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no side-effects**

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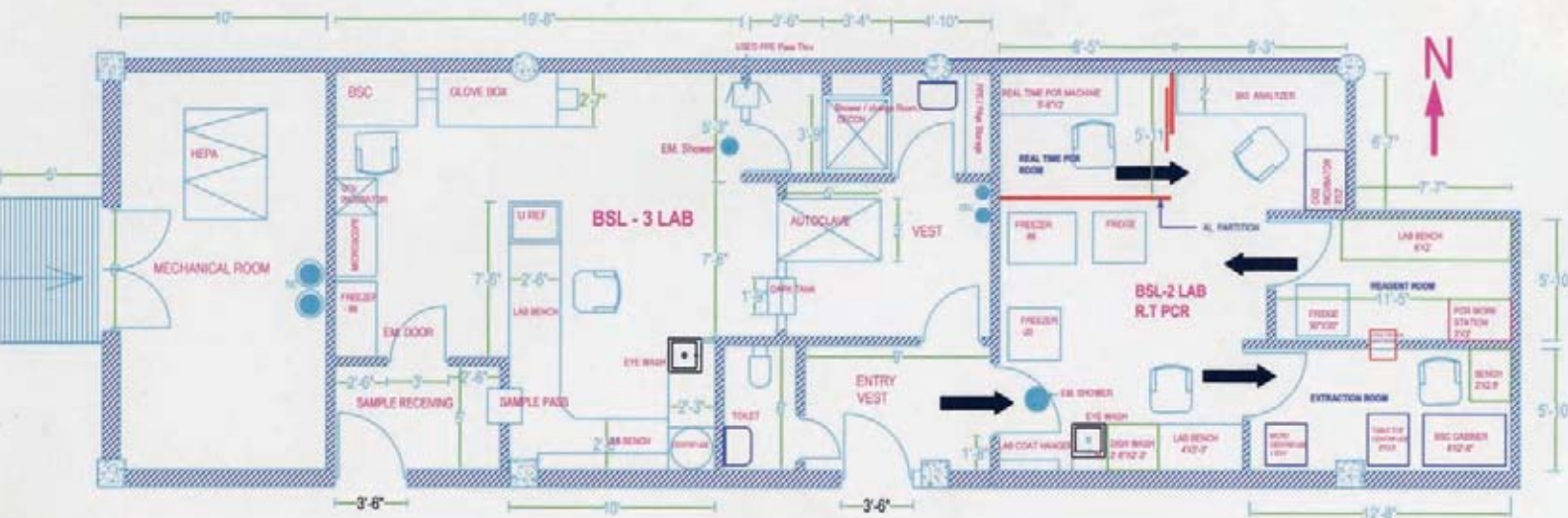
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An engineering drawing of the biosafety laboratory at ICDDR,B

Biosafety level 3 laboratory being established at ICDDR,B

With a high incidence of influenza and other dangerous pathogens in densely-populated Bangladesh, ICDDR,B is in the process of establishing a biosafety level 3 (BSL 3) laboratory with active collaboration of the Government of Bangladesh, the US-based Centers for Disease Control and Prevention (CDC) and National Institutes of Health (NIH).

ICDDR,B has conducted population-based surveillance for influenza in its Kamalapur study sites since 2004. Until 2007, the Kamalapur surveillance was the only surveillance for human influenza operational within Bangladesh. ICDDR,B, in collaboration with the Institute of Epidemiology Disease Control and Research of the Government of Bangladesh, established influenza surveillance at 12 hospitals throughout the country beginning in April 2007.

In March 2007, a large outbreak of influenza A (H5N1) was identified in poultry farms throughout Bangladesh. Because of the high case-fatality associated with the H5N1 strain, it can only be cultured safely in a laboratory environment designed to protect laboratory workers and the general community.

The existing Virology Laboratory of ICDDR,B collects and incubates nasopharyngeal wash samples from children in the Kamalapur neighborhood of Dhaka city. In November 2007, real-time reverse transcriptase polymerase chain reaction (RT-PCR), a rapid method for diagnosis of all kinds of influenza viruses, including those other than the four well-known, highly-pathogenic viruses (H3N2, H1N1 strains of

influenza A and Shanghai and Hong Kong strains of influenza B) was added to the laboratory. This means that the ICDDR,B's Virology Laboratory could immediately provide diagnostic results for the national hospital influenza surveillance system.

