



CENTRE
FOR HEALTH AND
POPULATION RESEARCH

Glimpse

International Centre for Diarrhoeal Disease Research, Bangladesh

ASCODD VII Held in Dhaka

Though considerable progress has been achieved in the control, prevention and treatment of diarrhoeal diseases, there is still much to be done. Diarrhoea still remains a major cause of death and illness in children less than five years in developing countries. To address this problem and to find out possible solutions, 'Seventh Asian Conference on Diarrhoeal Diseases' (ASCODD VII) was held in Dhaka from 17 to 19 September 1994. About 700 physicians and scientists from 12 countries of Asia and America attended the conference. The theme of the conference "1994 - the diarrhoea prevention year through social mobilization" is most appropriate and timely, and will help achieve the goal of 'Health for All by the Year 2000.'

The three-day long conference was inaugurated by the deputy leader of the parliament and an eminent physician of the country Professor AQM Badruddoza Chowdhury. In his inaugural speech, Professor Chowdhury thanked the Bangladesh Medical Association for hosting the conference, and hoped that the outcome of this conference would update the knowledge and help minimize the diarrhoeal incidence in the region. He also lauded the role of ICDDR,B in diarrhoeal disease



Professor AQM Badruddoza Chowdhury, deputy leader of the parliament delivering the inaugural speech.



Professor R Bradley Sack presenting the keynote paper in the conference.

research and invention of ORS. Professor Chowdhury happily remembered his association with the Centre during its internationalization. He was then the health minister of the Bangladesh government and a member of ICDDR,B Board of Trustees.

Among others, the inaugural session was attended by Mr Rolf C Carriere, UNICEF Representative in Bangladesh, Professor Myo Thwe from WHO, Dhaka and Professor Demissie Habte, Director of ICDDR,B.

Professor MA Majed, President of Bangladesh Medical Association and the International Organizing Committee of ASCODD VII, welcomed the participants. Professor KMS Aziz, Secretary General of the Organizing Committee and Professor D Habte, Director of ICDDR,B also spoke on the occasion. The keynote speech on "Diarrhoea Prevention Through Social Mobilization" was delivered by Professor R Bradley Sack from the Johns Hopkins University School of Public Health and Hygiene, Baltimore, USA. The conference included five plenary and 12 free paper sessions.

The Bangladesh Medical Association hosted the conference, while the World Health Organiza-

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Some of the speakers in the inaugural session (L-R): Professor MA Majed, President of the International Organizing Committee of ASCODD VII as well as President of the Bangladesh Medical Association; Mr Rolf C Carriere, UNICEF Representative in Bangladesh; Professor Myo Thwe from WHO, Dhaka; and Professor KMS Aziz, Secretary General of the International Organizing Committee of the ASCODD VII.

tion (WHO), UNICEF, and the ICDDR,B were the co-sponsors. ICDDR,B also sponsored the first Asian Conference on Diarrhoeal Diseases held in Dhaka in February 1981. The next Asian conference on diarrhoeal diseases (ASCODD VIII) will be held in Indonesia in 1996. ■

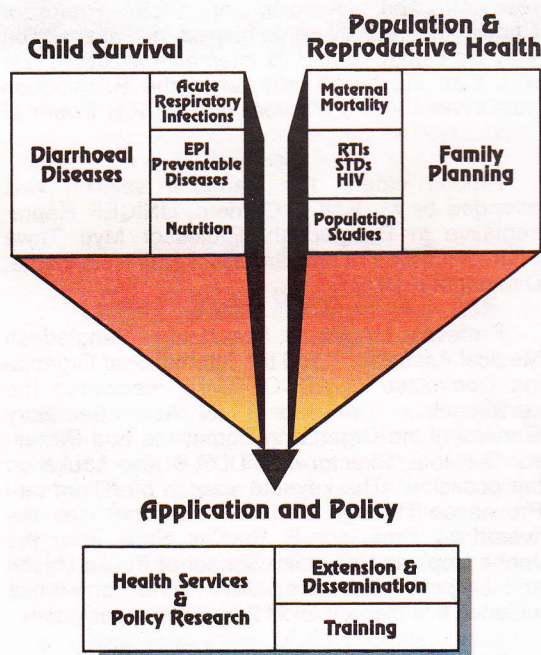
The Centre's Strategic Plan: "To the Year 2000" in Outline

