

Glimpse Newsletter



International Centre for Diarrhoeal Disease Research, Bangladesh

25 Years of ORS Discovery Celebrated

Few medical success stories are as thrilling as the ICDDR,B's discovery of the Oral Rehydration Solution (ORS). ORS proved a resounding success in 1971 when it slashed cholera death rates from 50% to 3% among thousands of refugees of the War of Liberation that culminated in Bangladesh's independence. Since then, ORS backed with the untiring efforts of ICDDR,B and other international agencies has saved the lives of millions of children worldwide.

With the purpose of celebrating the success of ORS and with the goal of improving the effectiveness of ORS and the efforts of ICDDR,B to save more lives, the Centre is celebrating 25 years of ORS. This world event (celebrations will also occur in Washington this year) will highlight the importance of this hey breakthrough to raise international awareness of the role and cost effectiveness of international health research.

A major component of the celebration was an award-giving ceremony jointly organized by ICDDR,B and the Ministry of Health and Family Welfare, Government of Bangladesh on 5 February 1994 at the International Conference Centre, Dhaka. The ceremony was presided over by Begum Khaleda Zia, Honourable Prime Minister, Government of the People's Republic of Bangladesh. Dr Demissie Habte, Director of ICDDR,B and Mr Serajul Huq, Deputy Minister for Health and Family Welfare, delivered welcome addresses to the assembled dignitaries which included ministers, secretaries, ambassadors, heads of missions, and heads of UN agencies including UNDP, UNICEF, and UNFPA. On behalf of ICDDR,B, the Honourable Prime Minister presented awards to Mr Fazle H Abed, Executive Director, BRAC; Mr Chowdhury Kamal Ibne Yusuf, Honourable Minister for Health and Family Welfare, Government of Bangladesh; Mr James P Grant, Executive Director, UNICEF; Mr James Speth, Administrator, UNDP; Ms Margaret Carpenter, Assistant Administrator, USAID; and Dr James Tulloch, Director, Control of Diarrhoeal and Respiratory Disease Programme, WHO, for their contributions to the development and promotion of ORS worldwide and in the villages of Bangladesh.

After receiving the awards, the recipients



Asem Ansari

While presiding over the award-giving ceremony, Begum Khaleda Zia, Honourable Prime Minister, Government of the People's Republic of Bangladesh, congratulated everyone associated with the discovery of ORS.

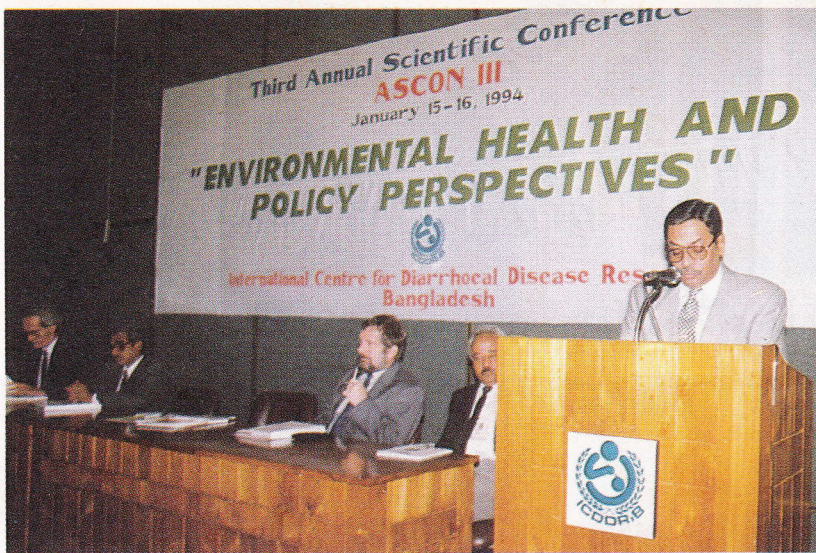
delivered their acceptance speeches. They lauded ICDDR,B for its role and contribution towards health research and development.

Dr Habte presented a commemorative plaque to the Honourable Prime Minister. The Prime Minister, in her address, congratulated everyone associated with the discovery of ORS. She thanked ICDDR,B and called the discovery of ORS "a remarkable advancement in the field of medicine." The Prime Minister was pleased that the Centre's scientists are working ceaselessly to improve this oral saline, to make it more effective and thereby diversify its use. She also thanked NGOs, WHO, and UNICEF for popularizing the use of ORS nationally and internationally. The Prime Minister urged the international community to continue extending their support to the Centre, and assured her government's continued assistance. The Honourable Prime Minister also released a commemorating postage stamp at this function.

