

Dialogue on Diarrhoea

Issue no. 48
March 1992



The international newsletter on the control of diarrhoeal diseases

Best of both worlds

Over 3,000 years ago, practitioners of the Ayurvedic system of traditional medicine in India were recommending that people with cholera be given quantities of a drink made by dissolving rock salt and molasses in tepid water. This sounds very like a form of ORT, developed only this century to prevent and treat dehydration due to diarrhoea. Doubtless there may be other beneficial treatments in traditional medicine.

Despite this, it is wise to be extremely cautious. Traditional remedies can be dangerous and few have been scientifically tested. Similarly, any integration of healers into health care services requires careful control and supervision. This issue of *DD* explores aspects of traditional healing, a topic that is often raised in letters from readers.

The photo shows a child with diarrhoea being cared for by a traditional healer. The healer knows that a sunken fontanelle is a sign of dangerous dehydration. She is laying her hand on the child's head as part of a traditional treatment to 'lift' the fontanelle. But she is holding in her other hand a cup which contains oral rehydration solution (ORS) mixed with a herbal tea to give to the child, who is obviously recovering well.

Ideal way forward?

Conflict and competition between modern and traditional health care systems within communities can waste valuable resources and hold back vital progress. We are increasingly realising the complex nature of health needs and the extent to which people use both modern and traditional systems (see pages 2,3 and 4). Surely the best from both systems ought to be tapped to meet these needs. The kind of happy compromise illustrated here could be the ideal way forward for the future in many societies.



ORT and traditional medicine in partnership: Dona Maria Augusta, a healer in north-eastern Brazil, performs the customary ritual to 'lift' the sunken fontanelle. She then gives the dehydrated infant 'strong tea', a safe and effective mixture of traditional herbal teas and ORS.

Cynthia Vukasovich

In this issue:

- Decisions about diarrhoea: understanding people's treatment choices
- Traditional healers – potential for collaboration?
- Update on viral diarrhoeas
- Special supplement on persistent diarrhoea

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When do people seek help ... and from whom?

Understanding the reasons why and when families seek, or do not seek, help for children with diarrhoea, can help health workers to make education messages and health services more relevant and effective.

Successful community based programmes depend on families knowing how to manage diarrhoea at home with fluids and food, and recognising when children need treatment by a health worker. Families often try different approaches – both modern and traditional – to treating childhood diarrhoea.

Choice of approach depends on the type of diarrhoea, what is seen as its cause, and the availability of health care. When and where families seek help is called 'health seeking behaviour'. The choices can include:

- home care without drugs;
- home care after asking the advice of a relative or neighbour;
- home medication with purchased drugs or home treatment using traditional remedies;
- visiting a traditional healer;
- seeking advice and/or prescribed treatment from a pharmacist;
- seeking advice and/or prescribed treatment from a health worker in government or private practice.

To improve health, programmes often try to increase access to modern medical care.

But the fact that a clinic or hospital is there does not necessarily mean that people will use it or accept it. Many will continue to use traditional healers and remedies.

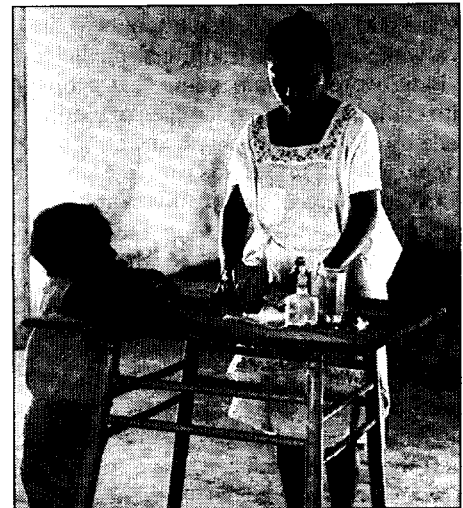
Numerous factors affect when and where families seek help, and why they may not use modern health services. These include:

- availability e.g. distance from a hospital or health centre, or times when health workers are on duty;
- affordability e.g. the cost of a consultation or medicines, or the 'cost' of time required to travel to a health centre;
- acceptability e.g. the level of confidence of a family or community in a health worker's diagnosis or advice.

