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KNOWLEDGE FOR
GLOBAL LIFESAVING SOLUTIONS

ICDDR,B mission in Zimbabwe

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ICDDR,B team helps tackle cholera epidemic in Zimbabwe



Two ICDDR,B clinicians at the bedside of a cholera patient in Zimbabwe

In response to a request from WHO's Global Outbreak Alert and Response Network (GOARN) for technical assistance of ICDDR,B, the Centre sent a team of experts to Zimbabwe for cholera epidemic management. The team was led by Dr Pradip Kumar Bardhan, Head of the Special Care Unit of our Dhaka Hospital. Other members of the team included clinicians Dr Azharul Islam Khan and Dr Ramendra Nath Mazumder, epidemiologists and physicians Dr Anwarul Iqbal and Dr Siraj Uddin Ahmed, and laboratory scientist Dr Md Sirajul Islam. This multidisciplinary team left Bangladesh for Zimbabwe on 10 January 2009 and joined the WHO team and a group of medical personnel and support staff from the Zimbabwean Ministry of Health already on the ground.

Initially, a UNICEF source reported

13,960 cholera cases in Zimbabwe since August 2008. The UNICEF report described the situation in Zimbabwe as "characterized by acute humanitarian needs and more protracted, chronic vulnerabilities." The outbreak affected nearly 70% of districts in the country and spread to neighbouring countries. According to a Red Cross report, as of 23 December 2008, more than 1,500 people had died in the epidemic. The situation became worse following the onset of the rainy season in Zimbabwe and travel relating to Christmas holiday. According to the latest report in mid-March, about 70,000 people have been affected, of whom 4,000 died. Earlier reporting by the United Nations and WHO estimated that there had been 40,000 cases with 2,755 deaths. This rapid change in the statistics illustrates the speed of the outbreak and severity of

the disaster. The death toll also indicates a high case-fatality rate. The ICDDR,B team attributed this to factors, such as the lack of trained manpower, lack of infrastructure, contaminated water supply, and poor sanitation.

The ICDDR,B team played a significant role in managing the cholera epidemic in Zimbabwe and was requested by the WHO Country Representative to extend their stay in Zimbabwe for an additional week. In addition to clinical case management, ICDDR,B experts assisted with bedside teaching, formal lecture, outbreak investigation, isolation and characterization of the organisms causing the outbreak, and drug resistance patterns of these organisms. The team recommended better standards of treatment, suggesting less use of IV fluids, more use of ORS, better

dehydration assessment, and prudent use of antibiotics. The ICDDR,B team was instrumental in updating treatment guidelines and management flowcharts in use now in Zimbabwe.

A second call from WHO came in early March 2009 as the situation worsened again. The Centre responded with a three-member team comprising clinician Dr Ramendra Nath Mazumder, laboratory scientist Dr Sirajul Islam and epidemiologist and physician Dr Siraj Uddin Ahmed. This new team left for Zimbabwe on 11 March. Dr Pradip Kumar Bardhan and Dr Azharul Islam Khan were excluded from the second team because their presence was essential for the management of an earlier-than-usual increase in patients suffering from diarrhoea at our Dhaka Hospital.

ICDDR,B is proud to have assisted the World Health Organization in its response to the serious epidemic in Zimbabwe. The Centre, with its decades-long expertise in epidemic control and the management of diarrhoeal disease outbreak, stands ready to assist when serious cholera epidemics occur in Bangladesh or elsewhere. Over the past two decades, the Centre has successfully assisted in cholera outbreaks in Ecuador, Peru, Cambodia, Mozambique, Yemen, and Zaire. WHO's call for technical assistance in epidemic control from ICDDR,B highlights the importance of the Centre as a responsive and professional world resource.

WHO Director General Dr Margaret Chan, in a recent meeting of the WHO Executive Board, thanked Bangladesh Minister for Health and Family Welfare Prof AFM Ruhul Haque for allowing the ICDDR,B team to work in Zimbabwe with the WHO group of experts. ICDDR,B is pleased to note that not just the Centre but also Bangladesh has been recognized for this humanitarian service in Zimbabwe. ■

HDSS-Matlab Model Adopted in Other Sites

The Matlab Model of longitudinal data collection on all households and individuals in a geographically-defined area under the Health and Demographic Surveillance System has been rapidly expanding to other field sites of ICDDR,B, i.e. Abhoynagar, Mirsarai, Chakaria, and Kamalapur.

