



Glimpse

International centre for diarrhoeal disease research, Bangladesh
NEWSLETTER

ISSN 0253-7508

Volume 10 Number 1

January - February 1988

Zinc as a Determinant of Diarrhoea-malnutrition Cycle

It was first reported in 1869 that zinc deficiency in diet is one of the causes of growth retardation. Zinc is necessary for normal growth of lower plants, animals, and human. Nutritional impact of zinc on human has been widely recognized after the rejection of Iranian army recruits in 1961 due to dwarfism related to zinc deficiency. In the following year, growth retardation and sexual dysfunction presumably due to zinc deficiency was reported in growing children and adolescents in Egypt. During a randomised trial in Egypt (1963), improvement in height and sexual functions was remarkable in those who received zinc supplementation. Few years later, school children of Denver, USA, were found to be suffering from retarded growth, loss of appetite and diminished sense of taste which were associated with lowered zinc level in the hair. Babies fed with infant formula without zinc showed growth retardation in UK (1980), whereas normal growth was restored when zinc was added to the formula. Better growth with zinc supplementation was reported in malnourished children from Jamaica (1981) and Egypt (1963). Improvement in vitamin A status and increased protein synthesis was noticed (1979) within 10 days with a daily intake of 40 mg zinc by severely malnourished Indian children.

Severe zinc deficiency leads to severe diarrhoea, frequent infection, and skin lesions in human and was called acrodermatitis enteropathica (AE) by Danbolt (1942). Diarrhoea and other signs of infection improved dramatically following zinc therapy. The structure of intestinal mucous membrane is severely disrupted during AE. These include flattened mucous membrane, stunted villi, dead tissue in the crypts, cytoplasmic vacuolation and increased number of lysosomes in the epithelial cells. These changes are associated with low levels of plasma zinc and alkaline

phosphatase, reduced urinary excretion of zinc and a marginal zinc level in the hair and these changes become normal with zinc therapy alone. Serum zinc levels in severely malnourished Bangladeshi children suffering from diarrhoea were significantly lower (mean $6.9 \mu\text{mol/l}$) than those in non-diarrhoeal control group (mean $10.3 \mu\text{mol/l}$). Children with kwashiorkor had lower serum zinc level (mean $5.6 \mu\text{mol/l}$) than marasmic children (mean $7.6 \mu\text{mol/l}$). It was further noticed that serum zinc levels in post-measles

(continued on page 2)



Asem Ansari

Mr. M R Bashir, Associate Director of Resources Development, ICDDR,B laid the foundation of the ICDDR,B Health Centre at Mallab at a simple ceremony on 8 February 1988. The construction of the building is being financed jointly by the United Nations Capital Development Fund (UNCDF) and the ICDDR,B. The foundation laying ceremony was also attended by the UNCDF representative, Government officials, local elites, and ICDDR,B officials.

Two-Week Home Maintained Diarrhoeal Calendar and Two-Week Diarrhoeal Recall : A Comparison of Epidemiological Methods

There appeared to be a good or excellent comparability between the two-week health recall and two-week health calendar for the reporting of diarrhoea, scabies, and conjunctivitis. There was a significant tendency to report disease more frequently in the two-week health recall than in the calendar. Neither the need for an increased number of calendars to be maintained nor limited education of mothers appeared to adversely affect the agreement between the calendar and recall histories.

The accurate determination of the presence or absence of diarrhoea is critical to the interpretation of any study evaluating an intervention in transmission or clinical outcome of the disease. The two-week recall period appears quite frequently in the medical literature. Personnel costs for obtaining even two-weekly interviews from large populations are high, respondents may feel burdened by frequent interviews, and interviewers are frequently frustrated by absenteeism of respondents.

Many community-based studies of diarrhoea in the developing world employ face-to-face interviews to obtain diarrhoeal histories. An alternative recording device that preserved the accuracy but avoided the expense and time commitment of the interview would be extremely valuable. To evaluate the comparability of episodes of diarrhoea obtained from a home-maintained two-week calendar with those histories given in response to a two-week health recall interview in a largely uneducated population, Stanton *et al.* studied about 1,500 families with children aged under 6 in Dhaka, Bangladesh (Stanton B, Clemens J, Aziz KMA, Khatun K, Ahmed S, Khatun J. *Int J Epidemiol* 1987; 16: 595-601).