[The March-April 1994 issue of *Glimpse* will be dedicated entirely to the celebration of 25 years of ORS.] ■

Inside pages

- * ASCON III ... 2
- * Review of courses ... 4
- * Workshop news ... 5



Mr Chowdhury Kamal Ibne Yusuf, Minister for Health and Family Welfare, inaugurated the Third Annual Scientific Conference on 15 January 1994.

ASCON III Held

The Third Annual Scientific Conference (ASCON III) of ICDDR,B was held on 15-16 January 1994 at the Sasakawa International Auditorium at ICDDR,B, Dhaka. Organization of annual scientific conferences is a major effort by the Centre to pursue its mandate to disseminate and share knowledge in the fields of diarrhoeal diseases and related subjects. This year, the conference focussed on environmental health issues, especially water, sanitation and hygiene practices in the control and prevention of diarrhoeal disease.

Mr Chowdhury Kamal Ibne Yusuf, Honourable Minister for Health and Family Welfare, Government of Bangladesh, inaugurated the conference on 15 January 1994 as the chief guest. The inaugural function was also addressed by Dr Demissie Habte, Director of ICDDR,B; Dr Mohammad Haroonur Rashid,



Prof RGA Feachem, Dean of the London School of Hygiene and Tropical Medicine, UK, delivered this year's annual lecture.

Secretary, Planning Division, Ministry of Planning, Government of Bangladesh; Mr Christopher R Willoughby, Chief of Mission, The World Bank, Dhaka; and Dr Peter Arnold, Counsellor and Head, Swiss Development Cooperation; and Dr Bilqis Amin Hoque, the organizing secretary of the ASCON III. The minister as well as other speakers emphasized on the need for intersectoral linkages in the field of environmental health.

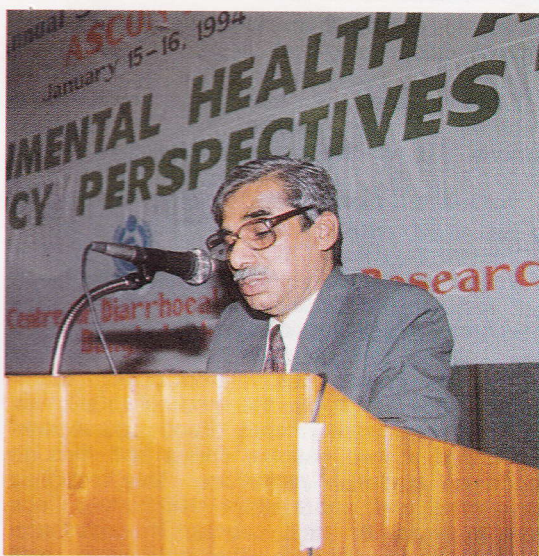
This year's annual lecture, a keynote address entitled "World health: the role of the environment", was delivered by Prof RGA Feachem, Dean, London School of Hygiene and Tropical Medicine, UK. He mentioned that life expectancy has increased throughout the world even at the same level of economic development during 1960-1993. It is attributed to development of research and knowledge



Prof M Shahjahan (extreme right), Vice-Chancellor, Bangladesh University of Engineering and Technology, chaired a symposium on Population, Urbanization and Environmental Health.



Dr Bilqis Amin Hoque, the organizing secretary of the ASCON III, delivered a plenary lecture on diarrhoea prevention: water and sanitation.



Asem Ansari

Dr Mohammad Haroonur Rashid, Secretary, Planning Division, Ministry of Planning, GOB, also addressed the inaugural function.



Fakrul

Dr Amir Hussain Khan, Director of Atomic Energy Centre, Dhaka, actively participated in lively discussions.

in the health sector. He mentioned that the current world is facing or will face in the immediate future, some new challenges, i.e. epidemic of HIV, or resurgence of old diseases, like TB and malaria. He also stressed on new health research to overcome such problems.

