

Dialogue on Diarrhoea

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The international newsletter on the control of diarrhoeal diseases

DD turns 50: looking forward

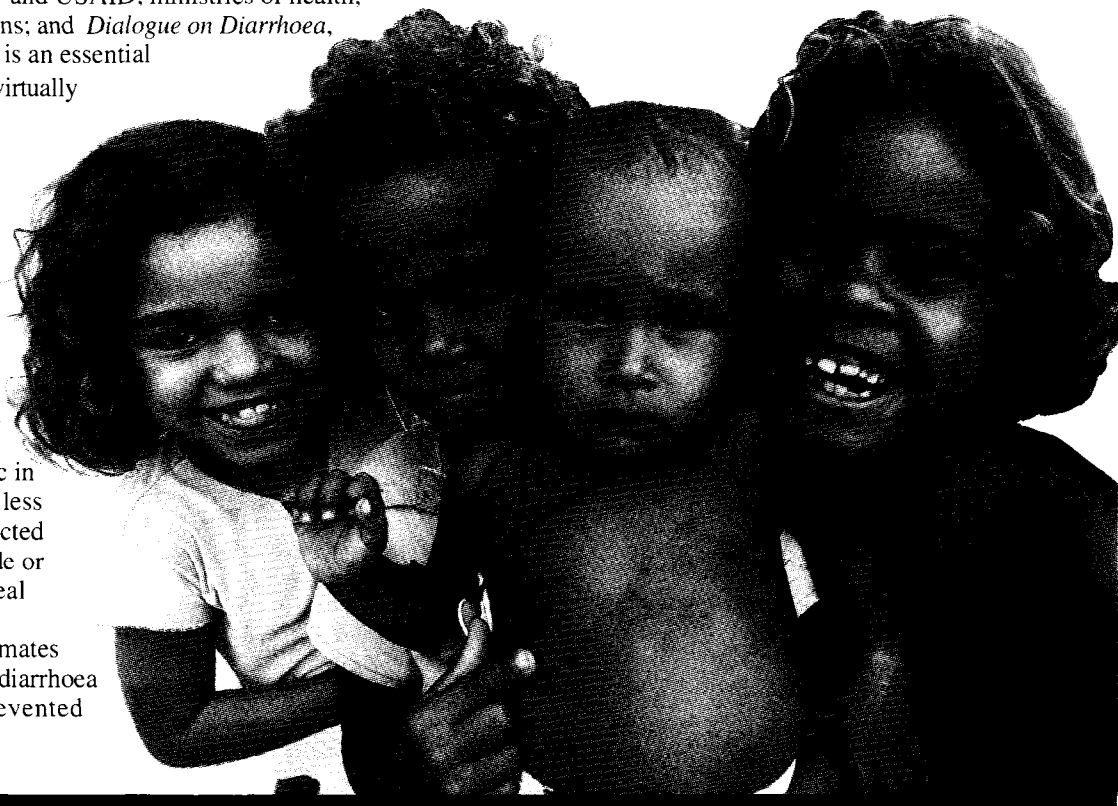
Dialogue on Diarrhoea celebrates its fiftieth issue this month. Bert Hirschhorn, an international editorial adviser since the start of the newsletter in 1980, looks at progress in the control of diarrhoeal diseases over the last 12 years and outlines future challenges.

Congratulations to *Dialogue on Diarrhoea* on its 50th issue, as fresh today as its first, 12 years ago. *DD* now reaches more than a quarter of a million readers in 172 countries and 10 languages. Diarrhoea used to be an impolite word. Now, thanks to health workers at all levels; the major international agencies – including WHO, UNICEF and USAID; ministries of health; non-government organisations; and *Dialogue on Diarrhoea*, control of diarrhoeal diseases is an essential child health programme in virtually every developing country.

