

# Glimpse

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 NEWSLETTER

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A practical session of the Inter - Regional Training course on Diarrhoeal Diseases—Laboratory Aspects in progress at the microbiological laboratory of the ICDDR,B.

## TRAINING COURSE ON LABORATORY ASPECTS HELD

A two-week Inter Regional Training Course on Diarrhoeal Diseases—Laboratory Aspects was held at the ICDDR,B from March 23–April 3, 1981. This was the first session of a course which will be offered by ICDDR,B every year and was jointly sponsored with WHO. Twelve participants from Bangladesh, Burma, China, Fiji Islands, Indonesia, Papua New Guinea, Philippines, Sri Lanka, Sudan, Thailand and Vietnam attended the Course, which included lectures, practical demonstrations and intensive practical work by the participants in the laboratories of ICDDR,B.

All the participants in the begin-

ning of the Course reported on the diagnostic, training and research facilities available in their own countries.

The Course was designed to provide the participants with the latest laboratory procedures for the identification of bacteria and viruses responsible for causing diarrhoea as well as to acquaint them with the concept and methods of quality control in microbiological laboratories, and with the latest microbiological techniques. Hopefully this course will not only promote self reliance by using the methods demonstrated here for the preparation of culture media and simple identifi-

cation techniques used in the laboratory, but will also develop technical cooperation among the scientists in the region.

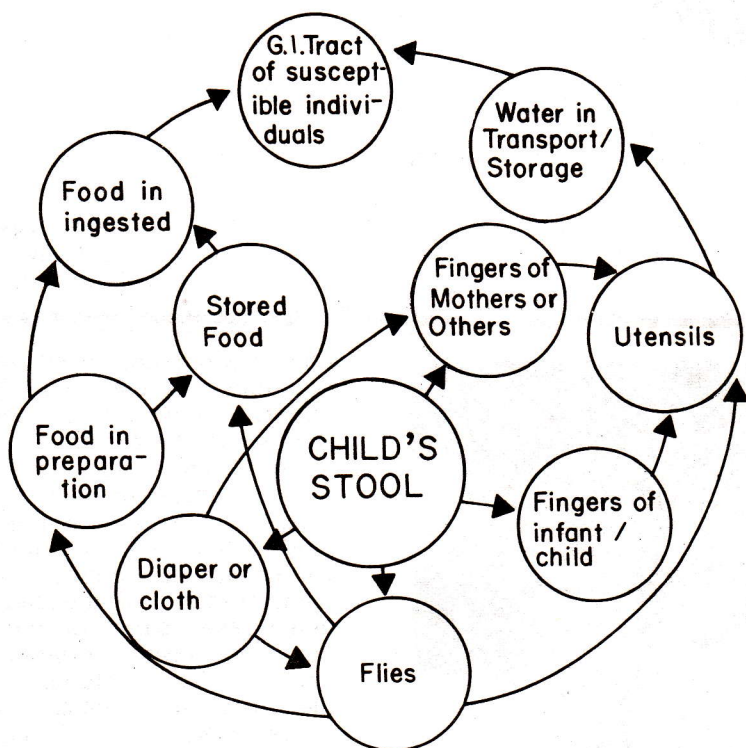
The Course participants were given a general overview of the diseases caused by enteropathogenic organisms. The methodology of the isolation, identification and characterisation of the causative agents responsible for bacterial, viral and parasitic diseases were explained. Agents studied in detail were *Vibrio cholerae*, *Vibrio parahaemolyticus*, Salmonella, Shigella, *E. coli* (Enteropathogenic and Enterotoxigenic) Campylobacter and Rotavirus. The different methods of assay of toxins, both labile and stable toxins were demonstrated. Special emphasis was laid on the simple bacteriological methods suitable for use in the field level laboratories of the primary health care programmes, and on testing the microbial susceptibility of different organisms and their resistant pattern to different anti-microbial drugs. Methods of determination of the microbiological quality of food, water and other environmental samples were also briefly demonstrated.

The participants also visited the Matlab field-station and observed the surveillance system and the treatment and diagnosis of diarrhoeal diseases under field situations.