Influence of beliefs

Cultural beliefs and attitudes especially affect how a family perceives a child's illness, the health care and treatment options available to them, and what they decide about where and when to seek help.

Many societies have their own classification systems for illnesses. Diarrhoea, for example, may not always be described as a single disease. Different types of diarrhoea can have local names and there may be



P. Almasy/WHO

Traditional treatment in Mexico: a woman prepares a herbal tea for her child, using a local recipe.

local beliefs about symptoms, causes and treatments of the illness. Families may seek treatment for some types of childhood diarrhoea and not for others, depending on how serious they think the illness is.

When a child becomes ill, a family may seek advice from several sources and try a variety of treatments. The first step is usually home medication, based on local beliefs about the illness and the advice of family, friends and neighbours. Only later will they visit a traditional healer, or a pharmacist or physician. People often visit a traditional healer before taking a sick child to a health centre or hospital.

Families accept the diagnosis and advice that make the most sense. If there is a big difference in cultural background and educational status between the community and the health worker, people may not understand (and therefore not follow) advice, so the treatment may not seem to 'work'. If advice does not make sense to them or the treatment does not appear to work, they will usually try another source of health care.

Dr Patricia Paredes, Instituto de Investigacion Nutricional, AP18-0191, Lima 18, Peru.

Checklist of questions for health workers

Health workers need to find out what local people believe and what action they take when a child has diarrhoea.

- 1 What are the different names for diarrhoea?
- 2 Do different names mean different types of diarrhoea?
- 3 What do people believe are the causes of these different types of diarrhoea?
- 4 What do people believe about giving food and drinks during diarrhoea? Do they think they should give:
 - extra water or other fluids
 - breastmilk
 - ordinary foods
 - special foods
- 5 Where do people go to seek help?
- 6 What treatments are sold or prescribed by local health providers?
- 7 In the treatment of diarrhoea, what do people believe about the use of:
 - local herbs and remedies
 - medicines
 - pills
 - injections
 - intravenous drips
- 8 Do people know about ORS? What do they think it is? Do they use it?

Mexico

A group of mothers in the central highland region of Mexico were asked how they decided about the severity of diarrhoea and whether their child was getting better or worse. For them the most important signs were changes in the child's behaviour which interfered with household activities, such as crying or restlessness. They also took notice of signs associated with the eyes, and changes in the frequency and appearance of the stools.

Most treated diarrhoea with a combination of home remedies and modern medicine. Only 5 per cent said they visited a traditional healer, although herbal teas (made from more than 12 different herbs), and rice water were commonly given as home remedies. Just over half of the mothers gave an over-the-counter drug, usually an antibiotic, aspirin, or a mixture of kaolin and pectin, bought from the local community store or a pharmacy. Only 10 per cent of the mothers used oral rehydration therapy.

A third of the mothers took the child to a doctor, either because of vomiting or persistent diarrhoea. Modern medicine appeals to them because it is used by 'high-status' people and has scientific authority. Doctors, however, are thought to be cold and aloof, and people do not always understand what they have to offer. All mothers who went to a physician continued to use home remedies along with the medicine prescribed.

Martinez, H, and Saucedo, G, 1991. Mothers' perceptions about childhood diarrhoea in rural Mexico. J. Diar. Dis. Res. 9 no 3:235-243.

Thailand

In central Thailand, people use both modern drugs and traditional remedies to treat childhood diarrhoea. In one study, half of those asked had taken advice from a herbalist. Modern drugs were widely and inappropriately used for the treatment of diarrhoea, whereas oral rehydration therapy was only used in about half of cases. Poorer people mostly bought medicines from local grocery stores.

Most people, when asked, did not know anything about the modern medicines they gave their children, but believed them to be good, particularly those given by injection.

Choprapawon, C, et al., 1991. Cultural study of diarrhoeal illness in central Thailand and its practical implications. J. Diar. Dis. Res. 9 no 3:204-212.



Asem Ansari/ICDDR,B

Specific symptoms such as vomiting, persistent diarrhoea or bloody stools, often prompt families to seek modern medical help, rather than visiting a traditional healer.

Peru

In a poor area of Lima, the capital city of Peru, we looked at how families chose treatment for children with diarrhoea. Families sought help outside the home when a child had signs and symptoms thought to be serious and based on folk beliefs about different types of diarrhoea. Different treatments were tried as new symptoms appeared during the course of the illness.