The Matlab field station of ICDDR,B, established in 1963, initiated its Demographic Surveillance System (DSS) in 1966 and was later renamed Health and Demographic Surveillance System (HDSS). What was once an obscure and remote rural area of Bangladesh is now globally known to the community of scientists as a vast field laboratory for health and population research. This databank has longitudinal information on more than two hundred thousand people. The meticulous record-keeping of vital events, like birth, death, marriage, in- and out-migration, and illness episodes among all people in a particular area provides health and population scientists a unique opportunity to undertake studies without manipulation of new variables. This implies that: by choosing specific parameter(s) from the lifetime events of the individuals as independent variable(s), it is possible to draw conclusions on the dependent variable(s) in studies designed to see demographic and socioeconomic trends and to determine a cause-and-effect relationship without collection of fresh data. Another advantage of these HDSS data is that the impact of interventions can be validated using virtually a case-control design since the site is divided into two areas: (a) the government service area where people receive usual government services only and (b) the ICDDR,B service area where people receive

extra services provided by all ICDDR,B interventions. The areas also are often referred to as 'comparison area' and 'intervention area'.

INDEPTH, a Ghana-based network of 37 HDSS sites in 19 countries in Asia, Africa, Central America, and Oceania, recognized HDSS-Matlab as the oldest and the largest of its kind in the world. Health and population studies conducted all over the world have used the Matlab databank more than from any other HDSS sites with INDEPTH membership.



HP iPAQ Pocket PC

For many years, data have been collected manually by Community Health Research Workers through door-to-door visits using prescribed paper forms that constituted a register. As technology advanced, the system was computerized and collected data, after necessary cleaning, were fed into PCs. A newly-introduced device called a Personal Digital Assistant (PDA) has made the job easier and faster. PDAs are essentially tiny handheld computers (HP iPAQ Pocket PCs) capable of scanning paper forms and directly entering information into PCs via USB port.

Another recently introduced device, the Kodak i40 series/i1200 scanning system, has eliminated the process of manual data entry altogether. This system has revolutionized the speed of data collection and ensured the quality of data and their analyses. However, this requires redesigning some of the paper forms to enable the device to recognize text. Data entered through this device are compatible with Microsoft Excel, Database Format, and export of these data to Open Database Connectivity Format facilitates further analysis using several other standard programs. This has also substantially reduced the data management costs and made the job of field workers easier for those trained in these exciting new technologies.

as the provision of family-planning services, reproductive healthcare, zinc trial, surveillance and clinical services for dengue and malaria, community development through self-help, operations research on the impact of micro-credit, research on poverty and health, etc. the sites have by now established health and demographic surveillance systems of their own with remarkable progress. One indicator of this success in longitudinal data collection following the Matlab model is the earning of INDEPTH memberships by Abhoynagar, Mirsarai, and Kamalapur sites in 2001 and by Chakaria in 2007.

It is noteworthy that five of the 37 field sites (in 19 countries) with INDEPTH membership belong to ICDDR,B. Proliferation and

Hib Vaccine Included in Bangladesh EPI and Rotavirus Vaccine in the Pipeline

The Expanded Programme on Immunization of the Government of Bangladesh has approved inclusion of Hib vaccine in its routine vaccinations for children. This, being a pentavalent conjugate vaccine, promises to prevent not only pneumonia and meningitis but also diphtheria, tetanus, pertussis, and hepatitis B.

The government decision was declared on 15 January 2009 by Professor AFM Ruhul Haque, Hon'ble Minister for Health and Family Welfare. Secretary of the Ministry Mr AMM Nasir Uddin noted: this was an important step-forward in preventing more childhood diseases in Bangladesh and in achieving Millennium Development Goal 4 of reducing childhood mortality.