In this two-day conference, there were three symposia addressing three areas: a) Diarrhoea prevention: obstacles and opportunities, b) Population, urbanization, and environmental health, and c) Cholera epidemics and disaster management. Speakers were invited from ICDDR,B, government of Bangladesh, and local NGOs. These symposia were followed by four free paper and poster sessions participated by the Centre's scientists. A total of 44 scientific papers on related aspects were

presented at the conference under two broad sub-headings: i) Diarrhoea prevention: issues in water supply and sanitation, and ii) Environmental health in the context of primary health care.

Some 350 delegates and participants from various NGOs, UN agencies, many universities of Bangladesh, UK and USA attended the conference.

In the closing session, a set of draft recommendations were finalized in consultation with the participants. The closing session was chaired by Dr Eimi Watanabe, Resident Representative, UNDP in Bangladesh; Mr Syed Alamgir Farrouk Chowdhury, Secretary, Local Government Division, Ministry of Local Government, Rural Development and Cooperatives, was the special guest. A report presenting the recommendations will be published soon. ■



Fakrul

Prof Robert E Black, Chairman, Department of International Health, The Johns Hopkins University, USA, chaired a symposium on Cholera Epidemics and Disaster Management.



Fakrul

The closing session was chaired by Dr Eimi Watanabe (left), Resident Representative of UNDP in Bangladesh. Mr Syed Alamgir Farrouk Chowdhury, Secretary, Local Government Division, Ministry of Local Government, Rural Development and Cooperatives, GOB, (right) was also present as special guest.

A Review of Courses on Epidemiological Methods in Public Health Organized by ICDDR,B: 1991-1993

ASM Mizanur Rahman and Bejoy R Saha

In recent years, research capacity building has become the major goal of the training programme of ICDDR,B. In 1990, the Programme Coordination Committee (PCC), a mandatory committee of the Centre which coordinates research with Bangladeshi institutes, recommended a training course on epidemiological methods for health professionals of the national institutions to strengthen their ability to undertake health research.

In compliance, the Training Coordination Bureau of ICDDR,B developed a four-week course on **Epidemiological Methods in Public Health**, in collaboration with resource persons drawn from ICDDR,B, and national institutions, including the National Institute of Preventive and Social Medicine, Institute of Epidemiology, Disease Control and Research, Bangladesh Institute of Research for Promotion of Essential and Reproductive Health and Technologies, and Dhaka University.

The course aimed to address the needs of national health professionals and was intended for persons having no formal training in epidemiology and biostatistics, but involved or intending to be involved in epidemiological research. The course objective was to provide an understanding of the basic concepts of epidemiology and skills in quantitative tech-

niques, to enable them to plan, conduct and evaluate epidemiologic studies.

Four volumes of training manuals were prepared for the course by the resource persons. The topics covered were:

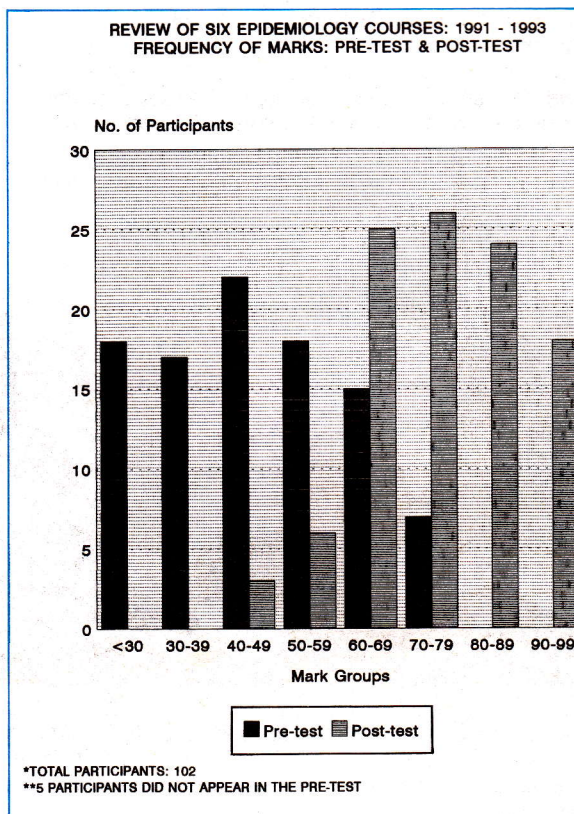
- Volume 1: General epidemiology and epidemiological studies;
- Volume 2: Biostatistics;
- Volume 3: Development of research proposals; and
- Volume 4: Writing of scientific papers.