In 34 years of its existence ICDDR,B has evolved into a busy cosmopolitan research centre whose scientists have wide-ranging expertise. Future research will be directed toward finding cost-effective solutions to the health and population problems of the most disadvantaged people in the world. The Centre's Strategic Plan "To The Year 2000" outlines work in three key areas:

Child Survival: Diarrhoeal diseases are responsible for the deaths of 3-4 million children every year. Acute and persistent diarrhoea and dysentery will remain priority areas for research on strategies for prevention including behavioural modification in personal and domestic hygiene, provision of appropriate water supply and sanitation to the household, and the development of effective vaccines. The Centre's scientists will improve national and international responses to epidemics, and the case management of diarrhoea based on better understanding of basic mechanisms. They will also study acute respiratory infections and nutritional deficiency states (including micro-nutrients).

Population and Reproductive Health: The Centre has a long history of conducting pioneering research in the areas of population and family planning. The Centre played a key role in raising the contraceptive use rate among women of reproductive age in Bangladesh to almost 45% through technical assistance and operations research. Matlab is now the model for MCH-FP programmes throughout the world, and the Centre

PRIORITIES FOR ACTION



has made important contributions to maternal health and safe motherhood. In addition to continuing work in these three areas, the Centre has recently initiated community-based research on STD/RTI/HIV infections.

Application and Policy: The Centre will continue to play a major part in improving both supply of and demand for existing health technologies, and in replicating the successful interventions piloted in its projects through health systems research. The Centre will increase its communication, dissemination and training efforts to influence international and national health policies in the areas of its expertise. ICDDR,B recognizes, and has given a high priority to, the need to transform research findings into action. ■

Cholera Epidemic Among Rwandan Refugees: Experience of ICDDR,B in Goma, Zaire

In July 1994, one of the worst cholera epidemics broke out among the Rwandan refugees in Goma, eastern Zaire, where nearly a million refugees took shelter. Zaire is located in central Africa. The United Nations High Commission for Refugees (UNHCR) estimated that nearly 12,000 people died during the epidemic.

ICDDR,B responded to a USAID call for assistance by sending an eight-member medical team to Goma within 48 hours of notice. The team, headed by Dr AK Siddique, a senior scientist of the Centre and head of the Epidemic Control Preparedness Programme (ECP), left Dhaka on 25 July 1994. The other members of the team included Dr MA Salam (chief physician), Dr Md Sirajul Islam (microbiologist/scientist), Dr K Akram and Dr K Zaman (epidemiologist, ECPP), Dr Sandra Laston (medical anthropologist), Ms Nancy E Fronczak (international fellow), and Dr RN Majumdar (physician/assistant scientist).

Due to a highly disorganized environment created by the disaster, the team faced some difficulties initially in organizing their activities. However, because of inclusion of members with previous experience on such situations, the team was able to become fully operational within 24 hours of arrival in Goma. During their two-week stay, the team in collaboration with UNICEF and the Ministry of Health, Zaire, conducted epidemiological assessment of the situation, rendered patient care by operating a temporary treatment centre and provided technical advice on case management of cholera and shigellosis to other health workers involved in medical relief. The ICDDR,B team also set up a field microbiology laboratory in Goma to identify the pathogens responsible for the epidemic and their drug sensitivity patterns.

The ICDDR,B team visited a number of temporary treatment facilities in two of the five camp sites where most refugees were sheltered, and provided technical advice to the health-care providers. They also visited treatment facilities in Goma city, where an estimated 200,000 refugees took shelter and were affected by the epidemic.



AK Siddique

Prompt treatment averts death from cholera. A temporary treatment Centre in Goma, Zaire.

Investigations conducted by the ICDDR,B team revealed that deaths from cholera even in the treatment centres were much higher than expected. The overall case-fatality rate in the treatment centres was nearly 15%.

Laboratory investigations conducted by the ICDDR,B team showed that the initial epidemic was indeed caused by *Vibrio cholerae* and the strains were resistant to tetracycline and doxycycline, the drugs commonly used for treating cholera patients. By the first week of August, the number of cholera cases was declining, but the number of dysentery cases was increasing rapidly indicating an impending epidemic. The ICDDR,B field laboratory identified that the organisms responsible were predominantly an epidemic strain of dysentery (*Shigella dysenteriae* type 1), which



K Akram

Advising the health care-providers in Goma. Cholera victims are in the background.

was resistant to most drugs used for treating shigellosis, except mecillinam. This observation was most useful to the health workers who were treating dysentery patients with ineffective drugs. Moreover, it may have helped the UNHCR Medical Coordination Committee, that had planned to secure large quantities of a drug that would have been virtually useless for treating patients infected with *Shigella*.