Since 1980 case management of diarrhoea has improved markedly – in the home, the hospital and nationally. Where case management has improved, the number of deaths from diarrhoea has decreased sharply, and fewer children are seen with severe dehydration. During the current cholera epidemic in Latin America, remarkably, less than 1 per cent of those affected have died, thanks to a decade or more of control of diarrhoeal disease (CDD) training and preparation. WHO now estimates that up to 90 per cent of all diarrhoea deaths of children may be prevented

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**The message for the future:
child health not just child
survival**



Sean Sprague/Panos Pictures

In this issue:

- The role of nurses
- Relactation
- Supplement on drugs and diarrhoea

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Nurses and midwives play a vital role in preventing deaths through diarrhoea. Their respected position in the community and frequent contact with mothers make them ideal people to promote good health practices. They can also help ensure that children receive correct treatment when they get diarrhoea.

DD looks at the role of nurses – in supporting breastfeeding and advising mothers on how to treat diarrhoea – and what can be done to improve nursing training.

Promoting the benefits of breastfeeding

Nurses and midwives have an important part to play in helping babies get off to a good start in life by promoting breastfeeding which sustains and protects babies against disease.

Good advice from a midwife or nurse can ensure that a mother prepares herself well for breastfeeding, starts breastfeeding as soon as the baby is born and continues to breastfeed until well after the child has begun to eat other foods.

It is important to discuss breastfeeding with a woman while she is pregnant, so that she knows about the benefits to herself and her baby and is ready to persevere even if she is offered formula milk or experiences problems at the beginning. Mothers should be reassured about unnecessary worries

such as concerns that their breasts are too small, or that breastfeeding may make their baby constipated.

Starting to breastfeed

The following steps help a woman to initiate breastfeeding:

- Give the baby to the mother to hold immediately after birth.
- Encourage the mother to begin breastfeeding within half an hour of birth.

- Help the mother with the first feed. Ask her how she feels, observe her feeding and make sure the baby is suckling in a good position.
- Do not give the baby any food or drink other than breastmilk, unless there is a sound medical reason.
- Let the baby stay in the same room as the mother, day and night from the time of birth (sometimes called 'rooming-in').
- Allow unrestricted feeding with no limits on time or frequency (called 'demand feeding').

Sustaining breastfeeding

Nurses and midwives in health centres and in the community should make use of opportunities when they come into contact with mothers to encourage them to continue breastfeeding, for example during family planning discussions, immunisation days and clinic visits.

The advice to mothers should include:

- Continue with exclusive breastfeeding for at least four to six months.
- Continue with breastfeeding, in addition to giving other foods, up to age two years or beyond.
- Encourage other mothers and pregnant women to breastfeed.

Extra help is needed for mothers with low birth weight babies, twins or babies with disabilities. Mothers with problems, such as sore nipples or worries about their milk supply, need individual help and advice. Mothers who work away from home also need support to continue breastfeeding.

With thanks to WHO.



Supportive advice from a nurse or midwife can ensure that a mother continues breastfeeding even if she experiences initial problems.

How to help a woman to re-establish lactation

Almost all women are capable of breastfeeding, even those whose milk has dried up after a gap in breastfeeding. Midwife Katherine Carter explains how health workers can help mothers to re-establish lactation, by providing information and support.

What is relactation?

Relactation is the re-establishment of the milk supply after a woman has stopped breastfeeding for anything from a few days to a few months (in general, it is taken to be less than six months). It also includes increasing an insufficient milk supply. It is also possible to *induce* lactation in women who have not lactated for years or who have never been pregnant. The same principle applies to relactation as to induced lactation: both are initiated and maintained by an infant suckling frequently at the breast.

Breastfeeding and hence relactation are important for two reasons:

Infant health: research shows that breastfed babies are less likely to suffer from acute respiratory infections, diarrhoeal diseases, and malnutrition.

Maternal health: the cost of buying formula, the time spent finding fuel and preparing infant milk feeds or caring for a sick child mean that a mother also benefits from breastfeeding. Reduced fertility rates caused by regular suckling may also improve her health.

What is needed for relactation?

Motivation: the desire to breastfeed and to re-establish or increase lactation is more important than a woman's physical condition. There are examples of post-menopausal women who have relactated and been able to feed babies.

Nipple stimulation: an infant sucking the nipple stimulates nerve impulses that cause the release of a hormone called prolactin which acts on the breast to produce milk. This is the best way to stimulate the breasts to produce milk.