The diarrhoea records obtained by the two methods were highly comparable (Kappa value 0.83). The comparability was not impaired by increased numbers of children in the household. The authors concluded that the two-week home-maintained diarrhoea calendar offers comparable results with the two-week recall and, in certain situations, could be a useful substitute.

The logistic advantages of the calendar, which remain to be tested in a setting without the addition of frequent home visits by research personnel, are multiple. It should be less expensive for a project and, probably, it would be more convenient for the mother. The calendar offers the advantage of not requiring person-to-person contact. By actively involving the mother in the monitoring of disease in her child the implications of specific health interventions may become more meaningful and apparent to her. ●

Zinc as a Determinant

(continued from page 1)

diarrhoea patients were depressed for a long time compared to those in watery diarrhoea patients (mean 6.4 v 11.0 $\mu\text{mol/l}$). Higher zinc loss in diarrhoeal stool was reported earlier by Solomons *et al.* (1974). Daily zinc requirement had to be increased to 300 $\mu\text{g/kg}$ body weight in adult chronic diarrhoea patients to improve diarrhoea and skin lesion (1982) (19.6 $\mu\text{g/kg}$ body wt is the accepted normal daily allowance).

In another animal study by Roy *et al.* (1986) 90 percent of the animals fed zinc deficient diet began to have diarrhoea from the third day. This diarrhoea was associated with loss of appetite, growth retardation, skin lesion, and loss of hairs. Changes in intestinal mucous membrane included its thinning, decrease in the number of epithelial cells, increase in intercellular space, degenerated mitochondria, and loss of tight junctions between adjacent intestinal epithelial cells (enterocytes). Zinc therapy stopped diarrhoea with improvement of mucosal abnormality. Water and electrolyte secretion induced by cholera toxin was significantly higher in the zinc deficient animals and the secretion was reduced by a 48 hour zinc therapy through dietary supplementation.

The sodium potassium pump activity in white blood cells (WBC) obtained from malnourished children is depressed. The activity is restored in the WBCs taken from the same group of children following a zinc supplementation. Reduced absorption of water and electrolytes and increased permeability of the small intestinal mucous membrane observed in zinc deficient rats (Roy *et al.* 1986) may have a similar mechanism to the one observed in the WBCs of malnourished children. Reduced mucosal disaccharidase activity and fat malabsorption have also been reported in zinc deficiency. Diarrhoea and zinc deficiency in malnourished patients may be interrelated. Thus it is reasonable to hypothesise that the abnormalities in sodium and water transport during zinc deficiency are due to the changes in the structure and functions of the intestinal mucous membrane. Studies, currently in progress at the ICDDR,B, on zinc supplementation in diarrhoeal children may furnish further information on this topic. ●

(This review is prepared by Dr SK Roy, Associate Scientist, ICDDR,B)

GLIMPSE publishes forthcoming events of international conferences, symposia, seminars, meetings and training courses. We welcome announcements for 1988 with details for free publicity through GLIMPSE. Please send your announcements to: Editor-in-chief, GLIMPSE, ICDDR,B GPO Box 128, Dhaka 1000, BANGLADESH.

WHO-CDD Programme Position on Flavouring in Oral Rehydration Salts

Until recently, the WHO-CDD Programme has actively discouraged countries and ministries of health from using flavoured preparations of oral rehydration salts (ORS), emphasising in their interactions with governments the desirability of using preparations with only the four basic ingredients (NaCl, KCl, NaHCO₃, and glucose). In addition to the potential for added flavour raising the price, the strongest arguments against the flavoured preparations have been the desirability of having a single preparation on the market (to reduce confusion among purchasers as well as health workers), and the possibility that added flavour may lead to children drinking too much of the solution and thereby developing hypernatraemia.