Further investigation by the team suggested that inappropriate rehydration therapy and inadequate experience of health workers in the management of severe cholera patients were some of the factors thought to be associated with failure to prevent deaths during the epidemic. The ICDDR,B team took over the operational control of temporary treatment centre at Katindo in Goma city. The centre had one of the highest case-fatality rates (14.5%). The team was able to demonstrate that by improving these factors they could reduce the fatality rate to less than 1%.

The Goma experience is an example of how the international communities can cooperate among themselves and improve their efforts in providing assistance by drawing the benefit from the experience of others. It also showed that no country is too poor to contribute to such efforts. ■

Dr AK Siddique

Lessons Learned on Door-step Delivery of Injectable Contraceptives

A workshop was held on 28 September 1994 at ICDDR,B to share the lessons learned on door-step delivery of injectable contraceptives in eight rural thanas in Bangladesh. The workshop was organized jointly by the Directorate of Family Planning, Government of Bangladesh (GoB) and the MCH-FP Extension Project (Rural) of ICDDR,B. A total of 150 participants from the

Centre, the national family planning programme, different NGOs, and donor agencies attended the workshop.

Chowdhury Kamal Ibne Yusuf, honourable Minister for Health and Family Welfare, GoB, inaugurated the function as the chief guest. The director of the Centre Professor Demissie Habte chaired the inaugural session. Among others, Syed Shamim Ahsan, Secretary, Ministry of Health and Family Welfare (MOHFW); Mr Khairuzzaman Chowdhury, Director General, Directorate of Family Planning, MOHFW; Mr SK Alok, UNFPA Country Director; Mr David Piet, Director, Office of Population and Health, USAID, Dhaka, also spoke at the inaugural session.

Professor Barkat-e-Khuda, Project Director, MCH-FP Extension Project (Rural) welcomed the distinguished guests and participants. Syed Shamim Ahsan thanked the Centre for its role in the national family planning programme, and reiterated that the extension project is a collaborative project of the GoB and the Centre. He hoped that the Centre will continue with its excellent work. In his inaugural speech, the Minister emphasized that the population boom is a major problem of the nation. He thanked the Centre for helping the government in seeking solutions to this problem. He expected that the findings of this study would help guide planners for future actions. Mr SK Alok of UNFPA expressed his happiness about the implementation and progress of the injectable contraceptive project. Mr David Piet of USAID recommended that equal attention and equal time be given to all family planning methods, and not just on injectables. Also, he emphasized on the quality of care and the sustainability of the method. Mr Khairuzzaman Chowdhury thanked the implementors of this programme at different levels for their contribution, and expressed his satisfaction over the activities of the project. Also, he assured full support to the project on behalf of the directorate.

The director of the Centre Professor Demissie Habte said that the Centre feels proud to be involved in this project with the Bangladesh government. He thanked the donor agencies for supporting the Centre in managing and providing family planning services to the nation. He hoped that the participants would find this workshop useful and productive.

[A summary of presentations and recommendations of the workshop will be published in the next issue of Glimpse.] ■

GOB-ICDDR,B Project Intervention Launching Ceremony held at Mirsarai, Chittagong

The Ministry of Health and Family Welfare (MOHFW) and the MCH-FP Extension Project (Rural) of ICDDR,B have undertaken a collaborative project to strengthen the MCH-FP and primary health care activities in Chittagong. The overall objective of the project is to assist the national



Fakrul

Chowdhury Kamal Ibne Yusuf, honourable Minister for Health and Family Welfare, delivering his inaugural speech as the chief guest.

programme, and make it effective, affordable, and sustainable. The initial objective is to enhance accessibility to MCH-FP services in Chittagong. The project has selected Mirsarai, a rural thana under Chittagong district, as a demonstration site where appropriate MCH-FP and primary health care interventions will be field-tested. The project will then transfer the Mirsarai experience to other areas of Chittagong using a "district approach".