The faculty members were Dr. D Barua from WHO, Geneva; Dr. George K Morris from CDC, Atlanta, USA; Dr. V T Rosdahl from University of Copenhagen; Dr. David A. Sack from Baltimore City Hospital, USA; and Drs. K M S Aziz, M I Huq, M U Khan, K A Mahmood from the ICDDR,B.

Targeting Sanitation Programmes where it counts:

# Mothers and Small Children



## CYCLE OF CONTAMINATION OF THE ENVIRONMENT THROUGH THE STOOLS OF INFANTS AND SMALL CHILDREN

Sanitation programmes in rural areas of developing countries frequently overlook infants, small children and their mothers to whom sanitation programmes should most be addressed.

### Rationale for targeting sanitation programs to mothers of small children.

Although usually considered to be innocent, the stools of infants and small children have in fact greater numbers of micro-organisms per unit of weight than do those of older children and adults (Feachem R. et al, 1981). For this reason alone small children deserve special consideration in the planning and execution of sanitation programmes. Environment must be protected against this highly infectious source of contamination.

Stools of infants and small children contaminate the environment through fingers of the child or his mother. Micro-organisms are

transmitted (Academy for Educational Development, 1980):

- to household objects: especially cups, spoons, and other utensils associated with food and drink;
- to food itself;
- to water transported or stored;
- ultimately to the mouths of other susceptible individuals.

### Methods for bringing sanitation programs to bear on the mothers of infants and small children.

#### Child-sized latrines.

The first requirement of an effective sanitation programme aimed at infants and small children is a child-sized latrine, conveniently located. Features of importance include: the proportions of the plate, the size of the hole, the proximity to the house, and the availability of soap and water.

Typical adult-sized latrines (simple pit latrines or improved latrines and aquaprives) present to the

small child a fearsome combination of a dark interior, a large, dark, deep hole, a plate too large to accommodate the feet, and a long walk back to the house...scarcely an encouragement to their use. In Sri Lanka, reportedly, (Elmendorf, 1980) a child's latrine has been developed which is located conveniently just behind the house. The design is such that even a toddler can confidently go out through the back door, squat on the child-sized plate, with no fear of falling into the small hole. A table with a basin of water and soap permits the mother or older child to clean the child after defecation. The small size of the structure and the hole, and the relatively small volume of fecal matter should make it possible to maintain this latrine without risk to the environment for 1-1½ years before digging a new pit.

### Health education of mothers and older siblings.

The objectives of health education in this case are behavioral and attitudinal. Methods used should aim at mobilizing mothers and others who care for children: (1) to insist on the design and installation of child-sized latrines or child-sized adaptations of adult latrines, (2) to provide soap and water for cleaning the child afterward, (3) to use diapers or an adequate wrap of another type on infants and young toddlers, and (4) to work with the child over 18-24 months in developing continuous latrine-use habits. Closely associated with the latter is the role model for the small child to follow.

The message central to the health education component is that the stools of infants and children are dangerous and therefore to be avoided by every means possible so as to prevent diarrhoea. The purpose is to create in mothers and others who care for children an attitude to support those actions to be undertaken. The message can be transmitted by whatever means available: radio, posters, talks at the health center, in the schools, in political meetings, at meetings of the village health committee, the credit cooperative, the women's association, and in the market place, i.e., wherever groups of mothers and young girls can be found.

Primary attention should be given to the methods used for mobilizing the target group. Ogiwonwo (1972) has shown that

behavioral attitudes are more likely to change in the context of a community support structure than when an individualistic approach is used. Others (Isely and Martin, 1977; Isely, 1978, Fountain, 1973) have demonstrated the advantages of concerted effort for achieving concrete results in water and sanitation. A first requisite of health education methods applied to those who care for young children then, is to obtain the support of community leaders, opinion-shapers, and persons of status. In this way a positively reinforcing context for expected changes in behavior can be created.

Key members of the leadership group are leading women of various families, particularly if these women are respected for their skills in midwifery, healing, or herbalism. Satgé and co-workers (1964) have emphasized the importance of village midwives in influencing the weaning behavior of younger women in Senegalese (Wolof) villages.