- More than half of the 168 children were given traditional fluids on the first day of diarrhoea. These included strong teas, herbal teas, and *panetela*, a weak gruel of toasted rice, bread and sugar. Over 80 per cent were given such fluids at some point during the illness.
- Modern drugs were the second most common treatment used. These included

anti-diarrhoeals, antibiotics, or anti-emetics – often the remainders of unused prescriptions from a previous illness in the family. A combination of chloramphenicol and tetracycline, known as *Quemiciolina*, used in a single dose, was particularly popular. A third of these children with diarrhoea were given this drug.

When is outside help sought?

Symptoms which caused the family to seek outside help, from a modern practitioner or a traditional healer (known as a *curioso*), included vomiting, listlessness or loss of appetite. But the duration of diarrhoea was the most important factor – the longer the diarrhoea continued, the more likely it was that the family took the child to a doctor or traditional healer.

The choice of modern or traditional healer depended on the way in which the family perceived and described a diarrhoeal illness. Children with blood in the stools or who passed many stools were more likely to be taken to a modern health facility. Those with fever were more likely to be taken to a traditional healer.

Cases thought to be due to some mystical cause were treated with a traditional healing method. In contrast, cases described in bio-medical terms (such as infection and diarrhoea) were more likely to be taken to a modern health facility. Families often used both systems and were willing to try any and all options to treat their child's illness.

Dr Nancy E Levine, Associate Professor of Anthropology, University of California, Los Angeles, California, USA and Dr Patricia Paredes, Medical Researcher, Instituto de Investigacion Nutricional, Lima, Peru.

Traditional medicine

Traditional medicine is a term used to describe health care that does not fall within the allopathic 'modern and scientific' health care system. Traditional health care varies greatly from one country to another and covers a wide range of practices.

It includes systems of medicine with a definite body of knowledge which is written down and taught formally, for example, traditional Chinese and Tibetan medicine, and Ayurvedic and Unani systems in India. It also includes 'folk' healers, such as herbalists and spiritualists, who learn from an older member of the family or special teacher.

There are also many traditional 'home' remedies made using recipes that have been learnt from older relatives.

“We tell mothers to use ORS and they don’t”

Carol MacCormack explains why mothers in Jamaica use traditional remedies for diarrhoea instead of ORS advised by health workers.

In Jamaica ORS has been carefully promoted through the health service. Sick children are seen by a health worker, a packet of ORS is given to the mother, its use explained, and the mother shown, in the clinic, how to give the solution with a cup and spoon. Health talks from nurses included the message never to use traditional remedies and only to use ORS packets. We talked with 263 mothers who had brought children with diarrhoea to outpatient clinics. Most mothers had heard the ORS message before – on the radio, television, or from health workers.

What mothers do

Diarrhoea symptoms that caused mothers to treat their children included frequent stools, vomiting, fever and stools which were watery or contained mucus.

Very few mothers prepared an ORS solution and gave it to their child. Mostly they

gave traditional remedies. The most common remedies used were coconut water, other fruit juice or fruit syrup and water, black mint or spearmint tea with sugar, and other sweet ‘teas’. A few gave glucose and water (without salt). When asked what fluids they gave, 3 per cent of mothers said breastmilk, and 1 per cent, bottlemilk. When asked, ‘What does your child like to drink when he or she has diarrhoea?’, most said breastmilk and none said oral rehydration solution.

A second category of traditional remedies was porridges made with wheat flour, corn meal, arrowroot or banana, flavoured with salt and sweetened with sugar. A few mothers gave other remedies and over-the-counter drugs, usually laxatives and ‘salt water’.

Familiar and less costly

Most of the traditional drinks mentioned are helpful for preventing dehydration. They were used because they were familiar, easily made or obtained and the child liked them. Traditional home remedies were also seen to be less costly. It took the best part of a day to travel to and from a clinic, wait to be seen, and rehydrate the child in the clinic with a cup and spoon. Mothers went home with only one packet of ORS. The ‘cost’ of that packet was a day’s time, travel expenses, lost wages, and food for snacks while travelling and waiting. Mothers could not buy packets of ORS from a nearby pharmacy because they are not for sale. This meant that, wrongly, some bought laxative salts, done up in little packets, as a substitute for ORS ‘salts’.