The key findings and recommendations on the needs assessment conducted at Mirsarai were presented at the Project Intervention Launching Ceremony held at Mirsarai, Chittagong, on 24 July 1994. The findings showed that contraceptive prevalence rate at Mirsarai was lower compared to district average, and the desired family size was larger than recommended. However, considerable unmet need for contraceptives exists. The project recommended greater emphasis on channelizing the interpersonal communication in the area, further training of the health workers and service providers, and greater cooperation among them. Quality of care should also be enhanced.

The ceremony was organized jointly by the Government and the ICDDR,B. Chowdhury Kamal Ibne Yusuf, honourable Minister for Health and Family Welfare (MOHFW), was the chief guest. Mr Sirajul Haque, honourable Deputy Minister, MOHFW; Mr MA Jinnah, honourable Parliament Member, Mirsarai; Syed Shamim Ahsan, Secretary, MOHFW; Professor Nurun Nabi, Director General, Health Services; Mr Khairuzzaman Chowdhury, Director General, Family Planning; Mr BR Chaudhury, Director General, NIPORT; other senior government officials, representatives of donor agencies, NGOs, and local officials and elites were present. The ceremony was chaired by Professor Barkat-e-Khuda, Project Director, MCH-FP Extension Project (Rural) of ICDDR,B. ■

Workshop on Disease Patterns, Treatment Practices, and Drug Requirements Held

A workshop on **Disease Patterns, Treatment Practices and Drug Requirements in Rural MCH-FP Government Facilities** was held on 20 June 1994 at ICDDR,B. Dr Aminul Islam, Director (MCH), Directorate of Family Planning, together with Prof Barkat-e-Khuda, Dr Thérèse Juncker and Dr Hélène Wirzba of the MCH-FP Extension Project (Rural) presented the main findings of the study.

Services provided and disease profiles were found different in Family Welfare Centres (FWC) from those in the Satellite Clinics (SC) in the study area; paramedics did not use an approach based on specific signs and symptoms to establish their diagnosis; they did not know many of the recommended treatments; and the drugs included in the present kits did not match the needs.

It was, therefore, recommended that: separate kits still be provided for FWC and SC but the contents of the kits and the distribution patterns be revised; paramedics be given access to reference books, regular refresher courses; supervision and



Chowdhury Kamal Ibne Yusuf, honourable Minister for Health and Family Welfare, delivering speech at the Project Intervention Launching Ceremony held at Mirsarai, Chittagong on 24 July 1994.

monitoring of their activities be enhanced; and the recording and reporting systems at FWC and SC be revised.

Syed Shamim Ahsan, Secretary, Ministry of Health and Family Welfare, and Mr Khairuzzaman Chowdhury, Director General, Family Planning, were the chief and special guests, respectively. Prof Demissie Habte, Director of ICDDR,B, presided over the workshop. Over 40 participants attended the workshop.

The main discussants, Prof Nurun Nabi, Director General, Health Services, and Mr BR Chaudhury, Director General, NIPORT, agreed with the findings of the study, and further agreed that the recommendations be tested in several field sites. A lively discussion on the need for revision of drug requirements and upgrading the knowledge of service providers followed the presentation.

Mr Khairuzzaman Chowdhury, in his speech, suggested the creation of a task force entrusted with the responsibility of working for the implementation of the workshop recommendations. ■



Prof Demissie Habte, Director of ICDDR,B, presiding over the workshop. L-R: Prof Barkat-e-Khuda, Project Director, MCH-FP Extension Project (Rural); Prof Nurun Nabi, Director General, Health Services; Mr BR Chaudhury, Director General NIPORT; Syed Shamim Ahsan, Secretary, Ministry of Health and Family Welfare; Prof Demissie Habte, Director of ICDDR,B; and Mr Khairuzzaman Chowdhury, Director General, Family Planning.



Syed Shamim Ahsan, Secretary, Ministry of Health and Family Welfare (MOHFW), addressing at the workshop as chief guest. L-R: Prof Barkat-e-Khuda, Project Director, MCH-FP Extension Project (Rural); Dr Mohammad Ashraf Uddin, Chief Health Officer, Dhaka City Corporation; Mr Richard Brown, Mission Director, USAID; Syed Shamim Ahsan, Secretary, MOHFW; Prof Demissie Habte, Director, ICDDR,B; Prof Nurun Nabi, Director General, Health Services; and Dr Abdullah-Hel Baqui, Project Director, MCH-FP Extension Project (Urban).