Support: a woman is affected by the views of her family and friends about infant feeding. In some places, women work away from home, and have to leave their infants for a relative to feed. In these circumstances, women need practical and emotional support and encouragement to re-establish and main-

tain lactation and to breastfeed when they are at home, and express breastmilk for feeding when they are not.

Information: health workers have a key role in supporting and encouraging women's confidence in breastfeeding and relactation. They need to know the basic facts:

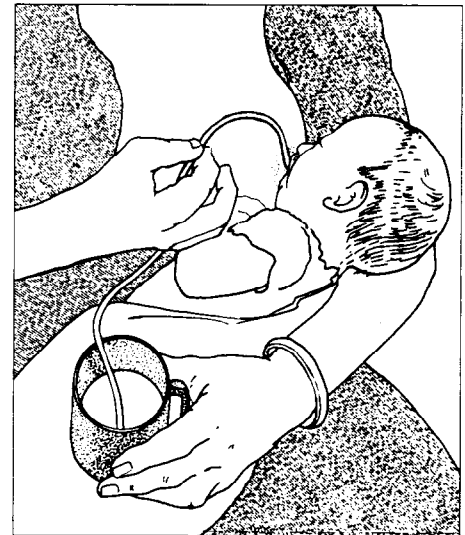
- Increased nipple stimulation leads to increased milk supply.
- Only a tiny proportion (probably less than 1 per cent) of all women are physically unable to breastfeed – if a woman has breastfed before it is very likely she can do it again.

Relactation in practice

Mulago Hospital, Uganda: a starving teenage mother was admitted with a malnourished two month old infant. She had not produced any breastmilk for several weeks.

After admission, she was encouraged to suckle the infant frequently, even though the infant's dietary requirements were met by formula milk. The young mother was also given food. Within a few days of admission her milk production was reinstated and the infant could be fed on breastmilk alone.

- Stress may temporarily inhibit the flow of milk, but does not affect its production, so even in a stressful situation increased suckling will result in greater milk production.
- Except in famine conditions, malnourished mothers are able to produce enough milk. If possible they should be given food supplements to help keep up their own body strength.



Daphne Paley-Smith

A breastfeeding supplementer – a cup of milk with a nasogastric tube leading to the breast – helps the baby get used to feeding at the breast while the mother's milk supply is being re-established.

How to relactate

- Establish that the woman wants to relactate. Be confident but realistic. Persistence is required, particularly during the first two to four days.
- Find out what sort of support is available to the mother, for example family, friends, health worker, health facility.
- Decide whether treatment or referral is necessary (and available) for health problems of the mother.
- Explain to the mother about the need for regular nipple stimulation in order to re-establish the flow of milk. This needs to happen 8–10 times a day, which means breastfeeding the infant every 2–3 hours, with a longer gap at night to give the mother time to sleep.

The baby may need to learn to suckle at the breast if previously bottle or tube fed, or if it has been too sick to breastfeed for a while. To help to do this, the mother should keep the baby close to her at all times. The baby should be encouraged to suckle whenever it is willing. Hold the baby close to the breast and make sure that it takes a mouthful of the breast tissue (see DD37 breastfeeding supplementer). One way to get the baby to suckle when the breast is not producing a lot of milk is to use a breastfeeding supplementer (pictured above). At its most basic, a breastfeeding supplementer is a cup of milk from which a nasogastric tube leads to the nipple. The

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Advising on home management of diarrhoea

How nurses and other health workers talk to mothers about treating diarrhoea is very important. WHO is promoting this step-by-step guide to informing mothers about good practice.

How a mother treats her child's diarrhoea at home depends largely on how well a nurse or other health worker has advised her. Every nurse should consider herself to be an adviser.

However, advising mothers on home management of diarrhoea is usually the last activity carried out by the busy health worker, and often the least well done. It may be difficult to judge how much to tell a mother in a short time – how to cover the essential information without overloading her with too much to remember.

To assist nurses and other health workers with this task, WHO suggests the following process: **ASK-PRAISE- ENCOURAGE –ADVISE–CHECK.**

ASK questions about what was done for the child before coming to the health centre, specifically about the drinks, food and treatment the child has taken.

