

## DIARRHOEA AND DRUGS

Despite widespread knowledge for the last 20 years that a simple oral rehydration solution can prevent most deaths from acute watery diarrhoea, many doctors and pharmacists continue to prescribe ineffective and expensive drugs. This *DD* insert reviews research into prescribing practice and what can be done to change it.

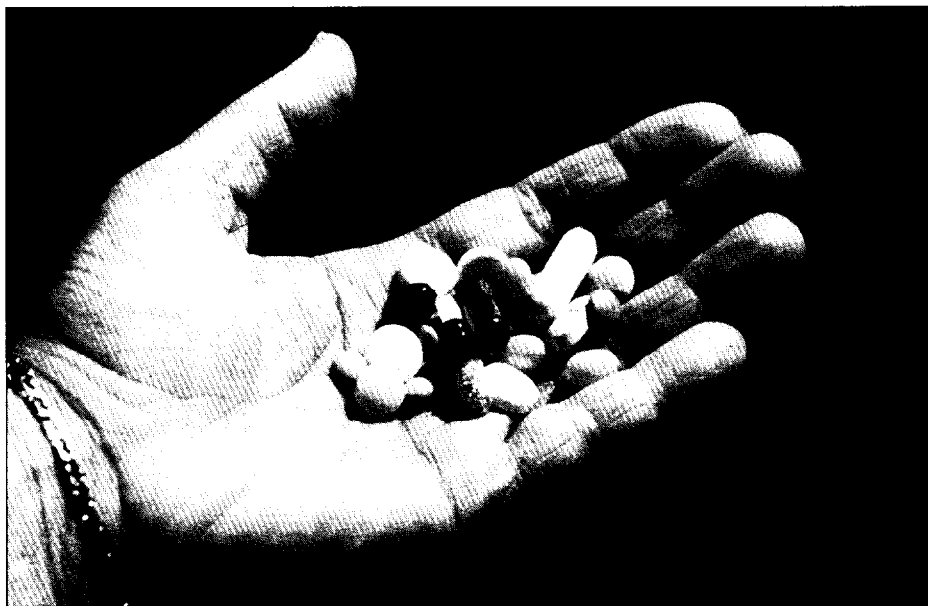
Over-use of drugs for childhood diarrhoea is an important problem, detracting from use of oral rehydration therapy (ORT) and costing money that could be better spent on other things. In Lima, Peru, for example, medications and visits to the doctor because of childhood diarrhoea cost on average a tenth of the monthly wage of poor families. If private doctors are used, the cost rises to more than one third of the monthly wage<sup>1</sup>.

The vast majority of medications given for childhood diarrhoea are not only ineffective, they can also be dangerous<sup>2</sup> (see guidelines below). Despite this, a variety of antibiotics and 'anti-diarrhoeal' preparations are prescribed by pharmacists and doctors, usually instead of ORT<sup>3</sup>.

### Reasons for drug use

To try to understand why drugs are over-used and to change these ineffective treatment practices, the Applied Diarrheal Disease Research (ADDR) project has funded 17 research studies.

These studies reviewed the practices of doctors, pharmacists, drug sellers and carers of children. Seven are complete, two are in the final stages of analysis, and eight



WHO

**Doctors and pharmacists continue to offer parents a wide range of useless and sometimes dangerous drugs to treat diarrhoea.**

are still collecting data.

Study results have shown that there are important reasons for the apparently 'irrational' use of drugs. For example, childhood diarrhoea causes mothers additional work and worry. They want it to stop

quickly. They believe that pills and injections will give speedy results. Such medicines are easily available and are thought to be the modern way to cure illness.

Health professionals are taught during training that diarrhoea often has a bacterial cause, and that it is better to treat possible causes than to worry about antibiotic resistance. Pharmaceutical company representatives often make regular visits to inform doctors about new products and to encourage them to prescribe more medications. Mothers ask for medicines for their children, and doctors report that if they do not give a prescription they risk losing their patient.

Finally, in many countries, sales of ORS (oral rehydration salts) packets give lower profits than sales of antibiotics and anti-diarrhoeal drugs. In some countries, ORS packets are distributed free of charge and pharmacists have no incentive to sell them.

All these factors must be taken into consideration when designing interventions that aim to change prescribing and treatment practices.