Manufacturers of ORS, however, have almost uniformly wanted to add flavouring, based on their own assessment of the flavour of the plain product, and complaints from parents either that they thought it tasted bad, or that their child refused to drink it because of its taste. Many flavoured preparations of ORS are already in the market.

In the most recent issue of *CDD Update*, an occasional publication of the CDD Programme, we see for the first time some relaxation of the previous position. While continuing to recommend the simplest ORS product, the Programme has laid out clearly the potential advantages of flavouring in increasing acceptability and use of ORS. It has also declared publicly that there is no documented evidence that flavouring will either lead to overconsumption and consequent hypernatraemia, or lead to underconsumption. Recognition that the slight additional cost may bring

(continued on page 6)

Rotavirus Causes Diarrhoea in Children in Dammam, Saudi Arabia

Diarrhoea is a major cause of morbidity and mortality among infants and children in many developing countries. Among various aetiological agents, rotavirus is considered to be an important cause of diarrhoea in children under 2 years of age.

In a recent study, conducted on 300 children aged 1-60 months (150 without diarrhoea served as controls) in Dammam, Saudi Arabia, one or more diarrhoeal pathogens could be isolated from 63% of the children with diarrhoea.

Rotavirus was the single most common diarrhoeal pathogen detected from children aged under 2: it was detected in 30% of the study children and in 6% of the control children. The highest frequency of rotavirus (40%) was observed in the age group 7-12 months, whereas this was low in children aged under 6 months and uncommon among infants aged 0-3 months. The second most common pathogen was *Shigella* ssp., which was isolated from 19% of the study children as against 3% of the controls (Huq MI, Rahman ASMM, Al-Sadiq A, Al-Shahri A, Alim ARMA. Rotavirus as an important cause of diarrhoea in a hospital for children in Dammam, Saudi Arabia. *Ann Trop Paediatr* 1987;7:173-6).

Studies carried out by Black *et al.* (1980) in Bangladesh have shown that 46% of the children aged under 2 brought to the hospital with diarrhoea were positive for rotavirus antigen. During epidemics, the percentage of rotavirus infection in children in a community may rise to as high as 90%. In another study in Kuwait on hospitalised children aged under 5, Sethi *et al.* detected rotavirus in stools from 40% of diarrhoeal children against 4.7% from a control group.

Although a higher incidence was seen in the cooler months of the year, the infection occurred throughout the year. Oral rehydration therapy should be initiated in children with acute diarrhoea as soon as possible to avoid further complications. Antibiotics should not be used unless the child has bloody diarrhoea and shigellosis is suspected. ●



Mr Anthony G Vincent, High Commissioner of Canada for Bangladesh (second from left) attended a sub-centre meeting at Khadergaon, Matlab (a MCH-FP sub-centre of the ICDDR, B) on 28 December 1987 while visiting the Matlab Field Station of the ICDDR, B. Dr Md Yunus, Head of the Matlab Station is seen explaining to Mr Vincent the record-keeping system maintained by the Community Health Workers for the services they provide. Dr M Badrud Duza, Associate Director, Population Science and Extension Division of the ICDDR, B is also seen (extreme right, rear row).

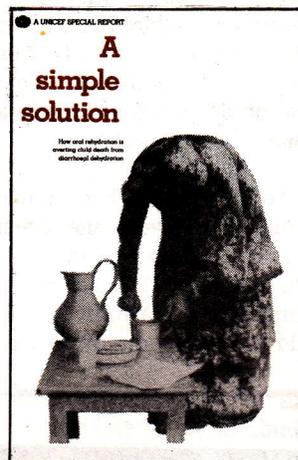
Fakrul

A Simple Solution

The UNICEF has recently published a special report entitled "A simple solution: how oral rehydration is averting child death from diarrhoeal dehydration". Glen Williams has written this report which contains 9 chapters on various aspects of oral rehydration therapy (ORT). Glen has also presented an overall sketch of the ORT situation worldwide.