Rural-Urban Joint Workshop on Project Goals and Activities

On 29 May 1994, the Rural and the Urban Extension Projects had a joint workshop at ICDDR,B. The workshop was organized to present an overview of the objectives of the Rural and the Urban Extension Projects. Syed Shamim Ahsan, Secretary, Ministry of Health and Family Welfare; Mr Richard Brown, Mission Director, USAID; Mr Khairuzzaman Chowdhury, Director General, Family Planning; Prof Nurun Nabi, Director General, Health Services; and other senior GoB, NGO, and donor representatives participated. The workshop was chaired by Prof Demissie Habte, Director of ICDDR,B. Two presentations were made at the workshop -- one by Prof Barkat-e-Khuda on behalf of the Rural Extension Project, and the other by Dr Abdullah-Hel Baqui on behalf of the Urban Extension Project. ■

PLAGUE

The outbreak of plague that is taking place in India is a re-visitation of an ancient scourge. It is the first such outbreak on this scale anywhere in the world in many years.

Plague is a disease, primarily of rodents and their fleas and humans, caused by a Gram-negative rod-shaped bacteria *Yersinia pestis*. There are two primary forms of the disease: bubonic (referring to the "bubo" or swollen, inflamed lymph node) and pneumonic (referring to the development of severe pneumonia.) The bubonic is by far the more common; it occurs in 2-6 days following the bite of a flea usually infected from a rodent. It is characterized by fever, and swollen, tender lymph nodes, usually in the groin area. This infection usually remains localized, and is treated by

incision of the bubo to obtain pus (to establish the diagnosis), and antibiotics. In about 10-20% of cases, however, the bacteria become blood-borne, and are carried to the lungs, causing severe pneumonia, usually affecting several lobes of the lung. Once the infection spreads to the lungs, it can be transmitted to others by aerosol: infected material coughed into the air is breathed by another person, with the bacteria thus gaining direct access to the lungs. This type of air-borne transmission from person to person can result in rapid transmission and large epidemics, as is happening in India now. In contrast, the bubonic form is not transmitted from person to person, but only through bite of fleas from infected rodents.

It takes as little as a day from the time of exposure, but can take up to 6 days to become ill. The first symptoms of pneumonic plague are cough (which may produce bloody sputum), fever, and shortness of breath. Once pneumonia develops, antibiotics must be given promptly to prevent death, which can occur in as little as 24-48 hours. The antibiotics most effective and most often used are streptomycin, tetracycline and chloramphenicol, which need to be initially given parenterally (intramuscularly or intravenously). Patients should be in "respiratory isolation" to prevent aerosol spread of the bacteria. Physicians and nurses often develop the disease from caring for their patients (before they know they are treating pneumonic plague.) Definitive diagnosis is made in the laboratory by staining and culturing the bacteria from sputum.

For persons in direct contact with and thus exposed to pneumonic plague victims, antibiotics should be used prophylactically to prevent the disease. The drug found to be effective is tetracycline (250 mg four times a day for an adult) or trimethoprim-sulfamethoxazole (one single-strength tablet two times a day for an adult). Doses for children are reduced according to age. The drugs need to be given for 5-7 days. Although there are vaccines against plague, they are relatively ineffective; none is adequate to provide quick protection as needed during epidemic periods, and the vaccines are not widely available.

Pneumonic plague can spread quickly, as shown by the spread from west India to New Delhi. Since persons can carry the bacteria without showing symptoms (carriers) for at least several days, it is impossible to completely prevent its spread by travellers. Careful surveillance of travellers coming from known infected areas, however, can be effective in early detection of cases. The bacteria are relatively hardy as well; they are resistant to drying and can live in moist soil for several months.

The bubonic form of the disease is impossible to eradicate, because it infects several hundred species of wild rodents worldwide. It can, however, be prevented from spreading to humans by controlling the rat population, particularly in urban areas.