The Government of Bangladesh, apprised of the preliminary findings of the high incidence rate of influenza due to the climatic conditions bolstered with a high population-density, requested major investment in upgrading diagnostic capacity of laboratories and training as part of the national pandemic preparedness plan with active support from the World Health Organization and the UN Food and Agriculture Organization. A new strain of highly-pathogenic avian influenza A (H5N1) has been circulating among birds in East-Asian countries since 1966 and, hence, Bangladesh's national pandemic plan explicitly calls for "a multi-sectoral response to prevent the spread and minimize the impact of outbreak and a pandemic." The plan includes a comprehensive surveillance for influenza from the national down to the community level by involving all government, NGO and private bodies, civil society, elected representatives, health professionals, and business bodies.

For the above to be accomplished, the country requires a biosafety level 3 laboratory to permit culture and full characterization of H5N1 viruses and other dangerous pathogens. ICDDR,B, having a substantial knowledge-base on the studies of microorganisms, will house a 1,000-square feet laboratory capable of: (a) evaluating over 10,000

specimens per year, (b) undertaking surveillance at 12 selected sites throughout Bangladesh, and (c) continuing population-based surveillance for influenza at Kamalapur slum areas in the Dhaka city.

The BSL 3 laboratory will receive 200 samples per month from 12 different hospitals from around the country, in addition to those from Kamalapur in Dhaka. Aliquots from all specimens that are found culture-positive for influenza or influenza-like viruses, will be forwarded to CDC for the assessment of feasibility of introducing influenza vaccines to be administered annually. The laboratory is being installed by a large team under the supervision of Dr Steve Luby, Head of the ICDDR,B's Programme on Infectious Diseases and Vaccine Sciences.

The analytical procedures will follow the standard WHO influenza Reagent Kit as adopted by CDC. The system can culture 50 samples per month and can adequately characterize if these are among the currently-circulating four strains of influenza. Establishment of the laboratory is a real jump-start for Bangladesh in line with the government efforts to prevent an influenza epidemic in the country. Influenza virus tends to mutate frequently, giving rise to newer strains. Thus, prior infection with influenza or prior immunization is generally not protective. This necessitated the establishment of a constant surveillance system, which will be supported by the new laboratory. It's worth mentioning that this will be the first biosafety level 3 laboratory in the country. ■

BoT Meeting of November 2007



The Board of Trustees in session

The ICDDR,B Board of Trustees (BoT) met at the Centre on 17-18 November 2007 to review the Centre's activities since its last meeting in June 2007. Presided over by BoT Chair Dr Timothy Evans, the Board expressed satisfaction over the Centre's performance during this period under the new leadership of Dr Alejandro Cravioto as Executive Director.

The Board approved the Executive Director's intent to develop a Strategic Plan for the Centre through 2020 to be reviewed during the retreat in June 2008. The Board emphasized that recommendations of the recent reviews be implemented following the newly-developed evaluation and monitoring framework.

The term of Dr Timothy Evans, Chairperson of the Board, was extended for another three years, as well as the terms of Dr Raj Karim, Dr Suttalak Smitasiri, Dr José Ignacio Santos, and Dr Mary Ann Lansang. The meeting welcomed two new members: Dr Mohammad Jalal Abbasi-Shavazi, an Iranian national and Dr Ann Larson—an Australian-American.

Dr Ann Larson is currently Director and Associate Professor at the Combined Universities Centre for Rural Health, Geraldton, Western Australia. She has a PhD in demography from the Research School for Social Sciences, Australian National University, Melbourne. Dr Larson has wide-ranging working experience in both developed and developing countries, including Australia, Bangladesh, Fiji, Papua New Guinea, The Philippines, Solomon Islands, Thailand,

Tonga, United States, Vanuatu, and Viet Nam. She received several prestigious awards and honours for her outstanding academic pursuits and research, such as Gary Quayle Prize in 1996, WD Borrie Prize in 1994, and scholarships from the Australian National University during 1982-1986. She is affiliated with a number of professional organizations, societies, and associations. She has more than 50 publications to her credit.

Dr Mohammad Jalal Abbasi-Shavazi is currently Head of the Department of Demography at the University of Tehran, Iran. He obtained his PhD degree in Demography from the Australian National University. His major areas of interest include: fertility transition, reproductive health, population policy, immigration, refugees, demography of the Muslim world, population, and education. Dr Shavazi is affiliated with several national and international professional societies, associations, committees, and editorial boards of internationally-circulated journals. He has, to his credit, more than 70 publications, including four books on population sciences.

The Board bade farewell to Mr Kul Gautam who represented UNICEF on the ICDDR,B Board of Trustees for several years, and lauded him for his outstanding contribution to the Centre as a member of the Board.