Each year, in the developing countries of Asia, Africa and Latin America, approximately 5 million children aged under 5 die of acute diarrhoea. About 80% of these deaths are in the first 2 years of life. In the developing world, about a third of all infant and child deaths are due to diarrhoea. Yet the deaths of 3 million children a year could be prevented by a method which is cheap, safe and so simple that it can be learned and used by any parent. This treatment is ORT.

This special report is available from the UNICEF office at a cost of US\$ 5 or UK £ 3.50.



ICDDR,B Publications

Briend A, Wojtyniak B, Rowland MGM. Arm circumference and other factors in children at high risk of death in rural Bangladesh. *Lancet* 1987;2:725-8.

Mid-upper arm circumference (MUAC) was measured monthly for 6 months in 5000 children aged 6-36 months from rural Bangladesh. Children who would die within one month of screening could be identified with 94% specificity and 56% sensitivity - almost twice the sensitivity achieved by other anthropometric screening schemes for this level of specificity. Specificity was slightly improved when the absence of breast feeding, concurrent diarrhoea, oedema, and acute respiratory infection were taken into account. Children at high risk of death can be detected by monthly measurement of MUAC, which may be used in poor communities where interventions have to be selective.

Akhtar SQ. *Clostridium difficile* and its role in diarrhoeal illness in Bangladesh. *Bangladesh J Child Health* 1986;10:145-8.

This paper reviews the role of *Clostridium difficile* in diarrhoeal illness in Bangladesh. *C. difficile* has been implicated as a pathogen associated with gastrointestinal disorder. *C. difficile* is a spore-forming, large, rod-shaped anaerobic bacterium and has gained clinical importance only during last two decades. In a study in Boston, USA, it is reported to be one of the causes of chronic diarrhoea. It also causes pseudomembranous colitis and antibiotic-associated diarrhoea in adults. The toxin of *C. difficile* is often present in asymptomatic infants, but it is rarely found in the stools of asymptomatic adults, including those receiving antibiotics. Studies have revealed that *C. difficile* causes gastrointestinal disorders when antibiotic association exists. Association of *C. difficile* has been isolated from different sources, but the epidemiological importance of these potential reservoirs is yet to be defined. As there are indications of nosocomial infection of *C. difficile*, careful use of antimicrobial agents should help to minimise the incidence. It is not clear whether patients once infected with *C. difficile* are at increased risk with subsequent antibiotic treatment. Studies on the association of *C. difficile* with diarrhoea in Bangladesh are still at a very preliminary stage.

Koenig MA, Philips JF, Simmons RS, Khan MA. Trends in family size preferences and contraceptive use in Matlab, Bangladesh. *Stud Fam Plann* 1987;18:117-27.

The Matlab Family Planning and Health Services Project has fostered an increase in contraceptive use and a corresponding decline in fertility. This study examines the trends in family size preference in the Matlab area from 1977 to 1984 and their relationship with contraceptive use. The most significant factor behind the sharp increase in the contraceptive use has been for spacing births. There also appears to have been a modest increase in the proportion of women not wanting additional children. Family size preferences in the treatment and comparison areas were roughly comparable. The findings are evaluated in terms of the current debate concerning the effect of family planning programmes on the fertility decline in the developing countries.

Debnath NC, Huq MI, Rahman A. A microbial investigation of neonatal calf diarrhoea in Bangladesh. *Indian J Anim Sci* 1987;57:1035-8.

In faecal samples collected from 100 diarrhoeic calves rotavirus (10%), enterotoxigenic *Escherichia coli* (ETEC) (20%), *Salmonella* spp. (3%), *Campylobacter jejuni* (7%) and other enteric bacteria were identified. A characteristic age-specific prevalence of the pathogens was observed. ETEC was most frequently recovered from calves within the first week and rotavirus from the second week. No significant differences in the distribution of pathogens were observed between traditionally and intensively reared calves

except for rotavirus which was detected more frequently in the latter group (significant at 5% level).