Both health workers and mothers wanted to do their best for the children. But because ORS packets were not sold commercially, and health workers warned mothers never to use traditional remedies, fearing some to be dangerous, children often did not receive either ORS or sufficient home fluids to prevent dehydration.

Carol MacCormack, Bryn Mawr College, Bryn Mawr, Pennsylvania 19010, USA.



Home remedies are often preferred to ORS because they are familiar and more easily available.

Healers and health services: working together?

DD reports on recent studies and highlights some key issues.

In many cultures, and for a variety of reasons, families often turn first to traditional healers for advice when a child has diarrhoea. It would seem sensible to try to ensure that healers give the right advice about fluids and feeding, and that harmful practices are discouraged.



R da Silva/WHO

Many healers receive training in traditional medicine, from, for example, a recognised association. However, they may need additional training in treating diarrhoea with ORT.

The potential for collaboration between the traditional and modern medical systems is being explored in some countries. Researchers have looked at how traditional healers treat diarrhoea and dehydration, and have tried to assess the extent to which it is possible to incorporate ORT into their practices.

Zambia: advantages and disadvantages

Recognising the important role of traditional healers, the Ministry of Health in Zambia created a Department of Traditional Medicine, and supported the setting up of a traditional practitioners’ association. A survey by the national CDD programme identified three groups: herbalists, spiritualists and faith healers.

Most were aware of the commonly recognised causes of diarrhoea, including

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bad food, poor hygiene and contaminated water. The usual treatment consisted of drinks of roots or herbs mixed with water; in some cases, porridge was recommended. Most healers could recognise the signs of dehydration and 79 per cent said they would be willing to advise giving oral rehydration therapy.

The majority of traditional healers were keen to learn about ORS, but an intensive training effort would be required to overcome problems such as overdosing with toxic herbal mixtures, and advising mothers to stop breastfeeding.

Dr Paul J Freund, PRITECH, PO Box 37580, Lusaka, Zambia.

Brazil: the ORT 'ritual'

In north-eastern Brazil, diarrhoea is a serious child health problem. Families consult a wide variety of traditional practitioners, as well as village health workers, nurses and physicians. The variety of healers and therapies often results in mixed messages, incomplete care and the child's eventual death. But 'modern' medicine is not always an option, due to problems in health care delivery, and people continue to turn to the traditional sector.

In one study, it was found that 83 per cent of rural mothers first seek help from traditional healers if their children have diarrhoea. Almost all urban mothers taking their children to a rehydration centre for intravenous rehydration had already consulted a healer. Diarrhoea is perceived by many parents as a variety of folk maladies – evil eye, fright disease, spirit intrusion, intestinal heat, or sunken fontanelle – and traditional healers are believed to have the spiritual power to cure a sick child.

Realising that many families seek help from traditional healers, the primary health care programme (PROAIS) at the Federal University of Ceara worked with them to deliver ORT. Together, healers and researchers developed an ORS-tea which combines traditional herbal anti-diarrhoeal teas with the correct mixture of salt and sugar, using a simple bottle-cap measure. Teaching materials on the prevention and treatment of diarrhoeal diseases were developed based on local beliefs about childhood illness, to be easily understood by non-literate mothers. Healers integrate ORT into their customary rituals for treating evil eye or a sunken fontanelle (as shown in the picture on page 1).

Intensive training of 400 traditional

healers was shown to increase the number of mothers using ORT, alter a number of dangerous health care practices, and reinforce preventive behaviours to stop diarrhoeal disease transmission. Infant mortality was significantly reduced, compared with control communities where healers were not mobilised. Introducing ORT in this way worked because it did not try to alter popular medical customs and beliefs, but built on them instead.

Dr Marilyn K Nations, Rua dos Tabajaras 575/700, Fortaleza, Ceara, Brazil.

Cameroon: interest in oral rehydration therapy

Fifty traditional healers in the Cameroon were asked how they treat diarrhoeal diseases. The healers were either herbalists, priests or diviners. Five different organisations of traditional healers were active in the four regions visited, and most were registered with the government. But not all healers belong to an association and they do not have to be registered to practise.