### Guidelines for correct use of drugs

- Antimicrobial drugs should be given only for dysentery (bloody diarrhoea) and suspected cholera with severe dehydration. Inappropriate use of antimicrobials can kill off useful gut bacteria and may lead to the development of resistant strains of bacteria. They can also have toxic effects and cause allergic reactions.
- Anti-parasitic drugs should be used only for proven and symptomatic amoebiasis and giardiasis.
- Anti-diarrhoeal drugs such as loperamide and diphenoxylate have no proven practical value in reducing diar-

rhoeal fluid losses in children. They can have dangerous side effects, for example depressing breathing and contributing to severe abdominal distension.

- Antispasmodics are only partly effective in inhibiting bowel contractions and should not be used.
- Although adsorbents such as kaolin and pectin, charcoal and attapulgite can change stool consistency, they do not decrease fluid losses and can reduce the effectiveness of other drugs.

*See DD42, 43, 44 and 45 for more information on the use of drugs in treating diarrhoea.*

# DIARRHOEA AND DRUGS

## What happens in practice?

Six studies have shown that drugs are the most common treatment for diarrhoea. Many families buy antibiotics without seeking medical advice. Even when doctors or pharmacists are consulted, they also recommend drugs more often than ORT – despite knowing better.

Families often combine modern medical treatment – ORT and drugs – and traditional practices – changes in feeding, use of teas and herbal remedies – to manage childhood diarrhoea. For example, buying a few capsules of tetracycline from a shop or a stall is becoming as common a response to illness as giving herbal teas.

Three studies in Nigeria, Thailand and Indonesia show that medications are frequently used by families to treat childhood diarrhoea.

### Family response

In **Nigeria**, a one year community based surveillance of 351 poor urban households, measured diarrhoea episodes and reported treatment<sup>4</sup>. It found that ORT was used during only 15 per cent of the days that children had diarrhoea. Antibiotics, however, were used on over half the days when children had diarrhoea. Among the households using antibiotics, over half bought them without seeking medical advice.

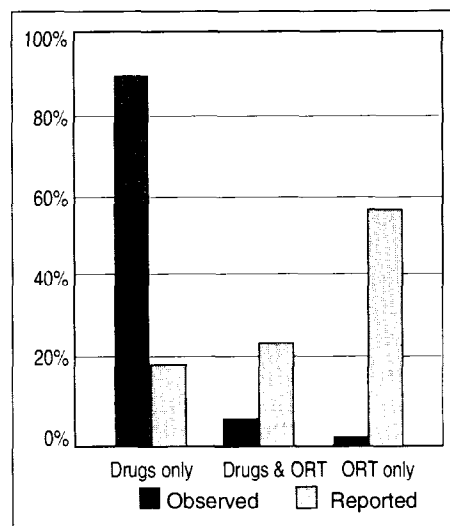
In **Thailand**, a six month diarrhoea surveillance study of 254 children under five<sup>5</sup> identified 80 diarrhoea episodes. Pills or liquid medicines were given in 91 per cent of episodes, but ORT was given in only 51 per cent. Other treatments given included injections (28 per cent) and herbal medicines (20 per cent). This study also asked parents how satisfied they were with these various forms of care. Very few (4 per cent) considered ORT the most important treatment for diarrhoea, while 60 per cent considered pills or liquid medicines as most useful and 10 per cent believed injections were best.

Interviews in **Indonesia** with mothers of children under two admitted to hospitals or health centres with diarrhoea, showed that half of the mothers had been given drugs to treat their children. Although 68 per cent of mothers reported giving ORT to their children, this was mostly home made sugar salt solution (SSS), which only 12 per cent of mothers were able to make properly<sup>6</sup>.

### Health workers' advice

The problem of inappropriate drug use in the community is paralleled by the inappropriate prescription and sale of medications by doctors, pharmacists, and drug sellers.

Studies in Peru, Indonesia, and Nigeria show that drugs are prescribed more often



A Nigerian study<sup>9</sup> showed a vast difference between what pharmacists and drug sellers said and their actual practice.

than ORT, and that practice can be quite different from what health workers say they do.

In **Peru**, doctors prescribed drugs more often and ORT less often than they said they did. A researcher interviewed 148 doctors about their practices, and observed 620 children being treated by them. Fifty-nine per cent of the children were prescribed antibiotics, while only 26 per cent of the physicians reported that they prescribed medications of any type. ORT was recommended in 54 per cent of cases, while 74 per cent of doctors reported recommending some type of ORT. Instructions for how to use ORT accompanied recommendations in only one in four cases<sup>7</sup>.