The first course was offered during July-August 1991, and by the end of 1993, six such courses were offered. Each course was announced in two national dailies and through concerned national institutions. The response was brisk and more than 100 applications were received for each course. The maximum number of participants for a course was planned to be 15 but was increased to 20 to accommodate the demand.

The general principles for selection of participants were:

- a. probability of using the knowledge and skill learnt from the course, and
- b. preference to sponsored institutional candidates.

Though 20 participants were selected for each course, one or two could not join the course, and some participants dropped out of the course for unavoidable circumstances. Thus, a total of 102 participants from six courses successfully completed the course and received certificates (Table).



Course No.	Year	Period	No. of participants (n = 102)
1	1991	July 28 - August 22	14
2	1992	February 23 - March 19	16
3	1992	July 5 - July 30	19
4	1993	January 24 - February 18	19
5	1993	August 1 - August 26	17
6	1993	October 3 - October 28	17

Of the 102 participants, 82% were from different national institutions, including NGOs. The rest were non-institutional candidates. Majority (74%) of the participants were physicians; social science and other biological sciences were the disciplines to which rest of the participants belonged. Sixty-seven of the participants were involved in research-related works. Seven were teachers from the different teaching hospitals.

Teaching methods used included formal lectures, demonstrations, exercises, informal discussions, and field work. Time allotted for theoretical sessions was 40 hours and that for exercise and field work was 80 hours. The participants of each batch were divided into four groups, and each group was required to develop a research proposal.

Each course was evaluated in terms of:

- a) knowledge and skills acquired by the participants, and
- b) the participants' view on the overall course organization.

Pre- and post-test, using the same set of multiple choice questions, was used to make quantitative assessment of the knowledge and skill acquired by the participants during the course. The qualitative assessment of the course curriculum, course schedule, and management of the course was made by the participants through a questionnaire consisting of both closed and open-ended questions.

The figure compares the pre-test and post-test scores obtained by the participants. About 59% of the participants scored less than 50% of total marks in the pre-test; whereas, majority (91%) scored 60-95% marks in the post-test. This indicates that the course objectives were largely attained. Twenty-four research proposals were developed by the participants, some of which are expected to be implemented. An understanding with the working group of the Essential National Health Research (ENHR), Bangladesh, has been made to consider to fund the proposals developed in this course.

Following the first course, each subsequent course was modified, based on the evaluation of the preceding course, to improve the course quality and its usefulness. The modifications included changes in course contents, course schedules and manuals. The course contents underwent a major change following the first course. The time for writing of scientific paper was reduced to two lecture sessions, to accommodate the use of Epi Info computer software for epidemiologic studies, developed by the Centers for Disease Control and Prevention (CDC), Atlanta. An evaluation study is underway to assess the course, in terms of use of the knowledge and skills learned from the course. ■

ICDDR,B-ICOMP-UNFPA Workshop Calls for Operations Research for Improving Family Planning Programme Effectiveness and Enhancing Quality of Care

While a population programme's effectiveness depends on its ability to meet people's needs and provide ever increasing quality of care, operations research is widely recognized as an effective mechanism to enable programmes to achieve these objectives. However, successful translation of operations research into policy and programmatic change is possible only through a partnership between programme managers and researchers.

The Matlab Project, as well as the MCH-FP Extension Project in Bangladesh, is a classic example of a partnership between programme managers and researchers which resulted in the successful implementation of a family planning programme under conditions of pervasive poverty and economic stagnation. Other countries, faced with the challenge to reduce fertility under conditions of poverty and social backwardness, have lessons to learn from these experiences.

ICDDR,B organized an international workshop on "Improving Family Planning Programme Effectiveness and Quality of Care through Operations Research" during 5-14 December 1993. The workshop was sponsored jointly by UNFPA, ICOMP (International Council on Management of Population Programmes), SIDA, and the host ICDDR,B. The aims of the workshop were to: a) discuss and analyze actual interventions tested and scaled-up to the national level to arrive at programme management strategies relevant to the participants' own countries; and b) develop effective mechanisms for linking operations research findings to policy and programmatic changes. The workshop was designed for senior programme managers and policy and operations researchers from Asian countries.