Those interviewed divided diarrhoeal diseases into two groups: those where a specific cause cannot be determined, and those with a specific cause. Treatments included harmful practices (65 per cent said they gave purging remedies) and beneficial ones (26 per cent began by giving something to drink).



Research is needed to find out whether traditional remedies are safe, and effective for treating diarrhoea.

Only a few had heard of or used oral rehydration therapy, and none knew how to make an oral rehydration solution correctly or gave it in large enough quantities to be effective. But, when the purpose of ORT was explained, the healers expressed great interest in using it.

Most had a favourable view of the role of modern medicine, except where the cause of illness was believed to be 'supernatural'. Patients were often treated simultaneously by traditional and modern healers, and it is not unusual for healers to send a remedy to a patient in hospital. Physicians also seemed impressed by the conviction of health workers and patients that traditional medicine is effective. Referrals took place between hospitals and healers, and between one healer and another. The main issue, which is not easy to address, is that of how to organise collaboration.

Flavien Ndonko, PRITECH/USAID, Rue Nachtigal, BP 817, Yaoundé, Cameroon.

Uganda: first source of health care

Nearly 300 traditional healers in Uganda were asked how they treated diarrhoea and what they believed to be the causes. The healers saw many cases of diarrhoea, and their beliefs about the causes mostly coincided with modern medicine – including poor sanitation, unclean water, and eating contaminated foods.

They used a great variety of herbs and plants, given with varying amounts of water, to treat diarrhoea. Twenty five per cent considered extra fluids to be necessary, and almost three quarters advised patients to take as much fluid as possible, including water, milk, fruit juices, porridge, tea, sugar and salt solutions. A few, however, advised restricted fluid and food intake. Many healers recognised their limitations and, if the diarrhoea had not subsided after 1 to 3 days, advised patients to seek treatment at a hospital.

These traditional healers provide the first source of health advice and treatment to most people in rural areas. Since they live with the people and share their customs and traditions they might have the potential to increase use of oral rehydration therapy, given careful training to improve their existing techniques.

Anokbonggo W et al., 1990. Traditional methods in management of diarrhoeal diseases in Uganda. WHO Bull. vol 68, no 3:359-363.

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Issues to consider

Some of the advantages and disadvantages of involving traditional healers in the promotion of oral rehydration therapy are:

Advantages

- Traditional healers are often the first providers of health care for many families in both rural and urban areas.
- Traditional healers are present in far greater numbers than modern medical personnel in many countries.
- Traditional healers are already treating many cases of diarrhoea.
- The cost of providing ORS and training for traditional healers might be lower than training costs for medical staff.
- Traditional healers work in the community and are familiar with what people think about illness and the attitudes of mothers. Promotion of ORT may be more readily accepted from traditional healers.

Disadvantages

- Traditional healers are not always organised and may be hard to reach with training programmes; targeting and selecting healers may be difficult and not all are motivated to collaborate.
- There is still mistrust of traditional medicine by the medical establishment and of doctors by healers.
- The problem of overdosing and use of potentially dangerous and toxic substances in young children in particular is a serious issue.
- There are harmful practices, such as purging (which need to be discouraged).
- If traditional healers do not treat diarrhoea correctly, children may develop more serious dehydration and be taken too late to clinics.
- There may be inappropriate adaptation of treatments – for example not giving enough fluid to combat dehydration.

Problems with purging practices

Use of enemas and purgatives has been recorded in many parts of the world, but the extent is not well documented. Jemima Hayfron-Benjamin writes from Ghana and warns of the dangers.

Taking an enema is common in Ghana. Elderly people, pregnant women, children and the sick are given enemas regularly, especially in rural areas where there are inadequate health services, and in urban slums. It is a traditional technique, culturally accepted and popular, and is often the first treatment at home for fever, cough, constipation, flatulence, diarrhoea and pain.

Enemas are used in medicine to clean the bowel before surgery or during labour, and to stimulate bowel motility after surgery. The practice of giving enemas and purging with strong herbs and other substances can be very harmful, especially in young children. If the active ingredients are toxic or corrosive, these can damage the intestines, leading to ulceration, perforation, peritonitis, septicaemia and even death.

I have seen many children who have collapsed after being given enemas containing a range of concoctions from cassava and ginger to remedies from traditional healers.