Neogi PKB, Shahid NS. Serotypes of *Campylobacter jejuni* isolated from patients attending a diarrhoeal disease hospital in urban Bangladesh. *J Med Microbiol* 1987;24:303-7.

The serotypes of *Campylobacter jejuni* strains isolated from patients attending the ICDDR, B hospital at Dhaka, and from animals were ascertained by Penner and Hennessy's serotyping scheme. Of the 102 isolates from man, 74% were typable and serotypes 53, 15 and 22 predominated. Of the 26 isolates from animals, 65% were typable and serotypes 15 and 53 occurred frequently. The diarrhoeal illnesses associated with different serotypes were similar. In one-third of the cases, other enteropathogens were present. *C. jejuni* was isolated from 7% of the patients tested in a 4% sampling system during 1983, and the prevalent serotypes appeared in most months. It is concluded that *C. jejuni* is a common enteropathogen in Bangladesh, that a few serotypes predominate among isolates from both man and animals, and that serotype does not predict clinical symptoms.

Stanton BF, Phillips N, Clemens JD, Wroot B, Gafur Z, Fleischman J, Khair T. An urban nutrition education and rehabilitation centre: a description of the programme and change in nutritional status of children who were enrolled. *Trop Geogr Med* 1987;39:287-95.

This study reports on a community-based day care nutrition rehabilitation and education centre which was established by the ICDDR,B in a slum in Dhaka, Bangladesh. During March-December 1985, approximately 10 children aged 1 to 5 years with a percent weight for height (% wt/ht) of 60 to 85 were enrolled in each of 9 sessions which were 3 to 5 weeks long. The children were

fed 3 meals and 2 snacks daily made from locally available inexpensive foods. A nutrition education programme, developed with input from several feeding centres in Dhaka, included daily lessons, participatory cooking and personal hygiene sessions. Of the 85 children entering the programme, 82 (95%) completed 3 or more weeks. Relative to base-line, a median increase of 8.7% wt/ht was observed at 5 weeks ($p < 0.001$), with the greatest improvement occurring in those children presenting with the lowest weights. Median increases of 7.2 and 7.4% wt/ht were noted 6 and 10 months after admission, respectively. Gender difference and minor illness did not have a significant impact on change in nutritional status. Poor performance of mothers in assigned chores was associated with inferior improvement in nutritional status 5 weeks but not 6 months post-admission. These results suggest that the intervention implemented by the centre may have been effective in improving nutritional status and that more rigorous evaluation of participants in relation to suitably matched concurrent controls should be performed.

(continued on page 6)

Microbiology Journal Published

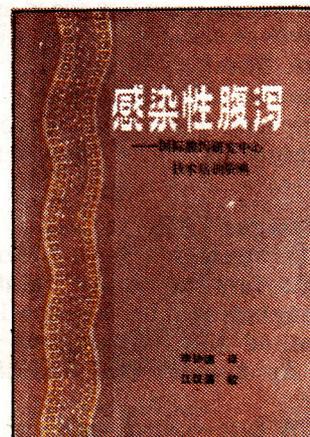
Bangladesh Journal of Microbiology is now published regularly by the Bangladesh Society of Microbiologists. It is a fully refereed bi-annual journal. The Board of Editors is composed of senior microbiologists of the country. The journal publishes results of research involving all aspects of general microbiology -- of basic or applied nature, and of local, regional, or wider relevance. The latest issue published was volume 4, No. 2, December 1987.

For contribution and subscription information please contact Zia Uddin Ahmed, PhD, Editor, Bangladesh Journal of Microbiology, C/o. International Centre for Diarrhoeal Disease Research, Bangladesh, GPO Box 128, Dhaka 1000, Bangladesh.

Technical Training Series Translated into Chinese

"Infectious Diarrhoeal Disease - Data on Technical Training Course" has been published in Chinese by the Ministry of Public Health of the People's Republic of China. This is a translation of the Technical Training Series on diarrhoea management Nos. 1, 3, 5, 6, and 7 produced by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). These documents were translated by Dr Li Zie-de during his stay at the ICDDR,B in 1985 under a collaborative programme between the People's Republic of China and the ICDDR,B. The translation was further corrected by Dr. Jian Hanzao.