Mr Chowdhury Kamal Ibne Yusuf, Honourable Minister for Health and Family Welfare, inaugurated the workshop on 5 December 1993. The inaugural function, held at the Sasakawa Auditorium of ICDDR,B, was also addressed by Mr S Shamim Ahsan, Secretary of the Ministry of Health and Family Welfare, Prof J K Satia, Executive Director of ICOMP, Mr S K Alok, UNFPA Country Director, and Prof Demissie Habte, Director of ICDDR,B.

In his speech, the Health Minister emphasized on the need for a client-sensitive package of services delivered by local women workers supported by a sound management system to enhance the quality of care of family planning (FP) services and increase the country's contraceptive prevalence rate (CPR). He stated that the FP programme in Bangladesh has been a success as statistics show that the CPR had risen to over 40% by the end of 1990 from a meager 6% in the late 1970s. He felt that the ICDDR,B, through its pioneering project in Matlab and later through its MCH-FP Extension Project, has made important contributions to the success of the country's population programme. The Minister declared that the national FP programme has by now adopted many of the lessons learned at the Matlab field station of ICDDR,B. He dwelt upon the important initiatives taken by the present government to strengthen the programme performance, which included the establishment of a task force to identify hurdles in programme implementation and to find suitable solutions.

The Secretary for Health and Family Welfare, Mr S Shamim Ahsan, also lauded the efforts of ICDDR,B towards evolving a successful model for extending innovative strategies of Matlab through the MCH-FP extension project. He mentioned that the pilot-test of door-step delivery of injectable



The participants posed for a group picture.

Fakrul

contraceptives undertaken jointly by the government and the ICDDR,B can bring useful results before going for a full-scale nationwide endeavour of this kind.

Prof Satia of ICOMP thanked ICDDR,B for being an important co-host for the workshop and felt that the participating experts could share valuable experiences of their own in their endeavours to implement operations research models for improving family planning programme effectiveness in their own settings.

A total of 16 participants from 9 countries attended the workshop, while 5 other resource persons from Bangladesh and abroad delivered lectures and keynote presentations. The workshop plan included classroom sessions in Dhaka, and field visits to Matlab in Chandpur and Abhoynagar in Jessore district.

In Matlab, the participants had the chance to engage in conversations with the clients, the community health workers, the programme managers, and others involved in the project.

A 3-day field trip to Abhoynagar was arranged to expose the participants to the process of transferring the Matlab experience to national programme under the MCH-FP Extension Project.

Lessons learnt by the participants were reflected in their group presentations at the end of the field visits.

Comparison of the findings and lessons learnt from Matlab and the Extension projects were done on the last day of the workshop. The main lesson from the two projects is that an increase in contraceptive prevalence rate and a reduction in fertility in a poor socio-economic setting is possible through an effective programme management based on sound operations research findings.

Concluding the workshop, participants gave recommendations to ICDDR,B on ways to

further improve implementation and evaluation of the projects and ways of disseminating the findings from them. In his concluding address, Mr AKM Rafiquzzaman, Director General (FP), stressed the importance of policy relevant research, and thanked the participants for their suggestions. ■

Statistical Training in the USA

1994 - 1995 Training Program Highlights:

- * Short-term (1 to 8 weeks) applied training in:
Geographic Information Systems, Data Dissemination, Computer Technology, Management, Sampling, Economic Statistics, and Population Statistics.
- * State-of-the-art hands-on microcomputer technology for all trainees.

For additional information contact: Chief, International Statistical Programs Center, U.S. Department of Commerce, Bureau of the Census, Washington, DC 20233, USA. ■

U.S. University Offers Degree Course in India

To address the health and population requirements of developing countries, the University of North Carolina at Chapel Hill, U.S.A. in collaboration with Indian Institute of Health Management Research, at Jaipur, India has started a training programme. The programme admits only mid-career professionals on competitive basis and provides degree of Masters in Public Health and Masters in Healthcare Administration. For further information, contact: Coordinator, The Executive Programme in Health and Population for Developing Countries, Indian Institute of Health Management Research, 1 Prabhu Dayal Marg, Sangarner Airport, Jaipur 302001, India. ■

ABSTRACTS of ICDDR,B Publications

Child growth

Pucilowska JB, Davenport ML, Kabir I, Clemmons DR, Thissen J-P, Butler T, Underwood LE. The effect of dietary protein supplementation on insulin-like growth factors (IGFs) and IGF-binding proteins in children with shigellosis. *J Clin Endocrinol Metabol* 1993 Dec;77(6):1516-21.