For example, an 8 year old girl presented with acute abdominal pain. The mother said her daughter had been feeling ill for a few weeks, with abdominal pains, loss of appetite, vomiting, severe weight loss and diarrhoea, so the mother gave her enemas from time to time. After the last enema, she noticed her daughter's condition was deteriorating and rushed her to hospital. The girl was pale looking, dehydrated and emaciated, feeling thirsty, vomiting occasionally and feverish.

We diagnosed typhoid fever with a perforated bowel following an enema, peritonitis and septicaemia. Because of the seriousness of the condition, she was rushed to theatre for an emergency laparotomy. Fortunately the child survived.

In another instance, a 9 month old baby girl was brought to us unconscious, with rolling eyeballs, signs of pulmonary oedema, early cardiac failure, severe anaemia and twitching. The child had diarrhoea two days before and was given an

'Modern' enemas: toxic chemicals

In South Africa some traditional healers were found to have caused harm to patients by 'modernising' their use of purgative enemas. Whereas enemas traditionally consisted of plant extracts, given through a truncated cow horn or hollow reeds, these have been replaced by domestic and industrial chemicals given with syringes or through rubber tubing. Some of these chemicals are toxic, and can cause severe damage to the bowel.

Dunn, J P et al., 1991. Colonic complications after toxic tribal enemas. Br. J. Surg. 78: 545-48.

enema that morning. Afterwards the child collapsed and was rushed to hospital where she died an hour later from acute cardiac failure and cerebral oedema caused by poisoning from the enema.

Unanswered questions

Giving enemas to children is widely practised, but we do not know enough about the problems this may cause. Unanswered questions include:

- When and why do families give enemas to their children?
- Are they aware that enemas may be dangerous?
- Which substances are used for purging and which of these are toxic, and in what concentrations?
- To what extent do enemas contribute to mortality in small children?
- How can this traditional practice be made safer or discouraged?

Dr Jemima Hayfron-Benjamin, Central Hospital, PO Box 174, Cape Coast, Ghana.

DD would be interested to hear from readers about this subject.

Developments in diagnosis and vaccines

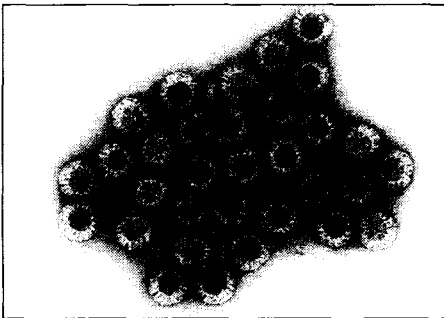
Viral infections account for over a quarter of severe childhood diarrhoeal episodes in developing countries. Ruth Bishop discusses the importance of different viruses and reports on recent progress in rotavirus vaccine development.

Viruses are an important cause of diarrhoea in young children. More than 50 per cent of diarrhoea in children admitted to hospital in industrialised countries is associated with viruses infecting the intestinal tract. Bacterial enteric infections are more common in children in developing countries, so the proportion of severe diarrhoea due to viruses is less, approximately 25 to 30 per cent, but is still important.

Rotaviruses

Rotaviruses are the single most important infectious cause of severe acute diarrhoea in young children throughout the world. The CDD programme at WHO considers development of a vaccine to prevent rotavirus infection to be a priority.

Field trials of vaccines have been held in Europe, USA, South America, Africa and Asia. The trials have used animal rotaviruses (from calves or young monkeys) that are very similar to human rotaviruses.



Rotavirus particles in diarrhoeal faeces, as seen using an electron microscope.

These animal rotaviruses are grown in cell culture and are given orally as live viruses. They seem to grow in the human intestine and produce serum antibodies without causing disease. The monkey rotaviruses have occasionally caused mild fever, but are considered safe for children.

Initially the effects of the vaccines were studied mainly in children aged 6 to 18 months. But the importance of early vaccination has now been realised, and most vaccine trials now involve infants aged 3 to 4 months. In breastfed infants there may be some interference with vaccine 'take' from high levels of maternal antibody in

breastmilk, but this might be overcome by giving more than one dose of the vaccine, perhaps at monthly intervals. In trials to date, the vaccines have performed best in children in Europe and the USA, where efficacy rates up to 70 to 80 per cent have been seen.