Similarly, in **Indonesia**, more doctors actually prescribed antibiotics and anti-

spasmodics than reported doing so, and slightly fewer prescribed ORT or adsorbents than reported doing so<sup>8</sup>. Doctors treating patients in government hospitals prescribed more ORT (59 per cent of cases) than doctors treating patients privately (38 per cent of cases). Even when ORT was prescribed, it was usually used after intravenous rehydration or in conjunction with antibiotics. Doctors were most concerned about the possibility of bacterial or viral infection causing the diarrhoea, and less concerned about dehydration. Almost half the doctors in the study believed that ORS was unacceptable to their patients because of its taste or colour.

In north-east **Nigeria**<sup>9</sup> there were dramatic differences between what pharmacists and drug sellers said and what they did. Research assistants, posing as parents of children with diarrhoea, described standardised diarrhoea cases to pharmacists or drug sellers and purchased the recommended remedies. The results were compared with what the pharmacist or drug seller said they did. Almost all the respondents were observed to prescribe drugs only, although fewer than 20 per cent reported doing so. Almost 60 per cent reported prescribing ORT only, while only 2 per cent were observed to do so.

### Knowledge not the key

The behaviour in these studies was not a result of lack of knowledge. Many health professionals appeared to know that they should be prescribing more ORT and fewer medications for childhood diarrhoea. At least they knew that was the 'correct' answer to give to an interviewer. Providing them with more information may not be enough to change their behaviour.

There is also an important lesson in research methods here. Actual drug prescribing behaviour in these studies is quite different from what is reported. Interviewing is, therefore, not a reliable way to measure professional prescribing practices or to evaluate the effects of interventions to change prescribing behaviour. Observation of actual practice, or review of prescribing records, is essential.

Doctors often say that they prescribe drugs because patients ask for them. This explanation was tested by a study in Peru<sup>1</sup> in which doctors were visited by mothers who had been trained either to demand medicine or not to ask for it. The doctors did not prescribe differently for the two groups of mothers. Patient demand for drugs was not an important factor.

# DIARRHOEA AND DRUGS

## How can we change behaviour?

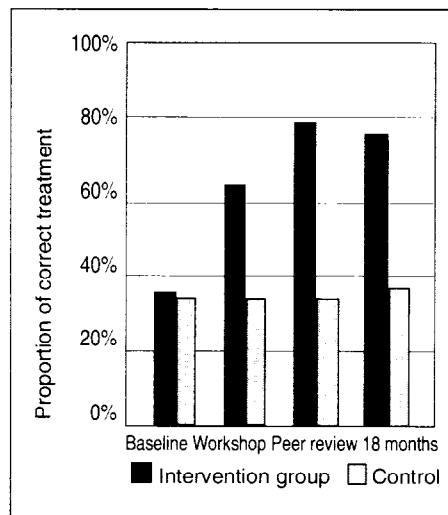
The widespread use of drugs for treating diarrhoea is clearly a major problem. How can prescribing practices be changed, so that doctors, pharmacists and drug sellers emphasise the use of ORT to prevent dehydration and reduce the use of inappropriate antibiotics and other drugs?

Methods of changing behaviour can be grouped into four categories: educational, regulatory, managerial and financial (see DD45 page 6). Three recently completed studies, two in Mexico and one in Thailand, looked at using educational and managerial techniques to change prescribing behaviour. Three other ADDR supported studies of behaviour change are underway.

### Doctors' review group

Two techniques were used very successfully in Mexico. A workshop was held for a group of doctors to review guidelines for treating cases of acute diarrhoea in children. The doctors were later brought together for a weekly review of the cases they had treated<sup>10</sup>.

Before the intervention, only a third of the doctors treated diarrhoea patients appropriately: recommending ORT; advising mothers to continue feeding children; and prescribing drugs only for Shigella and amoebic dysentery. Eighteen months later, 74 per cent of doctors participating in the



The introduction of regular review groups for doctors in Mexico<sup>11</sup> caused a dramatic increase in correct treatment of diarrhoea.

weekly review were treating cases appropriately<sup>11</sup>.

In a control group of doctors from a similar background to those taking part in

the review there was very little change in treatment practice over the same period, with only about a third of them (35 per cent) treating cases appropriately.

The study was then expanded to include 18 clinics in a district of Mexico City. Early results were similar to the first study. The proportion of patients treated appropriately increased from 12 per cent to 45 per cent in Social Security System (IMSS) clinics, and from 13 per cent to 43 per cent in Ministry of Health clinics. IMSS control clinics which did not receive the intervention showed no significant changes in practice over time, while at Ministry of Health control clinics, the proportion of patients treated appropriately decreased from 16 per cent to 11 per cent<sup>12</sup>.