Within the context of the community support structure one should address the problems to smaller mutually-supportive groups of women. Women leaders identified earlier might be the primary catalyzers of these meetings. The accent should be on group identity of solutions to problems:

- o Technical problems of constructing and locating child-sized latrines.
- o Personal problems of training toddlers to use them.
- o Practical problems of keeping track of toddlers too young to use the latrine and keeping them clothed.
- o Economic problems of having soap and water in constant supply.
- o Other problems related to disposal of pieces of cloth soiled by infants' stools, care of the child's stools when traveling, when at the market, or when the child is in care of a grandmother who "thinks differently".

#### **Expected results of targeting sanitation programmes to mothers of small children.**

If some or all of the changes mentioned earlier can be achieved, then certain beneficial results can be expected.

- o After 2-3 years of consistent training, children at age five should be habituated to latrine use, and thus hopefully able to continue the practice into

older childhood and adulthood.

- o As young mothers and other young persons engage in changing the defecation patterns of infants and small children, they themselves develop new habits of child care which they can pass on. Children who learn to use a latrine when they are very young, may train their own children.
- o Child-size latrines, use of diapers or other coverings for young toddlers and infants, and proper use of soap and water for anal cleansing and hand washing should lead to diminished contamination of the environment by fecal pathogens.

#### **Conclusions**

Infants and small children, whose stools have the greatest potential for contaminating the environment deserve special targeting in sanitation programmes. Despite the relative ease of introducing behavioral change in these small children, however, such change is necessarily dependent upon the availability of a child-sized latrine, and on the cooperation of mothers and others who care for them. The latter can be achieved only through a participatory approach to health education. If these approaches are effective, beneficial results can be expected: children who know how to use a latrine, young mothers ready to teach latrine use to subsequent children and subsequent generations, and fewer intestinal pathogens in the environment.

#### **CHINA**

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biotics and Chinese traditional medicine did not yield positive results. An 'antivirus' drug has been used experimentally, results are yet to be published.

In October 1979, there were 9652 cases of infantile diarrhoea. Of these 1943 with dehydration received intravenous fluid, rest were treated with oral rehydration. For home treatment ORS tablets (constitution:  $\text{NaHCO}_3$ -250 mg,  $\text{KCl}$ -150 mg, Glucose-2 gm to be dissolved in 100 ml of water were given.

It is felt that a suitable drug for the treatment of viral diarrhoea is necessary. The mode of transmission of diarrhoea is not yet clear. More research is needed on the epidemiology and prevention of diarrhoea.

## **PUBLICATION**

1. Are there Barefoot Doctors in Bangladesh: A survey of Non-Government Rural Health Practitioners/A.M. Sarder, Lincoln C. Chen. March 1981. (Scientific Report No. 42)

The aim of the survey was to elucidate the type, pattern, distribution, characteristics of non-government practitioners in a rural area.

In the area 1,292 non-government practitioners were identified, practitioner density was 4.7 per 1,000 population. Allopathic and homeopathic practitioners constituted 14.9 and 3.3 percent, respectively, of the total. Very few of these two categories were officially registered (1.8 percent of total). *Kobiraj, totka* (an indigenous healer), and other categories comprised 15.3, 60.5, and 6.0 percent, respectively. Allopaths and homeopaths were younger, better educated and mostly male in comparison to *kobiraj, totka*, and other practitioners, who tended to be older, less educated, and more often women most of whom learned their skills by apprenticeship.

The paper draws the conclusion that, despite high costs, the non-government system is utilized extensively because of availability, social access, and social perceptions of illness causation. Although information was not obtained on the biomedical effectiveness of native pharmacopoeias, perceived effectiveness was sufficiently high to attract patients in spite of high costs. Finally, the prospect of integrating non-governmental traditional medical systems into state-sanctioned medical bureaucracy is discussed with a view toward rationalizing health services in Bangladesh.

(See GLIMPSE Vol:2 No:9)

GLIMPSE or any of these publications can be received free. Complete list of publications are available. Write to the Publication Unit ICDDR,B PO Box no 128. Dacca-2 Bangladesh

## INDONESIA

As in other developing countries, diarrhoea is still a major problem in Indonesia and ranks second among the five most important childhood diseases.

Socio-economic problems such as large families, low purchasing power, poor housing condition, bad sanitation, lack of latrines, unprotected water supply, wrong attitude or habits of the people, all contribute to high incidences of diarrhoea.