PRAISE AND ENCOURAGE the mother's helpful actions. Every mother bringing a child for care has done something right, even if it is only coming to the health facility. Identify and praise correct action. This will encourage her and build her confidence, and make it more likely that she will follow the health worker's advice.

ADVISE – Even if a mother has done some things correctly, she may need advice about other things to do and to be tactfully warned against harmful practices. She will also need to know the signs to watch out for which mean her child should be brought back for further care.

CHECK – It is important to find out exactly what the mother has understood so that any misunderstandings can be corrected. It is better not to ask: 'Do you understand?' She will probably answer

'yes', thinking she has understood or because she is too afraid to say no. Ask her to describe what she will do when she returns home. This is a better way of checking her understanding.

When talking to mothers, nurses should also keep in mind **the rules of case management in the home:**

- Give the child more to drink than usual.
- Encourage the child to breastfeed/eat.
- Bring the child in for care if s/he shows any of the following danger signs:
 - Is eating or drinking poorly
 - Passes many watery stools
 - Is very thirsty
 - Is vomiting frequently
 - Has fever
 - Has blood in the stools
 - Is not getting better.

Thanks to WHO.

UK nurses need basic ORT training

The UK could learn from developing countries about educating nurses on diarrhoea management. Karen Whibley argues for better nurse training on ORT in the UK.

Nurses are in a key position to change public thinking about health issues. A major part of the nurse's role is health education and this is reinforced by the public perception that nurses have specialist knowledge.

Much of nurses' knowledge is gained 'on the job'. The use of oral rehydration therapy (ORT) is a case in point. Nurses in the UK usually receive little or no formal training on the subject. As a result, many nurses are unsure what ORT is and how it works. They are therefore unable to teach the public correctly and may, unintentionally, perpetuate incorrect ideas about how to manage diarrhoea. For example, the main mistaken belief is that ORT is a cure for diarrhoea. In addition, it is often recommended that young children be 'starved' for some days.

A typical scenario might involve a mother bringing her baby suffering from diarrhoea to a casualty department, or to the practice nurse at a general practitioner's surgery. Once seen by a doctor, oral rehy-

dration salts (ORS) may be prescribed, but the mother may not be told what ORS is, how to give it, how it will help her child, or that it will not cure the diarrhoea.

A joint and consistent approach is needed among doctors and nurses who deal with parents of children with acute diarrhoea, to reinforce good practice. This is starting to happen in many areas, and is reducing the number of children presenting to hospital casualty departments with this problem.

Although diarrhoea is less common in the UK and often less serious than in developing countries, a number of babies do die every year in the UK as a result of diarrhoeal dehydration, deaths which could easily be prevented by the timely use of ORT. Unfortunately, the UK is lagging behind developing countries in the promotion of ORT and training about ORT is often not included in nursing courses. Nurses should be taught the physiology of diarrhoeal dehydration and the rationale of ORT. With that knowledge, they would be able to ex-

plain to parents that it is not a cure but a mechanism by which fluids are replaced, thus preventing progression to serious dehydration.

Karen Whibley, Gastroenterology Research Nurse, Queen Elizabeth Hospital for Children, Hackney Road, London E2 8PS, UK.

Resource package for nurse training

The CDD programme of WHO is preparing a package of training materials to help nurses and midwives to update their skills and knowledge.

The package will include:

- a module on advising mothers
- resources on breastfeeding counselling
- a manual for trainers of nurses and other health care workers on teaching about diarrhoeal disease control.

Available from The Diarrhoeal Diseases Control Programme, WHO, CH-1211 Geneva 27, Switzerland.

Sahel nurse training scheme

Suzanne Prysor-Jones reviews the experience of introducing diarrhoeal disease control (CDD) teaching modules in schools of nursing in the Sahel region of West Africa.

Twenty-one schools of nursing, in Mali, Niger, Senegal, Burkina Faso, Mauritania and The Gambia, were the focus for a joint PRITECH¹ – WHO initiative to introduce a training package, which included teaching modules and a work book for use by students during work placements.

The modules covered:

- an epidemiological overview and clinical concepts
- the treatment and prevention of diarrhoeal diseases
- cholera
- health education techniques
- the national CDD programme.