The Board also bade farewell to Dr Charles P Larson, Director of the Health Systems and Infections Diseases Division and Mr Peter Thorpe, Director of the Information Sciences Division of ICDDR,B.



Dr Ann Larson



Mohammad Jalal Abbasi-Shavazi

The meetings concluded with an announcement of salary increase for the Centre's employees at all levels. ■

'Baby Zinc' has no side-effects

Studies at ICDDR,B have revealed that the newly-introduced dispersible zinc tablet—Baby Zinc—when administered with oral rehydration solutions (ORS) for the treatment of diarrhoea, has no side-effects in young patients. The liquid formulations of zinc, widely available for a long time in the Bangladesh market and elsewhere, often induce vomiting and regurgitation due to an unpleasant odour characteristic of usual zinc formulations.

At the beginning of the present decade, ICDDR,B felt the necessity of a cheap and an easy-to-carry zinc formulation with longer shelf-life in the Bangladesh

agreement with ACME Laboratories Ltd. for local production. The SUZY Project, with the assistance of a local advertising firm Dhansiri, prepared material for a mass media campaign to popularize the new dispersible zinc tablet.

The primary studies at ICDDR,B included efficacy trials in both children and adults, assessment of shelf-life, and acceptability among the users.

Many local and foreign paediatricians, while attending the national and international workshops and conferences organized at the Centre, spoke highly of the feasibility of this tablet form of

Khan as principal investigator, at the Dhaka Hospital of ICDDR,B to see if any side-effects are seen in patients after the intake of this new dispersible zinc tablet. The study was conducted among young patients attending an outpatient clinic operated by a local health-related NGO—Progati Samaj Kallyan Protisthan (PSKP)—that franchises the clinical services of the ICDDR,B's Dhaka Hospital. Children, aged 3-59 months suffering from diarrhoea, were treated with 20 mg of zinc sulphate daily for 10 days, along with ORS. During the one-year observation period, 42,440 children (57% male and 43% female) received zinc therapy, along with ORS. In this post-marketing



A mother/caretaker being interviewed to collect information on any side-effects after feeding Baby Zinc to her child

setting. In collaboration with a France-based pharmaceutical company Nutriset and a local pharmaceutical company ACME Laboratories Ltd., ICDDR,B introduced a new formulation of zinc in the form of dispersible tablets in blister packs. A project called SUZY (Scaling Up Zinc for Young Children with diarrhoea in Bangladesh) was initiated in 2003 under the administrative control of the Health Systems and Infectious Diseases Division of the Centre for research and dissemination activities towards social marketing of this new tablet formulation of zinc. ICDDR,B bought the patent sub-license from Nutriset and signed an

zinc therapy in Bangladesh setting in terms of efficacy, longer shelf-life, ease in administering, and acceptability. After a series of initial studies at ICDDR,B, ACME started production of the tablet in November 2006 under the brand name of Baby Zinc.

Now, Baby Zinc has crossed the Bangladesh border and has started becoming popular among paediatricians in Chad and Indonesia. New horizons for Baby Zinc are being explored.

A Phase IV clinical trial was carried out by ICDDR,B scientists, with Dr Ali Miraj

surveillance, carried out with financial support from the Bill and Melinda Gates Foundation, the medical staff who attended the patients did not observe any adverse events that could be attributed to zinc treatment. Vomiting and regurgitation, in some cases, was a transient phenomenon that did not impact on continuation of the zinc treatment.

No child was brought back to hospital because of recurrent vomiting after discharge from the hospital. The results of the study have been published in the *Journal of Health, Population and Nutrition* 2007;25(2):127-33. ■

ICDDR,B scientists win the 2007 APUA Leadership Award

The leadership role of ICDDR,B in the prudent use of antibiotics has been rewarded. The US-based Alliance for the Prudent Use of Antibiotics (APUA) presented their 2007 Leadership Award to Dr Wasif Ali Khan and Sabeena Ahmed of the Clinical Sciences Division of ICDDR,B at a ceremony held in Chicago, USA, on 17 September 2007.

ICDDR,B has played a leading role in the international scientific community by promoting more prudent antibiotic practices in Bangladesh and other developing countries as well as at the international policy-making level. These two

ics with the same foresight and perseverance that the anti-tobacco policy-makers had against tobacco a few years ago. With the increase in international travel, the spread of antibiotic-resistant infections to and from developed nations is well-recognized. Thus, the role of ICDDR,B in promoting the rational use of antibiotics has had an enormous impact on public health in Bangladesh and the world as a whole.