"Nutrient deficiency causes growth failure and decreases serum insulin-like growth factor-1 (IGF-1) concentrations. Because IGFBPs modulate the concentrations and availability of IGFs in serum, IGF-binding proteins (IGFBPs) were measured along with IGF-1 and IGF-II before and after 21 days of refeeding in 22 undernourished Bangladeshi children (2-4 yr of age) with shigellosis. The effects of a 150 Cal/kg. day diet with a normal protein (6%; n=10) or high protein (15%; n=12) content were studied. The results were compared with those of 25 age-matched healthy American children (controls). Body weight gain was better in patients receiving the high protein diet than in those receiving the normal protein diet. In both groups, initial IGF-1 (32 ± 6 and 24 ± 7 mg/mL; mean \pm SD) and IGF-II (177 ± 15 , 174 ± 45 ng/mL) concentrations were low compared to controls (100 ± 12 and 542 ± 29 ng/mL, respectively; $p < 0.007$). After refeeding, IGF-1 increased to 160 ± 26 ng/mL on the normal protein diet and to 322 ± 41 ng/mL on the high protein diet, exceeding values in controls ($p < 0.007$). IGF-II increased more than 2-fold on each diet ($p < 0.007$), reaching control values. IGFBP-2 concentrations before refeeding were twice those in controls (750 ± 200 vs. 317 ± 33 ng/mL; $p < 0.007$) and normalized after refeeding in the high protein group (288 ± 32 ng/mL; $p = \text{NS}$), but remained elevated in the normal protein group (526 ± 77 ng/mL; $p < 0.007$). IGFBP-3 levels before refeeding were low and returned to normal on each diet. IGFBP-3 proteolytic activity in serum was initially increased and declined on the high protein diet. In conclusion, protein content in the refeeding diet differentially affects IGFs and IGFBPs in young undernourished children with infection. IGF-1 and IGFBP-2 seem to be particularly sensitive to dietary protein alterations. We speculate that an increase in IGF-1 concentrations, normalization of IGFBP levels, and a decrease in IGFBP-3 proteolytic activity in serum may all be involved in the improved recovery and catch-up growth observed with the high protein diet."

Kabir I, Malek MA, Rahman MM, Khaled MA, Mahalanabis D. Changes in body composition of malnourished children after dietary supplementation as measured by bioelectrical impedance. *Am J Clin Nutr* 1994 Jan;59(1):5-9.

"Body composition was measured with bioelectrical impedance in 35 malnourished

children aged 24-59 mo to investigate the effect of a 3-wk feeding supplementation. Twenty children received a high-protein diet with 15% of total energy as protein, whereas 15 children received an isoenergetic standard-protein diet with 7.5% of energy as protein. Bioelectrical impedance analysis and anthropometry were done before and after 21 d of dietary supplementation. The children fed the high-protein diet gained significantly more body weight than those receiving the standard-protein diet (1.33 ± 0.54 vs 0.88 ± 0.47 kg, $p < 0.02$). The total body water and fat-free mass determined by bioelectrical impedance analysis showed that the group fed the high-protein diet increased significantly more (0.92 vs 0.58 kg) than those on the standard-protein diet ($p < 0.02$). Results of this study suggest that feeding a high-protein diet accelerates catchup growth and restores the reference body composition in children recovering from malnutrition."

Fertility

Chowdhury AI, Bairagi R, Koenig MA. Effects of family sex composition on fertility preference and behaviour in rural Bangladesh. *J Biosoc Sci* 1993;25:455-64.

"The effects of family sex composition on fertility preferences and behaviour during the period 1977-88 are examined using longitudinal data from Matlab, Bangladesh. The sex composition of living children was found to be systematically related to fertility preferences and behaviour, with a higher number of sons at each family size associated with a higher percentage of women wanting no more children, a higher percentage currently using contraception, and lower subsequent fertility. However, the highest percentage wanting no more children, using contraception and having lowest subsequent fertility was found among women who already had one daughter as well as at least one son. The effects of sex preference on fertility preferences and behaviour were measured using an index developed by Arnold (1985). The results suggest that while sex preference remained largely unchanged during the study period, its effect on contraceptive use declined and its impact on actual fertility remained modest and fairly stable."