Lessons learned

Lessons learned from the experience of introducing the training package include:

1. Teaching modules can be introduced into a curriculum that is not run on a modular basis.
2. Participation in developing the modules (through discussions of proposed modules and attendance at workshops to review the drafts) motivated the schools to use them.

3. Active involvement of the national CDD programme helps to ensure that the modules are used.

4. Making a set of teaching materials available to teachers and students increases motivation and allows students to study outside the classroom, and to use the modules as reference materials.

5. Follow-up is necessary to solve some of the problems that arise. For example, one of the schools in Mali's capital, Bamako, was distributing the modules to students without actually teaching them. The teachers were finding it difficult to integrate them into their teaching. A teacher from another school where the modules were being used well was sent by the CDD programme to share experience of using the modules.

Common problems

1. Student work experience is often hastily prepared and lacks supervision due to limited resources. Most nursing schools do not have clear guidelines for work experience. Students tend to be used mainly as extra workers for routine tasks.

The role of nurses in the Sahel

There are very few doctors in the Sahel region of West Africa, particularly in rural areas. A region of about 100,000 inhabitants might typically be served by only one or two doctors, based in the district capital, often with administrative responsibilities. Public health efforts rely mainly on the work of nurses for day-to-day implementation.

Nurses are usually responsible for:

- the running of health centres or dispensaries
- diagnosing and treating sick children, particularly in rural areas
- following up diarrhoea cases even if the child has been seen by a doctor
- managing well-baby clinics
- most of the health education
- training and supervising village health workers.

It is therefore extremely important that nurses have solid pre-service training in diarrhoeal diseases.

2. Case management is poor in some of the health facilities where students are placed and it is usually difficult for teachers from the nursing schools to intervene in case management. There are too few facilities with good case management practice to cater for the large number of students. National CDD programmes have a key role to play in upgrading case management practice to ensure consistency between what the students see in the field and what they learn in training schools.

Evaluation

1. Use of the modules has helped to create links between national CDD programmes and training schools, providing a possible model for other priority public health programmes.
2. The modules have resulted in more time being allocated to CDD in all schools using them.
3. Informal interviews with teachers and students have revealed that many of them would like similar clear and standardised materials for other health issues.

Suzanne Prysor-Jones, PRITECH, BP 3047, Dakar, Senegal.

¹ PRITECH (Technologies for Primary Health Care) is a USAID funded project.



Educating mothers about the prevention and treatment of diarrhoea is an important part of the work of nurses in Niger.

M. Jacot/WHO

The role of nurses

Re-establishing lactation

Continued from page 3

baby can suck on the tube at the same time as suckling on the breast. Alternatively, milk can be dripped over the mother's breast to get the infant to suckle. Even if an infant suckles only a little to start with, often the case in babies over three months of age, this will tend to increase after a week. Another method of encouraging the baby to suckle is to give it to another woman who is producing milk so the baby can learn the suckling action.

- A safely prepared artificial formula may be needed for an infant who is starting to suckle at the breast again while lactation is being established. There is no need to dilute the formula. Reduce the volume of the formula by about 30ml per day as the supply of breastmilk increases. Check the baby's weight to make sure it is receiving enough milk. It is better to use a cup and not a bottle with a teat, because a bottle and a teat are more difficult to keep clean and if a baby sucks from a teat it may be less willing then to suckle from the breast because the sucking action is different.

□ Relactation in practice

Saigon, Vietnam: women who volunteered for a programme to induce relactation ended up successfully feeding two orphans each.

Bangladesh: a relactation programme among refugees affected by famine was also successful, with women (if not the infant's mother, then a relative or friend) being induced to lactate within a few days.

Makere Hospital, Kampala, Uganda: a relactation programme among well-nourished women included strict frequent feeding of their infants (at least every two hours), supplementary feeds, giving one pint of cow's milk daily to the mother, and reassurance and information from staff.