Five percent of the children with diarrhoea need treatment for dehydration. Before 1974, twenty to forty percent of the total admissions in hospitals were due to gastroenteritis and the mortality in hospitals were more than 12%. These figures would be higher in the rural areas.

Gastroenteritis case fatality rate was 20.2% in 1961; 18.5% in 1970; 17.1% in 1972; 12.5% in 1974. (After a seminar on rehydration was held in 1974 it came down) 9.1% in 1975. The new method of rehydration i.e. the 'ROSE' system, in 1976 brought down the case fatality rate of cholera to 0 (none out of the 165 hospitalized cholera cases died) and of non-cholera gastroenteritis to 6%.

Recommendations of the 1974 Seminar on Rehydration held in the Medical School University of Indonesia has been accepted by the Government. A nation wide programme of rehydration and diarrhoea prevention has been launched. Breast feeding is also promoted. After two years a decrease in morbidity and mortality has been noted throughout the country.

**Causative agents:** In the general hospital in Jakarta (population more than 5 million), the main cause of diarrhoea is enteropathogenic *E. coli* 35.0%, (*Shigella* 5.0%; *V. cholerae* 3.5%; *Salmonella* 2.0%). A recent study

\* 'ROSE' (Suharjono *et al.*, 1976) is an acronym of the principles in the treatment of diarrhoea with severe dehydration: R for Rehydration with Ringer's lactate; O for Oral electrolyte glucose solution or Oralyte; SE for Simultaneous Education.

*The Inter-Regional Training Course on Diarrhoeal Diseases-Clinical Aspects were held in Dacca from 16-20th February, 1981. Country reports presented by the participants are edited for our readers, Dr. Arini Sutomo, of the Infectious Diseases Hospital and Dr. Adnan S Wiharta, from the University of Indonesia attended from Indonesia, Dr. Ye Sliao Lee from the Fukien Provincial Hospital and Dr. Sun Yanhua of the Beijing Children's Hospital attended from China.*

## COUNTRY REPORT

shows the main cause of diarrhoea in children is rotavirus (47.7%) (Gracey *et al.*, 1976).

A study in the field in South Celebes gave a different picture; here diarrhoea was caused by *E. coli* only in 6.9% cases and *V. cholerae* in 10%, and *V. parahaemolyticus* 28.2%.

The cases of diarrhoea with protein-calorie malnutrition (PCM) are more complicated. Generally PCM is associated with deficiency function of organs such as pancreas, liver and gut, causing fat malabsorption, steatorrhoea and/or lactose intolerance, resulting in diarrhoea. A correlation between diarrhoea and malnutrition has been noticed.

Children with chronic diarrhoea	856	52.8%
Children with protein calorie malnutrition	22	86.4%
Children with no ailment ("healthy")	50	72.0%
After bowel surgery (neonates)	32	21.9%
Children with malnutrition and diarrhoea	35	74.3%
Children with low birth weight	76	89.5%
Fullterm neonates	121	60.9%
Infants over 1 month	331	57.9%

TOTAL 1523

## CHINA

Generally diarrhoeal diseases in Beijing peak in summer (June, July and August) and in autumn (September, October and November).

Diarrhoea during summer is generally caused by bacteria, like *B. coli* and respond favourably to antibiotic treatment. Infantile diarrhoea during this period has been decreasing.

During winter, the clinical picture is different and viruses are suspected to be the cause. Infantile diarrhoea during winter is on the increase since 1978. Rotavirus has been identified in some cases. In 1979 rotavirus was identified in 84% cases.

In Beijing Children's Hospital infantile diarrhoea was successfully treated with rehydration, but anti-  
(Contd. on page 3)

During 1971-75, lactose intolerance and fat malabsorption were investigated in 1523 children of the different categories, following are the results:

- correcting fluid and electrolyte imbalance
- treating the ailment
- giving a diet with low or without lactose.

In Indonesia, like in many developing countries there are not enough trained paramedical personnel. To prevent severe dehydration in diarrhoea it is essential to train either the parents of patients or the attendants on the principles of oral rehydration therapy and measures for the prevention of diarrhoea.

No. of children	Lactose in intolerance
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856	52.8%
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22	86.4%
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50	72.0%
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32	21.9%
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Fat malabsorption	
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35	74.3%
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76	89.5%
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121	60.9%
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331	57.9%
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