Should we be concerned about pneumonic plague spreading to Bangladesh? That is certainly a possibility, since travellers from affected areas could carry the disease. (There is little possibility, however, that bubonic plague could quickly spread here, since it must be transported by the rodent population.) Some infected persons may

develop bloody diarrhoea resembling shigellosis, and could be admitted to hospital. We should be aware of the possibility of plague in patients with pneumonia coming from India, or of being in close contact with others who have recently come. Tetracycline (or trimethoprim-sulfamethoxazole) should be available to use as prophylaxis when a risk of transmission is strongly suspected. ■

Dr R Bradley Sack

Rural Women Can Contribute Towards A Sustainable Water Supply and Sanitation Project

Community participation is regarded as one of the key approaches to the success of a sustainable water supply and sanitation project. Women's role as managers of water, sanitation, family health, and child care is well-recognized worldwide. A study was carried out at ICDDR,B to assess the involvement of women in a water and sanitation project and its impacts on the health conditions in their society. The study involved women mainly in consultation, decision-making, and monitoring and maintenance of handpumps and latrines. The impacts were compared between children in "intervention" and "comparison" areas. In intervention area, people were provided with handpumps, latrines, and hygiene education, whereas in the comparison area, people did not receive these inputs. In the intervention area, women were directly involved in the site selection of handpumps and latrines, their installation, construction, and maintenance. About 89% of the pumps maintained by women, and 86% of those maintained by project workers were found to be in good working condition. Women supervised the construction of all 754 latrines, and emptied the pits of 65% of the 276 filled-up latrines. Results of the study show that socio-cultural factors are not barriers to women's involvement and performance, provided appropriate approaches for involvement and training are adopted. In general, their performance was satisfactory. The findings have policy implications for effective involvement of rural women in the development of sustainable water supply and sanitation programmes. ■

(Source: Hoque BA, et al. Women's involvement in a rural Bangladesh water and sanitation project. *Southeast Asian J Trop Med Public Health* 1994 Mar;25(1):67-73)

ABSTRACTS of ICDDR,B Publications

Giardia duodenalis

Goldin AJ, Hall A, Sarker RN, Warhurst DC, Miles MA. Diagnosis of *Giardia duodenalis* infection in Bangladeshi infants: faecal antigen capture ELISA. *Trans R Soc Trop Med Hyg* 1993 Jul-Aug;87(4):428-32.

"An enzyme-linked immunosorbent assay (ELISA) to detect antigens of *Giardia duodenalis* in faeces was evaluated as a diagnostic tool by testing faecal samples collected during a cohort study of 229 infants living in an urban slum in Dhaka, Bangladesh. Faecal samples had been

collected at enrolment, on a routine monthly basis, and repeatedly during episodes of diarrhoea and infection with *Giardia*, and a portion of all samples was frozen in saline. A direct smear of all had been examined by microscopy and again after concentrating cysts by ether sedimentation. A total of 2121 of the 4936 samples stored during the 22 months study were tested by the ELISA. After excluding non-specific binding, the sensitivity of the assay was 94.2% and the specificity was 98%. The presence of other parasites, including flagellated protozoa, was not linked to false positive ELISA results. There was a correlation between the number of *Giardia* cysts present and the ELISA optical density. Assuming that the ELISA is 100% sensitive, microscopy detected 92.4% of the infections detected by the ELISA."

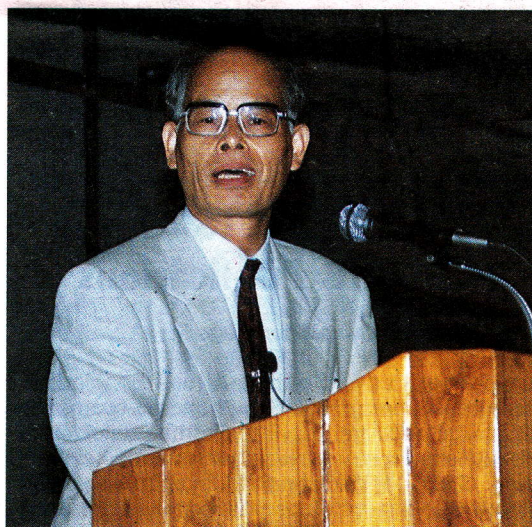
Rotavirus

Clemens J, Rao M, Ahmed F, Ward R, Huda S, Chakraborty J, Yunus M, Khan MR, Ali M, Kay B, van Loon F, Sack D. Breast-feeding and the risk of life-threatening rotavirus diarrhea: prevention or postponement? *Pediatrics* 1993 Nov;92(5):680-5.

