suddenly the whole scientific emphasis was switched around. One trainee, instead of relaying the facts as she had been taught, began talking in terms of 'cleaning the stomach.' Contrary to previous sessions with mothers, which concentrated on teaching about giving replacement fluids and salts, this produced lively interest and discussion. Salt is a well-known cleanser in North Yemen and the ORS mixture was being advised as one which would cleanse the stomach and therefore cure the diarrhoea. Surely the essential point is that use of ORS is taught and demonstrated correctly. The underlying reason for its acceptance is less important. And it is obvious that these mothers had a theory of their own which made ORS acceptable.

These examples provide clear instances of other approaches to reasoning which, if used in health teaching, will encourage better acceptance of important practices such as breastfeeding and oral rehydration therapy.

---

**Christine Ansell, Nutritionist, Oxfam and Pauline Wright, Public Health Nurse, WHO.**

---



WHO photo

In this Egyptian community breastfeeding is routine. Elsewhere, as in North Yemen, mothers need to be convinced of its merits.

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

## Information through illustrations

I am a Peace Corps Community Health Volunteer working in Sierra Leone, West Africa. Very occasionally I have found old issues of *Diarrhoea Dialogue* in our Peace Corps office. They have proved to be informative and extremely useful, especially when passed to my counterparts in the Ministry of Health and the Ministry of Social Welfare. It's a definite motivator for the health workers here to see that they are not alone with their troubles; and especially to learn techniques that they can use, like ORT.

However, it is difficult for us here in the Eastern Province to receive *Diarrhoea Dialogue* on a regular basis. We presently have ten PC CHV's in the East. And we all have Chiefdom Health Overseers or Public Health Inspectors as counterparts. Together we work with social welfare workers and village health committees. So if we could get 10-12 copies sent directly to Kenema I feel that we can guarantee widespread distribution of the ideas and techniques presented in DD.

I do have one suggestion. Pictures are invaluable to any health lesson. Do you think it would be possible to run one full page picture or illustration in each issue? When working across the bilingual border one picture is truly

worth a thousand words.

Any help will be appreciated. Thanks again for what you have already helped us to do.

**Tom Bik, PCV Taninahun, % Mr J. S. Conteh, Senior Health Inspector, Ministry of Health, Kenema, Sierra Leone, West Africa.**

## Lines of communication

I would like to make one comment about *Diarrhoea Dialogue* 13 that mentioned the four UNICEF priorities to save the 15,000 (or was it 20,000?) children each day from dying from diarrhoea with dehydration and malnutrition — the use of the growth charts, oral rehydration, immunizations; and I think the final one was breastfeeding. Not one of these priority items is new but, in spite of this, the message is still not getting to the target population. Perhaps if all the available lines of communication are used, then it will work. Learning the very ordinary things about daily survival are often the most difficult ones to get straight.

With thanks to you for your very clear and lucid way of presenting material that all of us ought to know.

**Myrtle Elizabeth Keller, MD, Kamuzu Central Hospital, P.O. Box 149, Lilongwee, Malawi, Central Africa.**

## Using DD for surveys

I am a final year medical student at Ghana Medical School. I came across an issue of *Diarrhoea Dialogue* (issue No 9, May 1982) at Danfa, a rural suburb near Accra, whilst doing my Sub-internship in Rural Medicine there. I was so impressed with the publication that I read it cover to cover! The practical advice series column gave me enough information to carry out a survey on mothers' attitudes to diarrhoea in Bawku District, Northern Ghana. I used the results as my dissertation in partial fulfilment of the Final Part II Examinations in Community Health 1983 for the award of MB.ChB degree.

I would also be very pleased if you could regularly supply me with *Diarrhoea Dialogue* and any other publications which will help in my full understanding of the problems of diarrhoea and its management.

**Frank K. P. Nyonator, C2/W1 Students' Hostel, Ghana Medical School, Korle-Bu Teaching Hospital, Korle-Bu, Accra, Ghana.**

## DD for extension workers

I should be very grateful if you could include my name on your mailing list to receive the *Diarrhoea Dialogue*.

I'm an Agricultural Extension Officer working in a Joint Oil Palm Project financed both by the World Bank and the Government of Ghana. I work in rural areas, that is farmers who have their own lands and are interested to participate in the project known as the Outgrowers.

I work in a 50 kilometers radius from the main plantation. *Diarrhoea Dialogue* would benefit me a lot during my usual rounds to the villages. As an Extension Worker, I should know something about health education and pass on the knowledge to the rural dwellers, especially where health posts and clinics are not available.

**J. N. Asiedu, GOPDC — (Kwae Plantation), P.O. Box M428, Accra, Ghana.**



Pictures liven up a nutrition class in Papua New Guinea.

**Scientific editors:** Dr Katherine Elliott (U.K.) and Dr William Cutting (U.K.)

**Executive editor:** Denise Ayres

**Editorial advisers:** Dr David Candy (U.K.), Dr I. Dogramaci (Turkey), Dr Richard Feachem (U.K.), Dr Michael Gracey (Australia), Dr N. Hirschhorn (U.S.A.), Dr D. Mahalanabis (India), Dr Leonardo Mata (Costa Rica), Dr Mujibur Rahaman (Bangladesh), Dr Jon Rohde (Rockefeller Foundation), Ms. E. O. Sullesta (Phillippines), Dr Andrew Tomkins (U.K.), Dr Paul Vesin (France), Dr M. K. Were (Kenya).

With support from **WHO, UNICEF, and SIDA**

## Diarrhoea Dialogue

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