ICDDR,B, in collaboration with Dhaka Shishu Hospital and other partners, contributed greatly in the process of policy decision-making by disseminating results of research and surveillance on the efficacy of this new vaccine to the Bangladesh Ministry of Health and Family Welfare. The Centre also conducted an efficacy trial on the vaccine among 68,000 children of Dhaka city during 2000-2003 in partnership with Dhaka Shishu Hospital, Johns Hopkins University, Dhaka City Corporation, and EPI. The Centre's groundwork leading to this government decision also included a collaborative surveillance in mid-2004 in seven



Kodak i40 scanning system

Using HDSS-Matlab as a model, several other ICDDR,B field sites have started similar surveillance systems at various times. The Abhoynagar field site of Jessore district was a pioneer in this regard. The site initiated its DSS/HDSS longitudinal data collection in 1982, followed by Mirsarai of Chittagong district in 1994, Chakaria of Cox's Bazar district in 1999, and Kamalapur urban site at Dhaka in 2003.

Although these sites were initially set up for activities other than health and demographic surveillance, such

development of infrastructural facilities, including training of field workers in HDSS data collection using the latest technologies and constant updating of software for analyses of sociodemographic data, are among the priorities of the Centre's agenda also. Using the Matlab data, Bangladesh has, over the decades, continued to evolve as a hub of health and population research relevant to the developing world, and the enrichment of HDSS data archives in other ICDDR,B field sites should enhance the importance and usefulness of the Centre's HDSS in the future. ■



hospitals and two field sites to assess the burden of Hib-related diseases in the country. The surveillance continued until 2007 when more than 22,000 children had been enrolled. Laboratory analyses of blood samples revealed that Hib is one of the three most common organisms, and Hib infection is more prevalent in the first two years of life.

Haemophilus influenzae type b (Hib) is a bacterial pathogen that causes severe pneumonia and meningitis. With widespread use of ORS and protocolized management, diarrhoea is no longer a fatal health problem in Bangladesh but pneumonia is now the number one killer of children in Bangladesh. Each year about 55,000 children die of pneumonia in this country, and more than two million children die globally. ICDDR,B's study revealed that 34% cases of pneumonia may be averted with Hib vaccination which will save about 20,000 lives annually. Professor Samir Saha, a senior microbiologist at Dhaka Shishu Hospital and a pioneer in Hib research commented: inclusion of this new vaccine in the EPI would prevent disability and death due to meningitis in Bangladesh.

With financial assistance from GAVI Alliance, the Government of Bangladesh is now in the process of collecting over 27 million doses of this vaccine for use during 2009-2010. Initiatives for production by local pharmaceutical companies are also underway which will make the vaccine available at an affordable price.

ICDDR,B's collaboration with Dhaka Shishu Hospital, Ministry of Health and Family Welfare and other stakeholders will continue for impact studies and other research activities on Hib vaccine as a new entry into the EPI.

* * *

Two vaccines for rotavirus are currently being tested for probable inclusion in the EPI in Bangladesh. Rotarix manufactured by GlaxoSmithKline and Rotateq by Merck have been proven efficacious in preventing rotavirus-associated diarrhoea and have been licensed in many countries, with inclusion in their routine EPI schedules. ICDDR,B is now involved in similar groundwork as was done for Hib vaccine to draw attention of the Government towards inclusion

of the rotavirus vaccine(s) in the routine EPI. With funds from USAID/WHO/NVPO, the Centre started its trials in 2001 at Mirpur, Dhaka, to examine the efficacy and safety of Rotarix. With encouraging results from the Phase I study, ICDDR,B carried out the Phase II study in the same site during 2005-2006 with funding from PATH. Along with the evaluation of immune response and side-effects, the Phase II study was intended also to see if the vaccine has any kind of interference when administered with oral polio vaccine (OPV). Results, as published recently in the renowned journal *Vaccine*, showed that concomitant administration of Rotarix and OPV does not have any adverse effects in infants. Phase III study on Rotateq and Phase IV study on Rotarix are ongoing in field sites, including Matlab, under the guidance and supervision of ICDDR,B scientists.