- It takes about two to three weeks to re-establish an adequate supply of milk, although this can vary. Mothers trying to re-establish lactation need constant encouragement, especially in the first few days. Health workers should see women as often as possible during this time. Other women who have successfully relactated can also help provide support and advice.
- Lactogogues are substances said to increase milk supply. Those which are cul-

turally acceptable and not harmful, e.g. some herb teas, can be helpful. A nutritious diet is probably more important. Hormone therapy is rarely used, and hormone stimulating drugs may do no more than increase the medical acceptability of the process in the eyes of health workers or the community.

Katherine Carter, 18 Belton Road, Bristol BS5 0JF, UK.

A full list of references for this article is available on request from AHRTAG.

QUESTION AND ANSWER

Gluten intolerance

I was in Ecuador until a few years ago and developed chronic diarrhoea which was diagnosed as amoebiasis. Drugs had no effect. When I returned to the UK I was diagnosed as 'coeliac'. Is gluten intolerance increasing in developing countries where people have only recently started eating wheat based foods?

Gita Hahn, London, UK.

Professors Gordon Cook (Hospital for Tropical Diseases, London) and David Candy (King's College Hospital, London) reply:

Coeliac disease can be more accurately described as gluten intolerance. It is a genetically determined abnormality of the small intestine. Symptoms are caused by eating gluten (a mixture of proteins found in wheat and certain other cereals such as barley or rye), which is harmless when eaten by most people. Exactly how gluten acts is unclear, but it damages the mucosa (lining) of the small intestine, causing the villi (finger-like protuberances which increase the absorptive area) either to become blunted or to disappear.

The result is that normal absorption of food cannot take place. This leads to weight loss, or failure to thrive in infants and children, and deficiencies in some vitamins (e.g. folic acid) and minerals (e.g. iron). There is usually diarrhoea with large, pale and foul smelling stools, sore tongue and mouth ulcers, tiredness, abdominal discomfort and, in longstanding cases, osteoporosis (poorly calcified bones) can result. Symptoms often begin as soon as wheat based foods are introduced, although they may start in adults. The severity of the symptoms varies.

There is evidence that the disease exists in India, although it is not often diagnosed. A few reports exist from African countries and China. However, this does not necessarily mean that these populations are rarely affected, but more likely reflects the fact that they eat very little gluten. More research is necessary to find the true prevalence of the disease in developing countries. In the UK about 1 in 2,500 of the population is known to have coeliac disease.

Treatment consists of strict elimination of gluten from the diet. Even the smallest amount will rapidly cause damage to the small intestine, and strict avoidance of gluten in an affected person must be life-long.

Handbooks for health

AHRTAG produces a wide range of health and development publications which are available at low cost (or, in some cases, free to readers in developing countries).

These include manuals on:

- making a cold box for vaccines
- refrigerator maintenance
- running a health centre store
- managing district dental services
- low cost disability aids
- and helping disabled children to move through play.

The manuals are available through TALC, a UK distributor.

AHRTAG also produces newsletters on primary health care action and overview, acute respiratory infections, community based rehabilitation, and AIDS prevention and care, as well as booklets on topics such as drug packaging and laboratory investigations.

Write to AHRTAG, 1 London Bridge Street, London SE1 9SG, UK, for a free copy of our updated publications list and order form.

Glass-sized SSS

In *DD47*, where you mentioned recipes for SSS, a Madras reader's recipe for sugar salt solution (SSS) using one pinch of salt and four pinches of sugar was corrected. I would like to point out, however, that the Madras recipe is for one tumbler (200ml) of water, not for a litre bottle. Can you please publicise this, as I am being questioned by *DD* readers here about it.

Father Emmanuel Mariam Pillai, Educational Multi Media Association, 32 College Road, Nungambakkam, Madras 600 006, India.

Dr William Cutting replies:

Thank you for drawing this to our attention. Local recipes do often relate to locally available containers, and the Madras recipe reflects this. WHO recommends an early start to rehydration using 'home available' drinks (water, rice water, soup, yoghurt drinks etc). Sugar salt solution (SSS) can also be used if the ingredients are available and mothers know how to prepare it correctly.

Super 'ORS' recipe

Mutolere Community Based Health Care Programme in Uganda has been promoting a solution to prevent dehydration known as super 'ORS'.