Irrational use of antibiotics is minimized in a huge number of patients seeking care from ICDDR,B. Routine antibiotic treatment is carefully guided by the antibiotic

The introduction of Baby Zinc, a dispersible zinc tablet, along with oral rehydration therapy indirectly reduced the use of antibiotics in the treatment of diarrhoeal diseases and, in turn, supported the prudent use of antibiotics. Launching of Dukoral oral cholera vaccine in Bangladesh in early 2007 and research on vaccines for bacillary dysentery, rotavirus, and pneumonia are also important steps in reducing the use of antibiotics for diseases that could be treated and/or prevented by other means.

The Centre has also provided leadership in improving antibiotic use in other



Dr Wasif Ali Khan and Sabeena Ahmed, with the President and Executive Director of APUA and an NIH official, after receiving the APUA Leadership Award 2007 at a ceremony held in Chicago, USA on 17 September 2007

scientists were instrumental in the Centre's research for exposing the ill-effects of the random use of antibiotics and in adopting realistic solutions in clinical practice and public policy to avert the increasing antimicrobial resistance to infections and to restore the efficacy of these essential lifesaving drugs.

The demand for and access to antibiotics is increasing in the developing world. In countries like Bangladesh, unscrupulous quacks and uneducated drug-vendors and pharmacists sell antibiotics, and patients consume these at their own discretion. With this background, the Centre has, for the last four decades, addressed this irrational use of antibiot-

susceptibility information revealed from the Hospital Surveillance System and its laboratories. If needed, these guidelines are changed based only on the results of known clinical trials. In addition, the Centre has disseminated comprehensive information on its antimicrobial resistance data through various periodicals, including those published in local language to facilitate healthcare providers to prescribe antibiotics most appropriately. Besides, the Centre's Hospital Infection Control Committee has, since the mid-1980s, successfully explored infection-control strategies in the Dhaka Hospital aimed at reducing the carriage of resistance and transmission.

parts of the developing world through its Epidemic Control Preparedness Team and the interventions by the Laboratory Sciences Division to avert antimicrobial resistance in the region. Examples are events that took place in 1994 at the refugee camps in Goma, Zaire in Africa and the ongoing efforts to reduce antimicrobial resistance in Nepal.

Recognition by APUA of the Centre's efforts in the prudent use of antibiotics will inspire the ICDDR,B scientists to work further towards achieving the Centre's mission—to develop and promote realistic solutions to the major health, population and nutrition problems facing the poor people of Bangladesh and other settings. ■

Human Resource Development: Lessons from Bangladesh

Health professionals come from far and wide—Sudan, Japan, Kenya, Indonesia, Angola, Afghanistan, Uganda, Australia—to attend the twice-yearly course on Emergency Response to Cholera and *Shigella* Epidemics conducted at ICDDR,B. They come because they want to learn, and they come because they can share their knowledge with government staff, paediatricians, programme officers, environmental health managers, public health advisors, consultants, international medical relief personnel; experts from all fields come together to improve response to new and emerging issues in health and population.

Effective exchange of knowledge involves interactions between decision-makers and researchers and results in mutual learning through the process of planning, disseminating, and applying existing or new research in decision-making and programme-planning. Transfer and exchange of knowledge support and improve evidence-based decision-making to help ensure that the best possible decisions are made in running healthcare systems worldwide and strengthen system performance towards achieving the Millennium Development Goals.

The World Health Organization's *Knowledge for Better Health* (2004) report emphasizes that health systems must interact more closely with health research systems to generate and use relevant knowledge for their own improvement. A culture of mutual learning, problem-solving, and innovation should be the basis of this relationship, which should reach beyond academic institutions and laboratories to involve health service providers, policy-makers, the public, and civil society more. ICDDR,B works to create an enabling environment for fostering collaborations and transfer of knowledge. The Technical Training Unit of the Centre is playing a key role in this regard by offering courses to international participants.

Over 26,000 people have received this training at ICDDR,B. Of them, one is Dr Abdullah Abed from Afghanistan who completed the course in December 2006. This story is based on an interview with Dr Abed.

Dr Abed is a Senior Program Manager at the Agency for Assistance and Development of Afghanistan (AADA) in Kabul, where he provides technical support to health projects to improve the preventative activities at the field level, develops and implements treatment protocols for communicable diseases, and coordinates routine health activities. One of his colleagues, a previous course participant, inspired him to attend ICDDR,B's course. AADA's working area covers provinces in Afghanistan where diarrhoea is very common, and the organization maintains a weekly surveillance. Dr Abed is often required to lead the team in managing the outbreaks, and he enrolled in this training to contribute to his organization's technical expertise and to the Afghan Ministry of Public Health.