(Continued on page 8)

Forthcoming International Meetings and Conferences

6TH INTERNATIONAL CONGRESS FOR INFECTIOUS DISEASES, Prague, Czech Republic, 26-30 April, 1994. For further information, contact: WKV-Vienna Congress Management Co., c/o. Austropa-Interconvention, Friedrichstrasse 7, A-1043 Vienna, Austria (Fax: 43-1 58800-133).

17TH ALL NEPAL MEDICAL CONFERENCE, Butwal, Lumbini Zone, Nepal, 8-11 February 1995. Conference theme: DISASTER AND HEALTH PERSONNEL. For further information, contact: Organising Secretary, 17th All Nepal Medical Conference, Nepal Medical Association, Lumbini Zonal Hospital, Hospital Road, Butwal, Nepal (Fax: 977 73 20465).



Saving a million lives each year

ABSTRACTS of ICDDR,B Publications

(Continued from page 7)

Breast-feeding

Ahmed F, Clemens JD, Rao MR, Khan MR, Haque E. Initiation of food supplements and stopping of breast-feeding as determinants of weaning shigellosis. *Bull WHO* 1993;71(5): 571-8.

"The association between the period elapsed since weaning and the risk of shigellosis was assessed between 1 November 1987 and 30 November 1989 for a cohort of 1085 Bangladeshi children aged <3 years. The children were followed for 1 month after exposure to *Shigella* spp. in their residential neighbourhoods, and the 268 who developed microbiologically confirmed (n=118) or clinically presumptive (n=150) shigellosis were compared with the 817 control children who did not develop either syndrome. No increase in risk was noted among breast-fed infants who received food supplements within the previous 3 months compared with those who had received supplements for longer (adjusted odds ratio (OR)=1.2; 95% confidence interval (CI)=0.4-3.0). However, compared with breast-fed children, non-breast-fed children had an increased risk (adjusted OR=2.0; 95% CI=1.3-2.9; p<0.001), which was largely attributable to a substantially increased risk in the 3 months after stopping breast-feeding (adjusted OR=6.6; 95% CI=2.9-14.6; p<0.001). The early post-cessation risk was equivalent for confirmed and presumptive shigellosis, but was particularly pronounced among the severely malnourished (adjusted OR=10.2; 95% CI=3.1-33.3; p<0.001). This complex temporal pattern of risk highlights the need for precise definitions of weaning to facilitate identification of children at high risk for invasive diarrhoeal syndromes."

Providencia alcalifaciens

Mathan MM, Mathan VI, Albert MJ. Electron microscopic study of the attachment and penetration of rabbit intestinal epithelium by *Providencia alcalifaciens*. *J Pathol* 1993 Sep; 171(1):67-71.

"Ileae of adult rabbits with removable ileal ties (RITARD model) that developed diarrhoea and ileal loops of adult rabbits after inoculation with *Providencia alcalifaciens*, isolated from two patients with diarrhoea, were studied by transmission electron microscopy for enterocyte-bacterial interactions. Two modes of entry of bacteria into epithelial cells were seen: one directly by endocytosis associated with polymerization of cytoskeletal components and the other by disruption of tight junctions with entry into and proliferation in intercellular spaces." ■

ORS Usage Study - 1992

Social Marketing Company, a promoter of the oral rehydration therapy (ORT) in Bangladesh, conducted a study in 1992 to measure the level of awareness and usage pattern of ORS/ORT among the respondents both in the urban and rural areas. Data were derived from the randomly selected samples (n=1,339) using questionnaire.

Results of the study showed that half of the respondents administered both ORS and drug to the patients. Only 19% provided only ORS, whereas 11% provided just drug. It was also observed that homeopathic treatment played a role in the diarrhoeal episode, particularly in the rural areas. A substantial number of respondents (69%) believed that oral saline was not the only treatment for diarrhoea. They stated that doctors' advice (35%) was required and drugs (45%) should be given with ORS during diarrhoea. A few believed that ORS should be given at initial stage (7%), and it does not stop loose motion (nationally 9% and 12% in rural strata). Results of the study also revealed that about half of the mothers/respondents were either completely ignorant or partly aware about various concepts related to ORS preparation, dosage, function, etc.

[Source: Hasan K. ORS usage study-1992. Dhaka: Social Marketing Company, 1993. 46 p. (In-house research report # 2/93)] ■

[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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