Since no treatment for diarrhoea due to rotavirus is available yet, prevention through vaccination is the best strategy to combat the virus. The prevalence of rotavirus diarrhoea worldwide is about 17% of the total episodes of diarrhoea leading to 475,000 to 580,000 deaths a year. In Bangladesh, the situation is even worse. ICDDR,B hospitals receive and treat around 40,000 children with rotavirus diarrhoea every year. Consequence of rotavirus diarrhoea is more serious than that of other diarrhoeas. One child in every 390-660 dies by the age of five years due to complications of rotavirus infection.

Inclusion of any or both of the above two vaccines for rotavirus in the EPI may substantially reduce the burden of diarrhoeal disease in the country. However, before a recommendation is sent to the Government of Bangladesh final analyses of the results of ongoing studies must be completed. ■

ASCON XII held successfully

ICDDR,B held its 12th Annual Scientific Conference (ASCON XII) on 9-12 February 2009 at the Bangladesh-China Friendship Conference Centre in Dhaka, with more than 500 participants. To explore how health systems in the country and other developing nations can be strengthened and quality of services be improved based on the needs of the users, the theme of this year's ASCON was "Health Systems Research: People's Needs First."

In addition to those from ICDDR,B and other institutions of Bangladesh, prominent researchers from Australia, Canada, USA, Germany, Thailand, Philippines, India, Iran, Pakistan, Ethiopia, Uganda, Nepal, and Nigeria attended the Conference to share their recent research findings with recommendations both through oral presentations and posters. With more than 100 oral and 70 poster presentations, the Conference yielded a significant outcome to provide guidelines to set future strategies for user-oriented health-delivery systems in the developing world.

Centre's alumnus Mr Abul Kalam Azad, Hon'ble Minister for Information and Cultural Affairs, Government of the People's Republic of Bangladesh, inaugurated the Conference on 9 February. He reminisced about his good days at ICDDR,B and assured continued support of his government to the Centre and its activities, especially development of infrastructural facilities for clinical services to diarrhoea patients free of charge. He also applauded the Centre's special arrangements of opening make-shift treatment units with tents and bamboos to accommodate the extra patient-load during floods and other disasters



Mr Abul Kalam Azad, Hon'ble Minister for Information and Cultural Affairs, Government of the People's Republic of Bangladesh, presenting his inaugural speech on the opening day of ASCON XII

causing diarrhoeal disease in the country.

The inaugural ceremony was also graced with the presence of Dr Richard SW Smith, Director of Ovations Chronic Disease Initiative and former Editor of the British Medical Journal, who presented the keynote speech. During the Conference, he also conducted three special sessions on technical writing and editing titled "Getting Published", of which one was dedicated to discussions on ethical issues in publications.

Professor Alejandro Cravioto, in his welcome address, greeted the participants and wished the expatriates a comfortable stay in Dhaka during the Conference. Dr Tracey Pérez Koehlmoos, Head of the Centre's Programme on Health and Family Planning Systems Research and Deputy Chair of the ASCON XII Scientific Committee introduced the Chief Guest and the keynote speaker to the audience.

In technical sessions, the central theme was subdivided into six building blocks: Service Delivery, Information and Evidence, Medical Products and Technologies, Health Workforce, Health Financing, and

Leadership and Governance. Each technical session started with plenary speeches. The plenary speakers included: Professor Dr Hilary Standing, Fellow, Institute of Development Studies, University of Sussex, UK and Visiting Professor, James P Grant School of Public Health, BRAC University, Bangladesh and Adjunct Scientist of ICDDR,B; Dr Faruque Ahmed, Director, BRAC Health Programme (with Professor Dr Shah Monir Hossain, Director General, Directorate General of Health Services, Bangladesh in the chair); Professor Sandra Oliver, Professor of Public Policy, Social Science Research Unit and EPPI-Centre, Institute of Education, University of London, UK; Dr Zakir Hussain, Member, Technical Committee, Health Matrix Network, Bangladesh (with Dr Peter Kim Streatfield of ICDDR,B in the chair); Dr Sikder M Zakir, President and CEO, Telemedicine Reference Center Ltd, Bangladesh; Professor Anwar Islam, Director and Professor, James P Grant School of Public Health, BRAC University (with Professor David Canning, Professor of Economics and International Health, Harvard School of Public Health, USA, in the chair); Dr