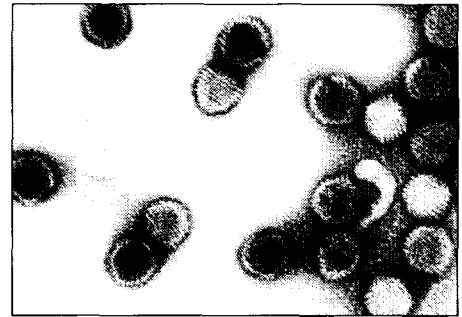
There are four main rotavirus serotypes. To be effective, a vaccine must be able to protect against disease caused by each serotype. One approach is to develop a combined vaccine that contains all four serotypes. These combined vaccines have been shown to be safe, and a major trial of the effectiveness of one mixture will start soon in Venezuela.

The rotavirus vaccines tested so far are not suitable for release by their manufacturers because of their limited efficacy. If the trial in Venezuela is successful, it is possible that this vaccine could be made available for more widespread use by 1994. It is hoped that a rotavirus vaccine could be combined with oral polio vaccine, without decreasing the 'take' of either vaccine. There is preliminary evidence that the oral rotavirus vaccines tested so far do not interfere with the effectiveness of oral polio virus vaccine when given in combination. If this proves to be correct, then it is probable that oral rotavirus vaccines could be incorporated in the EPI schedule.

Researchers are also trying other approaches to the production of rotavirus vaccine. These include attenuated human virus, and production of genetically engineered vaccines. All strategies have focused on development of oral vaccines as it is thought that parenteral vaccines are less likely to be effective.

Enteric adenoviruses

Adenoviruses of serotypes 40 and 41 have been shown to cause severe acute diarrhoea in 6 to 8 per cent of young children admitted to hospital in developed countries. The diarrhoea is generally of longer duration than that caused by rotaviruses. Enteric adenoviruses also cause severe diarrhoea in young children in developing countries, but their importance seems to vary from country to country, and further



Adenovirus particles in diarrhoeal faeces. Diagnosis by electron microscopy is no longer necessary, as special chemical tests have been developed.

studies are needed to see whether they are involved in chronic illness and development of malnutrition. Diagnosis of infection by electron microscopy is no longer necessary; sensitive and specific ELISA assays are now available.

'Small' viruses

These include astroviruses, caliciviruses, Norwalk viruses and others. It seems likely that infection due to a number of different small viruses could explain many diarrhoea episodes from which no pathogen is isolated. Several 'small' viruses have been shown to cause epidemics of food-borne or water-borne diarrhoea and may prove to be important in developing countries. Recently some laboratories have developed specific ELISA assays for these viruses, and it may soon become possible for laboratories in developing countries to find out how important these viruses are as a cause of severe disease in young children.

Professor Ruth Bishop, Department of Gastroenterology, Royal Children's Hospital, Parkville, Melbourne, Victoria 3052, Australia.

Barnes, G L, 1991. Intestinal viral infections, in: Paediatric Gastrointestinal Disease, ed Walker WA et al., B C Decker Inc, Philadelphia, pp538-546.

Cook, S M et al., 1990. Global seasonality of rotavirus infections. Bull WHO 68:171-177.

Madeley, C R, 1986. The emerging role of adenoviruses as inducers of gastroenteritis. Paed. Infect. Dis. 5:563-574.

Deworming for older children?

Following William Cutting's comment in *DD47*, Andrew Tomkins discusses some benefits of deworming programmes.

Dr Cutting raises important issues about appropriate strategies against helminths. While it is true that pre-school children suffer a considerable burden of ill health, I am concerned that the current emphasis on child survival programmes has led to the neglect of the health of school-age children. The impact of helminths on growth and development of school-age children needs to be seriously considered.

While it is important to emphasise the need to improve water supplies and sanitation, after a decade of highlighting these issues many children still live in disadvantaged environments. Is it, therefore, reasonable to rely on environmental control and improved personal hygiene alone to reduce the prevalence of gut parasites? Many parents would argue that it is not, and in many countries purchase of anti-helminthic drugs, even by poorer families, is seen as a high priority.

Drug costs have fallen quite markedly over the last few years. In a programme in Indonesia, over 80 per cent of parents with children attending schools pay US\$0.50 per year for a service which, among other aspects of health care, involves distribution of anti-helminthic drugs. In Zanzibar, the Department of Education has decided to distribute them through schools.