Ingredients:

1.5 litres water (3 tumpeco mugs or 3 Uganda beer bottles)
Handful of flour (sorghum, millet, or maize meal)
Level teaspoon salt (or large pinch using 3 fingers)
Fruit if available (e.g. 3 medium tomatoes)

Method:

Ensure all utensils to be used are clean and wash your hands. Mix the flour and salt with a little of the measured water and heat the remaining water. When it is boiling, stir it into the flour mixture. Cook for 10 minutes. Peel and chop the fruit finely (especially if the solution is for an infant) and add it two minutes before the solution is ready.

When cooled, give infants one quarter of a tumpeco mug after each loose stool (adults and children half a tumpeco mug). Keep the solution covered and discard after 24 hours.

Important:

Super 'ORS' should be given to the person with diarrhoea *in addition* to other foods – not *instead* of them. Mothers should continue to breastfeed their infants. Super 'ORS' is not a medicine. If the diarrhoea patient does not improve or becomes worse, take them to a health centre.

The addition of fruit is optional but makes the solution more palatable: tomatoes provide potassium as well as a nice flavour. The ingredients for this recipe do not require precise measurement: a handful of flour may vary somewhat from person to person without affecting the solution's benefits.

Super 'ORS' has been well received by villagers. Sugar is very expensive and is not a standard ingredient in their homes. Promoting ORS sachets perpetuates the myth that imported packages are better than what is locally available. In fact the reverse is true! Furthermore the sachets may not be available when needed. Super 'ORS' is proven to be more effective in actually reducing diarrhoea. It is more nutritious than alternative recipes. The ingredients are more readily available to people in rural areas. Communities elsewhere can adapt super 'ORS' according to flour, fruits and measurements available.

Vivienne Lumley, Health Visitor, VSO Uganda.

Dr William Cutting replies:

ORS usually refers to the standard WHO/UNICEF formula of oral rehydration salts. Here it is used for a special home made oral rehydration solution, which is apparently easily made and well accepted in Uganda. These are important advantages. However, in cases where a child is dehydrated, the WHO/UNICEF formula is more effective because its precise formulation is designed to replace all of the salts and water lost in the liquid stool. The formula used in Uganda is undoubtedly effective and should be encouraged, provided mothers prepare and use it correctly.

Rice electrolyte solution

I work at a paediatric clinic in a remote eastern village in Tamil Nadu, south India, where gastroenteritis is a major problem. The concept of oral rehydration therapy (ORT) has made a real breakthrough in reducing mortality from acute gastroenter-

itis. For the past ten years, we have been using rice electrolyte solution (RES). We get about 150 cases per month and 90 per cent of them are treated with RES alone.

RES is willingly accepted by both high and low socio-economic groups. Now most of our children have started taking RES at home before coming to our clinic. We feel that the confidence they have in ORT is due to supervised therapy given at our clinic, even while intravenous fluids (which are only given when ORT fails) are available.

Dr D Meikandan, Avvai Child Care Clinic, Avvai Street, Bharathi Nagar, Ramnathapuram 623 535, Tamil Nadu, India.

Soya bean success

I am the co-ordinator of a self help programme which aims to combat malnutrition and child mortality through the use of soya beans.

Since we found a way of preparing soya which suited local tastes, soya has become well known and used throughout Zambia. As we are mainly dealing with malnourished children, we are confronted with diarrhoea every day.

Our programme includes education, child monitoring and practical cookery demonstrations and teaching mothers general health care. We advise the mothers of children suffering from diarrhoea to make their own oral rehydration fluids and to add to this fluid three tablespoons of cooked soya flour. The mixture is cooked and cooled, then fed to the child. We have used this method for four years with great success. We have found that the addition of soya breaks the vicious cycle of malnutrition → inability to digest food → diarrhoea → no food to the body → malnutrition.

We feel that spreading the use of soya, thus reducing malnutrition, would automatically reduce the problem of diarrhoea. **Renate Schempp, Co-ordinator, Soya Nutrition Project, PO Box 90612, Luanshya, Zambia.**

Dr William Cutting replies:

If adding soya makes the oral rehydration fluid more acceptable then that is good. Beware of confusing the replacement of lost fluids and electrolytes (rehydration) with the need for good nutrition. Cereal based ORT has very little nutritional value and will not break the diarrhoea/malnutrition cycle. As soon as children are rehydrated, they should be given their usual diet again, possibly in increased amounts.