David Peters, Associate Professor and Deputy Director for Academic Programmes, Johns Hopkins Bloomberg School of Public Health, USA; Mr Zafrulla Chowdhury, Director, Gonoshasthya Kandra, Bangladesh (with Dr Abbas Bhuiya of ICDDR,B in the chair); Dr M Kent Ransom, Technical Officer, Alliance HPSR, World Health Organization and Honorary Lecturer, Health Policy Unit, London School of Hygiene & Tropical Medicine, UK; Dr Tania Dmytrachenko, Senior Health Economist, World Bank and Mr Jean-Olivier Schmidt, Programme Coordinator, Health Programme, GTZ (with Mr Dirk Gehl, Project Manager, Kreditanstalt für Wiederaufbau, Bangladesh in the chair).

Welfare, Bangladesh; Ms Margarita Clark, Deputy Country Director-Programs, Save the Children-USA, Bangladesh; Dr ABM Jahangir Alam, Director PHC and Line Director, ESD, Directorate General of Health Services, Bangladesh; Dr Jahir Uddin Ahmed, Acting Director General, Family Planning Association of Bangladesh; Dr Abdul Mannan, Joint Chief, Planning Wing, Ministry of Health and Family Welfare, Bangladesh; Professor Abdul Hannan, Director, Institute of Public Health, Bangladesh; Brig. Gen. Sarker MA Matin, Director, Bangladesh Drugs Administration; Dr Md Aminul Islam, Director, Maternal and Child Health, Bangladesh; Dr Khairul Islam, Country Representative,

Sheikh Mujib Medical University, Bangladesh; and Prof Provat Chandra Barua, Line Director, MPDC, TB & Leprosy, Directorate General of Health Services, Bangladesh.

Although ASCON was initially begun as an annual event of ICDDR,B to disseminate its own research findings, the above list of external participants make it clear that the event has emerged as an international forum for sharing knowledge and lessons learnt for improvement of health interventions undertaken anywhere in the developing world.

In addition, this sharing of knowledge and experiences generates new ideas for further research to identify factors that affect the governance, service provision, organization, financing, and the use of healthcare.

Over the last few decades, operations research on health systems has placed emphasis on exploring people's needs while undertaking interventions for health-service delivery. ICDDR,B played a leading role in this regard through launching of its Programme on Health and Family Planning Systems Research. ASCON XII outcome will be instrumental in designing innovative strategies to improve the health systems based on the needs and satisfaction of the users, reducing inequalities in healthcare, and increasing the efficiency and sustainability of service-delivery agencies.

As is done in every ASCON, an expert panel of judges chose the best oral presentation and the best poster presentation for rewarding the presenters. This year Shehrin Shaila Mahmood of ICDDR,B and E. Ekirapa-Kiracho from Uganda jointly received the best oral presentation award. Two ICDDR,B scientists: Jasmin Khan and Nurul Alam jointly received the best poster presentation award. ■



Dr Richard SW Smith, Director of Ovarian Chronic Disease Initiative and former Editor of the British Medical Journal, presenting the keynote speech

Other distinguished persons who chaired the various Scientific Sessions were from outside the Centre. They included: Mr Juan Carlos Negrette, Chief of Party, Smiling Sun Franchise Programme, Bangladesh; Dr Atia Hossain, Senior Advisor in Health Economics, GTZ, Bangladesh; Ms Jennifer Finch, Senior Program Manager, AusAID, Bangladesh; National Professor Brig (Rtd) Abdul Malik, Chairman, National Heart Foundation of Bangladesh and former Advisor, Ministry of Health and Family

Water Aid Bangladesh; Dr Fahmida Khatun, Additional Director (Research), Centre for Policy Dialogue, Bangladesh; Dr Sultana Khanam, Former Director, Health Systems Development, WHO/SEARO, India; Dr Farah Mahjabeen Ahmed, James P Grant School of Public Health, BRAC University, Bangladesh; Dr Ahmed Al-Sabir, Director (Research), National Institute of Population Research and Training, Bangladesh; Prof ASM Bazlul Karim, Professor of Paediatrics, Bangabandhu