"Purpose. To assess the relationship between breast-feeding and the risk of life-threatening rotavirus diarrhea among Bangladeshi infants and children younger than 24 months of age. Design. (continued on page 8)

Overseas Training

In May 1995 the Royal College of Obstetricians and Gynaecologists, and the Liverpool School of Tropical Medicine, UK, are launching a ten-week course for doctors and nurses/midwives. The course will lead to a "Diploma in Reproductive Health in Developing Countries." For further information contact: Course Secretary (DRH), Liverpool School of Tropical Medicine, Pembroke Place, Liverpool L3 5QA, UK.



Fakrul

Prof Hiroshi Itoh, from the Department of Pathology, Kobe University School of Medicine, Chuo-ku, Kobe, Japan, gave a seminar on 'Pathology of Infantile Diarrhoea' on 31 August 1994 at the Sasakawa Auditorium of ICDDR,B.



Saving a million lives each year



Asem Ansari

Mr K Raghunath, Indian High Commissioner to Bangladesh (extreme left) visited ICDDR,B on 25 August 1994. He was taken around the Centre's facilities. In the Molecular Biology Laboratory, he is seen talking to Dr SM Faruque (extreme right) while Prof Demissie Habte, Director of the Centre looks on.

ABSTRACTS of ICDDR,B Publications

(continued from page 7)

Case-control study. Setting. A rural Bangladesh community. **Participants.** One hundred two cases with clinically severe rotavirus diarrhea detected in a treatment center-based surveillance system during 1985 and 1986, and 2587 controls selected in three surveys of the same community during the same calendar interval. **Outcomes.** Cases and controls were compared for the frequency of antecedent breast-feeding patterns. **Results.** Compared with other feeding modes, exclusive breast-feeding of infants was associated with significant protection against severe rotavirus diar-

rhea (relative risk (RR)=0.10;95% confidence interval [CI]=0.03, 0.34). However, during the second year of life, the risk of this outcome was higher in breast-fed than in non-breast-fed children (RR=2.85; 95% CI=0.37, 21.71), and no overall protection was associated with breast-feeding during the first 2 years of life (RR=2.61;95% CI=0.62, 11.02). **Conclusions.** Although exclusive breast-feeding appeared to protect infants against severe rotavirus diarrhea, breast-feeding per se conferred no overall protection during the first 2 years of life, suggesting that breast-feeding temporarily postponed rather than prevented this outcome. While not detracting from efforts to promote breast-feeding to alleviate the burden of diarrhea due to nonrotaviral enteropathogens, our findings cast doubt on whether such efforts will impact on the problem of severe rotavirus diarrhea."

Persistent diarrhoea

Akbar MS, Roy SK, Banu N. Persistent diarrhoea: management in algorithmic approach using a low-cost rice-based diet in severely malnourished Bangladeshi children. *J Trop Pediatr* 1993 Dec;39(6):332-7.

"Easy and successful dietary management of persistent diarrhoea has been a long desired goal. Finding an efficient diet which is economically feasible, and easy to prepare in poor homes of developing countries, has not been easy. A dietary algorithm was followed to test the clinical efficacy of an inexpensive and easy to prepare diet made up with rice powder, egg white, glucose, and soya oil. We studied a cohort of 100 severely malnourished children aged between 3 and 36 months with persistent diarrhoea in Dhaka Shisu (children's) Hospital, Bangladesh, during 1990. Initially on a milk-based diet, 26 children (26%) improved while on a subsequent rice-based diet; 65 (88%) of the remaining 74 children improved within a week, with a mean recovery period of 4 days. Patients who did not improve with the rice-based diet were weaned earlier than those who improved. Nine patients failed to improve on the rice-based diet. They were given a soya formula, and only two improved. The remaining seven patients finally improved when a comminuted chicken diet was given. Eight patients died in the hospital with secondary infections of septicaemia and bronchopneumonia. This study offers a simple and effective algorithm on the management of persistent diarrhoea and also demonstrates the success of a rice-based diet, showing promising and feasible means of management of persistent diarrhoea in patients with severe malnutrition."

[Views and opinions expressed in the articles/abstracts are those of the authors, and not necessarily those of the editors or the publisher.]

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Managing Editor : M Shamsul Islam Khan
Associate Editor : Hasan Shareef Ahmed
Cover design : Asem Ansari

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