Following are the questions to, and responses by, Dr Abdullah Abed:

What are your key areas of interest?

"The conflict in my country has had a significant impact on the health system, and in combination with the difficult geographical environment, has resulted in poor access to basic healthcare services for most section of the population. One of my priority areas is, therefore, looking at factors affecting health and rural development. Second, the development of human resources and training systems is crucial to delivering better healthcare services and improving public health. A gap currently exists, and we need to work on strengthening and coordinating the skills-base for our health workers. For example, we have been filling the gap for midwives and female doctors: the accreditation of midwifery education programmes in Afghanistan has been very well achieved using a standard-

ized educational management system. A national midwifery education accreditation board has been established, with a framework for successful recruitment, education, and deployment of midwives in the country, and these institutions are assigned to educate midwives. The board governs the accreditation process and implements the educational standards."

What's the biggest health challenge for Afghanistan at the moment?

"Maternal mortality—with 1,600 deaths per 100,000 livebirths—is one of the leading causes of death in Afghanistan and is one of the highest in the world. Women die from problems relating to pregnancy and childbirth or experience complications during pregnancy, many of which are life-threatening for them and their children. Forty percent of deaths among women of childbearing age are caused by complications in pregnancies that are preventable. We need to develop a learning resource package to address the causes of these mortality rates. For example, we know these risks are greatly reduced if a trained health worker attends pregnant women, and we are making significant progress towards this by increasing the number of skilled birth attendants in the country through community midwifery education and community health workers.

The last five years have seen the country begin the process of re-establishing its internal structures and processes, which has included the revival of the Ministry of Public Health (MoPH). The MoPH is committed to an integrated health services package, combining rebuilt government services and contracting NGOs for the remaining service provision. Concern for standards has led to the development of a mechanism to ensure standardization across the country, irrespective of provider, to ensure equity and equality for all: a basic package of health services (BPHS), and an essential package of hospital services. There are three levels of facili-

ties providing BPHS: basic health centres, comprehensive health centres, and district hospitals. According to the most recent census, this system is currently covering approximately 80% of the country."

How is Afghanistan progressing towards the MDGs?

"Obviously, we are making inroads towards improving maternal health, but there is some concern about the sustainability of services, by depending on non-governmental organizations to sponsor the majority of health facilities in the country. We need to measure the impact of our interventions and our progress by assessing improvements in

maternal mortality and morbidity, and health education are to be included in basic education.

What's the most valuable knowledge you have gained from your training at ICDDR,B?

"That cholera does not have to be fatal, and that water management in disease prevention is an important factor."

How do you plan on sharing your knowledge from the course with your colleagues in Afghanistan?

"I will replicate the ICDDR,B training on Emergency Response to Cholera and *Shigella* Epidemics to our NGO

expertise I have gained, enormously exceeded what I have accumulated through the years and in other institutions of excellence at Hopkins, Liverpool, or Moscow."

"It's amazing the way Bangladesh has managed to simplify the treatment of cholera."

"With organized support at many levels, so much can be achieved without great financial involvement—the message on diarrhoeal disease prevention and treatment needs to be implemented at the grassroots level."

The Technical Training programme at ICDDR,B aims at improving the clini-



Dr Abdullah Abed, with another foreign trainee, in an urban slum of Dhaka, while receiving hands-on training at ICDDR,B on Emergency Response to Cholera and Shigella Epidemics

health provision and the levels of mortality and morbidity."

What would you like to see for health services in Afghanistan during the next ten years?

"The sustainability of services and quality control of private practice in the country, capacity building for the development of care providers and practitioners. A target for reduction in key health indicators, particularly

staff, which include 560 health workers (doctors, midwives, and nurses), with a focus on preventative measures in their integrated service provision."

When asked to give us some quotable statements to accompany this article, Dr Abed said the following:

"After this wonderful and most-educating experience in beautiful Bangladesh and renowned ICDDR,B, I would like to inform that the knowledge and

cal skills of health personnel through hands-on training on specific aspects of diarrhoeal diseases, associated complications, and nutritional problems. Course participants leave with a strengthened capacity, both for the individuals and their organizations, in managing epidemics due to cholera and *Shigella* following disasters. Most of all, they leave as friends of ICDDR,B.

Contributed by Jo Grzelinska ■