Overall, the results were so positive that the IMSS has decided to adopt the intervention in the state of Tlaxcala. If this is successful, IMSS, which provides health care to more than 60 per cent of Mexicans, will adopt the same approach throughout the country.

### Educational messages

In Thailand an intervention aimed at pharmacists and drug sellers was not so successful<sup>13</sup>.

One group of participants was educated in large groups about ways to improve prescribing practice. Another group was given educational messages by telephone. Each group received the same printed materials. Before the intervention about a third of pharmacies prescribed ORT; 82 per cent prescribed antibiotics; and 76 per cent prescribed anti-diarrhoeals. After the intervention the same proportion still prescribed ORT. Eighty per cent of the pharmacies continued to prescribe antibiotics, while 77 per cent still prescribed anti-diarrhoeals. Prescribing levels at control pharmacies were not significantly different.

The results suggest that the educational intervention was not successful in bringing about behaviour change. However, because the campaign was directed at head pharmacists and main drug sellers in the shops studied, it may not have reached all the people who sell drugs in those outlets.

Further studies are underway in Indonesia to compare face-to-face teaching methods with teaching in large groups. These studies will also look at different ways of educating urban doctors and owners of small shops. It is hoped that the studies will help policy makers to decide which groups of health workers are easiest to influence and which methods are most effective.



Pharmacists need to be convinced that their job is to advise appropriate treatment for diarrhoea – ORT to prevent dehydration – rather than to recommend expensive drugs.

# DIARRHOEA AND DRUGS

## What is the way forward?

More information is needed about the motivation of doctors and pharmacists, and how community expectations of health professionals can be changed.

Changing inappropriate drug use is a complex issue. It is important that we understand the habits and motivations of all the people involved in treating diarrhoea (doctors, pharmacists, drug sellers and family members who buy drugs without seeking medical advice).

Studies supported by ADDR are currently looking at:

- pharmacists' prescribing practices and community drug use in Lima, Peru
- the factors influencing doctors' prescribing practices in Lima
- doctors' prescribing habits in Pakistan
- community drug use in Lahore, Pakistan.

Future ADDR studies may look at questions such as:

- What role does patient demand play in influencing a doctor's or pharmacist's prescribing practices?
- What part do economic incentives play?
- How great is the public health risk of over-use of antibiotics as compared with anti-diarrhoeals?

Enough is known already to predict some interventions which are most likely to be effective in changing prescribing practice. Important factors include:

- involvement of the prescribers themselves in formulating policy for change
- use of different materials and messages

for different audiences

- educational materials designed with the motivation of the target audience in mind.

### Understanding motivation

Researchers need to develop more creative strategies to understand behaviour. Health workers need to pay more attention to the public health impact of their actions. They have to make sure their patients understand that a 'good doctor' is not defined simply by how many drugs he or she prescribes.

Parents of children with diarrhoea need to have a new image of what good doctors or pharmacists prescribe. Strategies for changing their views need to be developed.

### Looking beyond diarrhoea

These studies emphasise that drug use is a barrier to proper management of most kinds of diarrhoea. Many illnesses apart from diarrhoea, such as malaria and acute respiratory infections, are also common in developing countries. People use drugs for these illnesses too. If people reduce the use of drugs for diarrhoea, will they increase their use of drugs for other illnesses? Would community campaigns to change drug use just for diarrhoea have less impact than campaigns to change drug use for other diseases as well? We do not yet know the answers to these important questions.

These studies should also raise concerns about what people want from their doctors and pharmacists. Are patients most interested in receiving a diagnosis, advice, or a prescription? People often think they will get well more quickly if they receive a pill or an injection. Professionals know this, and they know they can see more patients if they spend more time prescribing drugs and less time diagnosing and educating. How then can doctors and pharmacists help education and ORT to become acceptable substitutes for drugs?

### Established practice

These questions are relevant not only to the treatment of diarrhoea. They involve fundamental issues about how professionals should practise medicine, and what happens when 'proper case management' seems to interfere with established routines, take more time, and bring in less money.

Finally, these studies also remind us that we know little about how professionals establish their own treatment habits and later maintain them. How important are training, peer pressure, pharmaceutical representatives, continuing education and patient pressure at different times during a professional's career? Will a newly qualified doctor respond to the same message as one who has been practising for 30 years?

Answers to these questions will allow more effective interventions to be designed to improve treatment of diarrhoea as well as other diseases.

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