DD turns 50: Looking forward

Continued from front page

by rehydration, continued feeding and use of antimicrobials in specific cases. The cost of CDD, whether expressed in cost per death averted or in absolute terms compared with other programmes, is very low.

In the past 12 years oral rehydration therapy (ORT) has proved to be effective as more than just supportive treatment for mild illness. It saves lives under extreme conditions: from low birth weight neonates in incubators to elderly people in nursing homes; in conditions of stress in refugee camps and on mountain sides; in people with AIDS; and in children with severe dehydration when intravenous fluids are unavailable.

Research in CDD has also expanded dramatically. Significant findings include:

- Continued feeding during diarrhoea – with breastmilk, milk or weaning foods – protects a child's nutrition, and also shortens the episode. Good case management, therefore, not only saves lives, but strengthens those who recover.
- A highly effective cereal based oral rehydration solution can be made and used at home, and improves the outcome.
- Confirmation that basic hygiene and sanitation – hand washing, and the availability of sufficient clean water and latrines – definitely reduce the incidence of diarrhoea and have the greatest effect when all these factors are combined.
- Up to 80 per cent of cases of diarrhoea seen at health facilities have an identifiable microbe (viral, bacterial or protozoan) as the cause. Routes of transmission are now better understood, and this knowledge will help in prevention.
- Social scientists have provided us with information about families' knowledge of and response to their children's diar-

rhoea. Mothers search eagerly for a rapid cure, but ORT takes time and patience to give and by itself does not stop diarrhoea. It has been useful to discover that mothers worldwide are two to three times more likely to use ORT when the child has specific serious symptoms – frequent watery stools, vomiting, listlessness, and loss of appetite – than for simple diarrhoea. Children with these symptoms run a high risk of death through dehydration.

- Mass education and modern communications have proved highly successful in promoting CDD messages to families and health workers alike.

In the next 12 years, CDD has several new paths to explore. The important ones, in my opinion, are to:

- Eliminate the unnecessary and harmful use of so-called anti-diarrhoeal drugs (and over-use of antibiotics) through better and wider training of health workers; educating the community; political and administrative actions; and better understanding of the social and economic factors influencing the misuse of drugs. This requires working with private medical practitioners as well as with government personnel (see insert in this issue of *DD*).
- Continue nutritional research – into local foods such as porridge, soured milk and yoghurt, and fermented cereals; into micronutrients such as vitamin A, zinc, iron and glutamine; into the use of cereal based ORT (both home made and packaged); and the effects of all these on treatment and prevention of diarrhoea.
- Determine the causes and best treatment of persistent diarrhoea.
- Integrate CDD activities with other programmes, notably immunisation, ARI control, water and sanitation, and family spacing.

- Develop and deliver cost effective anti-diarrhoeal vaccines.
- Expand our understanding of the knowledge, attitudes and practices of mothers. It is important that we know more about the constraints they face in case management – particularly in safe preparation and use of ORT (why do some mothers know about ORT and fail to use it?) – and in prevention of diarrhoea.
- Continue to demonstrate and publicise the direct link between poverty and illness, between social injustice and malnutrition.

Some writers have recently proposed that saving lives only worsens the world's population crisis. They refuse to recognise that health programmes such as CDD strengthen children who would survive diarrhoea episodes without treatment, but would be left in a weakened state. The choice in the coming decade, therefore, is between more children who are chronically sick and listless or more children who are healthy and competent. In our goals and evaluations, we must stress child *health*, not just child mortality.

Dr Norbert Hirschhorn, c/o The Ford Foundation, PO Box 2030, Jakarta, Indonesia.

Correction – ORS tablets

Page 7 of *DD47* featured questions and answers about ORT. It mentioned the availability of ORS tablets which dissolve in water. The Program for Appropriate Technology in Health (PATH) informs us that the ORS tablet (Servidrat oral rehydration salts) is manufactured by Ciba-Geigy. For further information please contact Ciba-Geigy AG, Klybeckstrasse 141, CH-4002 Basel, Switzerland.

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