Of the 5000 copies published, 4000 have been distributed to the Anti-epidemic Stations (Provincial level) in China to guide medical workers for better management of diarrhoea patients in their own institutions.



ICDDR,B Publications

(continued from page 5)

Shahid NS, Rahman ASMH, Sanyal SC. Cryptosporidium as a pathogen for diarrhoea in Bangladesh. *Trop Geogr Med* 1987;39:265-70.

Cryptosporidiosis, a zoonosis caused by *Cryptosporidium* species, is a newly recognised coccidial protozoan infection causing diarrhoea in humans. Using a modified acid fast technique, the ICDDR,B has been screening a 4%-sample of diarrhoea patients attending the ICDDR, B diarrhoea treatment centre for *Cryptosporidium* in their stools as a part of an ongoing surveillance programme. Positive specimens were confirmed by the standard Giemsa method. *Cryptosporidia* were identified predominantly in young children and were associated with watery diarrhoea, vomiting, cough and mild-to-moderate dehydration. The protozoan had a seasonal pattern with an increase in the hot, humid weather. It is concluded that *Cryptosporidium* infection is relatively common in Bangladeshi children and may be responsible for a significant proportion of diarrhoea in this area.

Khan MU, Barua DK, Begum T, Shahidullah M. Vibriocidal titre in cholera cases and contacts: its value in assessing endemicity of or susceptibility to cholera. *Trop Geogr Med* 1987; 39:271-5.

Vibriocidal antibody titre in excess of 1:40 occurred within two weeks of cholera infection, both in severe hospitalised cases, contact cases and in asymptomatic infected contacts. These levels, considered to be indicative of protection, persisted for 6 months or longer in more than half of the subjects irrespective of presence and severity of symptoms. Approximately 40% of infected family contacts had similar titres implying recent infection and subsequent protection. The use of antibiotics to treat acute cases, and whether infection was due to antibiotic-resistant or sensitive *Vibrio cholerae* had no effect on the response of vibriocidal titre. Endemicity of cholera was higher than previously observed in Dhaka. Screening populations to obtain positive titre rates permits retrospective assessment of cholera infection and provides an indicator of future susceptibility.

Clemens JD, Stanton BF. An educational intervention for altering water-sanitation behaviors to reduce childhood diarrhea in urban Bangladesh. I. Application of the case-control method for development of an intervention. *Am J Epidemiol* 1987;125:284-91.

A case-control study was performed to develop an empirically based intervention for improving water-sanitation practices and rates of childhood diarrhoea among

families residing in urban Bangladesh. For three months, fortnightly histories of diarrhoea were taken for all children aged under 6 among 1,350 families to estimate age-specific rates of diarrhoea in the population. A total of 247 randomly sampled families, termed sentinel families, were visited once during the study for prolonged observations of water-sanitation practices. Behaviours potentially affecting incidence of diarrhoea were compared in a case group (n=45), defined as sentinel families whose children had rates at least 1.7 times the rates expected for similarly aged children, and in a control group (n=53), defined as sentinel families without any episodes of childhood diarrhoea during the period of observation. Three practices differentiated the two groups: more control (82%) than case (53%) mothers who were observed to prepare food washed their hands before beginning the preparation (p<0.01); fewer control families (33%) than case families (80%) had ambulatory children who, when observed to defaecate, did so in the family's living area (p<0.01); and fewer control (30%) than case (47%) families had children who were observed to place garbage or waste products in their mouth (p<0.10). Focus on these three empiric associations enabled the design of a community-specific educational intervention which is simple in construction and based upon naturally occurring, financially feasible, salutary practices.

Khan MU, Khan MR, Sheikh AK. Dehydrating diarrhoea & cataract in rural Bangladesh. *Indian J Med Res* 1987;85:311-5.