Environmental improvements and oral rehydration are crucial, and should be emphasised at all times. They are not sufficient, however. Programmes which emphasise the importance of personal hygiene, sanitation and safe water supply can act in tandem with deworming.

These approaches are not just part of another vertical programme to be imposed on a community. Parents are looking to

schools as an investment in the future of their children. They may well regard initiatives in parasite control as something to be welcomed.

Professor Andrew Tomkins, Institute of Child Health, 30 Guilford Street, London WC1N 1EH, UK.

Traditional handwashing

The Shona community in Zimbabwe customarily teaches children to wash their hands before meals. People used to pour water over their hands from a locally made earthenware vessel with a long, narrow spout. Families now tend to wash their hands communally, using a wide, flat dish, with the youngest children washing their hands last.

I wanted to find out if this way of handwashing involves a greater risk of infection than the traditional method, and if teaching people to wash their hands under running water would affect the incidence of diarrhoea. I selected the mothers of 70 children who came to the local hospital with severe diarrhoea. Half were taught about washing hands under a running tap or in water poured over them from a vessel. The other half were not taught this method.

After nine months, fewer than half the children of mothers in the first group had come to the hospital again with diarrhoea infections, whilst nearly three quarters of the children in the 'control' group had been brought to the hospital. Although very small, the study encouraged us about the health benefits of educating people about washing their hands under running water.

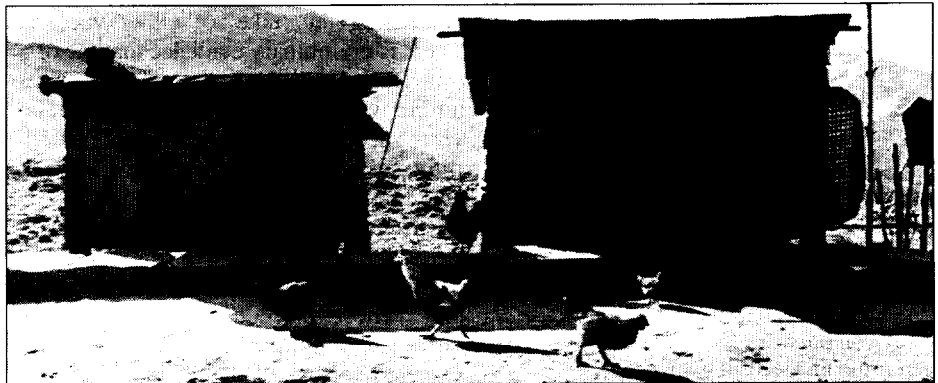
Dr Vitalis Chipfakacha, Senior Regional Medical Officer, PO Box 5, Tsabong, Botswana.

Note: In this community there was no shortage of running water.

'Keep animals out of your house!'

The health team of WaterAid is trying to help people in rural and semi-urban communities of Nepal to build and use hygienic toilets. After reading *DD45* we will also try to prevent the spread of disease by animals, especially chickens. Chickens are kept for economic and religious reasons. In poorer communities, people keep them inside their houses. We now intend to try to encourage people to build chicken coops and to keep chickens out of the house.

G K Chhetry, Health Co-ordinator, WaterAid, Nepal.



Realising that keeping animals indoors can spread infection, a family in rural Nepal built these secure outdoor coops for their chickens.

G K Chhetry

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With support from **AID (USA), ODA (UK), UNICEF, WHO**

DD is produced in eight language editions. **Publishing partners:** BRAC (Bangladesh), CMAI (India), CMN (China), Grupo CID (USA), HLMP (Nepal), Imajics (Pakistan), ORANA (Senegal), RUHSA (India), Univ E Mondlane (Mozambique)

Dialogue on Diarrhoea



Dialogue on Diarrhoea is published by AHRTAG, 1 London Bridge St, London SE1 9SG, UK. Tel: 44-71-378 1403 Fax: 44-71-403 6003 E-mail: GEO2 AHRTAG Reg. charity no. 274260

DD is free to readers in developing countries. There is an annual subscription for readers elsewhere of UK£10.00/US\$20.00 (excluding students from developing countries who are eligible for free copies). Reductions are available for bulk orders.