To examine whether diarrhoea has any association with cataract, a study was conducted at Matlab, Bangladesh on a population of 182,976. Individuals with cataract were screened in 149 villages and those with severe-to-moderate diarrhoea were admitted to the field hospital. Diagnosis was done using standard techniques. All patients with cataract

WHO - CDD Programme

(continued from page 3)

proportionate benefits by leading to greater acceptability and increased use is also clearly stated.

This step opens the door to governments more freely allowing private manufacturers to distribute and sell flavoured products, and for reconsidering whether they will promote officially both flavoured and unflavoured products. While we will all await evidence scheduled to come from studies of the possibility of overconsumption or underconsumption, this gives us the possibility of responding more positively at present to the wishes of consumers and producers of ORS for flavoured preparations. ●

- [Source: 1. WHO: CDD Update No. 2, Nov 1987.
2. Technical Literature Update - a PRITECH Project Handout of current literature on ORT & related health issues]

detected amongst cholera patients admitted from 1966 to 1981 and those detected among patients with other causes of diarrhoea admitted from 1978 to 1981, were matched with patients with cataract in the non-admitted population. Prevalence of cataract in patients with cholera and other acute diarrhoeas was not higher than in the non-admitted population. Although diarrhoea due to various causes is most frequent in children, cataract was common in adults, aged 50 years and above. Diarrhoea from all causes together did not show a significant association with cataract among presenile and senile age groups also. Thus, it appears that dehydration from acute diarrhoea may not have any association with cataract formation.

Stanton BF, Clemens JD. An educational intervention for altering water-sanitation behaviors to reduce childhood diarrhea in urban Bangladesh. II. A randomized trial to assess the impact of the intervention on hygienic behaviors and rates of diarrhea. *Am J Epidemiol* 1987;125:292-301.

An educational intervention was designed to improve three water-sanitation behaviours empirically shown to be associated with high rates of childhood diarrhoea in Dhaka, Bangladesh: lack of hand-washing before preparing food, open defaecation by children in the family compound, and inattention to proper disposal of garbage and faeces, increasing the opportunity for young children to place waste

products in their mouth. Fifty-one communities, each comprising 38 families, were randomised either to receive (n=25) or not to receive (n=26) the intervention. During the 6 months after the intervention, the rate of diarrhoea (per 100 person-weeks) in children aged under 6 was 4.3 in the

(continued on page 8)

1988 SWA Election

The members of the Staff Welfare Association (SWA) of the ICDDR,B elected their office bearers for 1988. Mr Md Shafiqul Islam is the re-elected President of the Association. Those elected as the Vice-Presidents and General Secretaries of the SWA Executive Committees of Dhaka and Matlab are named below:

Dhaka

Vice-President: Mr A H G Kader Chowdhury
General Secretary: Ms Tahmina Begum

Matlab

Vice-President: Mr Khalilur Rahman I
General Secretary: Mr Siddiqur Rahman

The newly elected office bearers of the executive committees at Dhaka and Matlab were installed in colourful ceremonies on 19 and 31 January 1988, respectively. ●



Fakrul

The SWA President for 1988 speaking at the installation ceremony at Matlab. Mr Ali Mahub, Associate Director for Administration, Personnel, and Finance of the ICDDR,B (fourth from the right) represented Prof Roger Eeckels, Director of the ICDDR, B and patron-in-chief of SWA. The newly elected office bearers of Mallab SWA are also seen.

ICDDR, B Publications

(continued from page 7)

intervention communities and 5.8 in the control communities (26% protective efficacy; $p < 0.0001$). A corresponding improvement in hand-washing practices before preparing food was noted, although no improvement was observed for defaecation and waste disposal practices. These data suggest that educational interventions for water-sanitation practices can have an important beneficial effect upon childhood diarrhoea in developing countries, particularly when the interventions are designed in a simple way to promote naturally occurring salutary behaviours that are empirically associated with lower rates of childhood diarrhoea.

Moyenuddin M, Rahman KM, Sack DA. The aetiology of diarrhoea in children at an urban hospital in Bangladesh. *Trans R Soc Trop Med Hyg* 1987;81:299-302.

Enteric pathogens were studied in 104 cases with acute diarrhoea and in 74 age and sex matched concurrent controls. One or more pathogens were isolated from 59.1% of cases compared with 20.4% of controls ($p < 0.001$). Single enteropathogens were detected in 33.7% and multiple enteropathogens in 25.4% of the cases. Enteropathogenic *Escherichia coli* (EPEC), *Campylobacter jejuni*, rotavirus, *Vibrio cholerae* non-01 and enterotoxigenic *Escherichia coli* were the major pathogens detected. The high rate of isolation of EPEC from diarrhoea cases (23.1%) indicated a definite role for this pathogen in causing endemic diarrhoea in Bangladesh.

Koster FT, Palmer DL, Chakraborty J, Jackson T, Curlin GC. Cellular immune competence and diarrheal morbidity in malnourished Bangladeshi children: a prospective field study. *Am J Clin Nutr* 1987;46:115-20.

In a year-long prospective study 152 Bangladeshi children with mild to moderate protein-calorie malnutrition status were monitored for cellular immune defects as related factors to morbidity due to diarrhoeal, respiratory, and febrile diseases. In children older than 36 months, wasting correlated with skin test anergy to three recall antigens and with inability to initiate hypersensitivity to dinitrochloro-

benzene. In this older age group, anergy was associated with a 58% increased attack rate and an 83% increased duration of diarrhoeal diseases but not with febrile or respiratory infections. In stepwise regression analysis, this anergy effect was independent of the small negative impact of poorer nutritional status on morbidity. Ninety-three percent of diarrhoeal illnesses lasting at least 14 days were among anergic children. Cellular immune incompetence, indicated by anergy of unknown aetiology, is associated with increased diarrhoeal morbidity and may promote the vicious cycle of repeated infections and deteriorating nutritional status.

Rahim Z, Kay BA. Enrichment for *Plesiomonas shigelloides* from stools. *J Clin Microbiol* 1988;26(4):789-90.

Bile peptone broth and alkaline peptone water (pH 8.5) were examined as enrichment media for the isolation of *Plesiomonas shigelloides* from stools, with salmonella-shigella agar as the isolation medium. After 423 parallel examinations in two different experiments, bile peptone broth enrichment for 24 h was observed to be six times more effective ($p < 0.01$) than direct plating alone on salmonella-shigella agar. Bile peptone broth was found to be twice as effective as alkaline peptone water for the recovery of *P. shigelloides* from stools. ●

Forthcoming International Meetings and Conferences

XVIII INTERNATIONAL CONGRESS OF ENTOMOLOGY, Vancouver, Canada, July 3-9, 1988. Contact: Dr. G. Scudder, Dept. of Zoology, University of British Columbia, Vancouver, BC, V6T 2A9, Canada.

THE ROME INTERNATIONAL CONGRESSES OF GASTROENTEROLOGY & DIGESTIVE ENDOSCOPY 1988, Rome, Italy, September 4-10, 1988. Contact: STUDIO EGA, Professional Congress Organizers, Viale Tiziano, 19, 00196 Roma, Italy.

FIRST ASIA-PACIFIC CONGRESS OF MEDICAL VIROLOGY, Singapore, November 6-11, 1988. Contact: The Congress Secretariat, Department of Microbiology, Faculty of Medicine, National University of Singapore, Lower Kent Ridge, Singapore 0511.

EDITORIAL BOARD:

Editor-in-Chief : D Mahalanabis; Scientific Editor : Ansuuddin Ahmed; Assistant Editor : Hasan Shareef Ahmed.

MEMBERS : AN Alam, AK Azad, AA Zahidul Huque, M Shafiqul Islam, M Shamsul Islam Khan, ASM Mizanur Rahman, AKM Siddique and MA Wahed.

Cover design : Asem Ansari.

Published by the International Centre for Diarrhoeal Disease Research, Bangladesh, GPO Box 128, Dhaka -1000, Bangladesh.
Telephone : 600171-600178 (8 lines), Cable : CHOLERA DHAKA, Telex : 65612 ICDD BJ.