Dedicated to saving lives, icddr,b is an international public health research organisation located in Bangladesh. Through the generation of knowledge and translation of research into treatment, training, and policy advocacy, icddr,b addresses some of the most critical health concerns facing the world today.
Welcome to this year’s Annual Report in which we share a selection of research outcomes and activities from 2012.

I would like to take this opportunity to thank my predecessor Dr. Alejandro Cravioto for his tenure at icddr,b, first as Deputy Executive Director (2005-2007) and then as Executive Director (2007-2012). His commitment to building icddr,b’s scientific capacity and modernising its business systems has left the institution well-positioned to build on its historic past. My thanks also go to Dr. Abbas Bhuiya for his stewardship as Interim Executive Director (July 2012 to March 2013).

I took on the role as icddr,b’s Executive Director in April of 2013 because I believe icddr,b can have a major public health impact globally. I plan for icddr,b to build on its record of leadership in developing key lifesaving, global health interventions. icddr,b’s history is full of such examples, including the development of ORS and later zinc-ORS; demonstration of the lifesaving potential of several vaccines now in international use, including tetanus vaccination for women of childbearing age, measles vaccination for infants, and killed oral cholera vaccine for the general population; and development of a then revolutionary approach to family planning and primary care, which deployed women who are residents of the community to deliver contraceptives and child health interventions to their neighbours. As you will read in this report, icddr,b has now developed additional interventions which have great promise to become major contributors to global health. These include a birthing mat that warns when the level of postpartum haemorrhaging warrants immediate referral, and an inexpensive, ready-to-use, therapeutic food, using local ingredients, for treatment of children with severe acute malnutrition.

In the future, I would like icddr,b to tackle complex, intractable health and development challenges, such as prematurity, childhood stunting, and climate change and resilience. These challenges share common elements: they are
poorly understood, exist in Bangladesh, require international collaboration for breakthrough research, and have the need for big science. Developing innovations to address these challenges will leverage icddr,b’s key assets—our multidisciplinary scientific skills, cutting-edge laboratory and field infrastructure, and international connectivity.

Success in addressing these public health gaps will require a willingness to think downstream, partner internationally, and anticipate what happens with the addition of new evidence and knowledge. While icddr,b and Bangladesh will be an ideal ‘test bed’ for these projects, newly developed solutions from the projects will need to be evaluated in multiple geographic locations to demonstrate effectiveness and scalability.

Moving forward, it is critical that icddr,b works along the full continuum; from discovery and development to delivery and delivery evaluation. This will require changes, such as returning clinical services to a platform for a robust hospital-based clinical research programme, enhancing our training and teaching through the James P. Grant School of Public Health, and expanding institutional partnerships on a global level.

I look forward to the opportunity to serve as the Executive Director of this great institution in the coming years as we build on the groundbreaking platform that icddr,b has already established as a key global resource for innovations in health.

John D. Clemens, MD
2012 IN NUMBERS

Finance

$13 m unrestricted programme
$38 m restricted programme
$4 m other income
US$55 m revenue

105 new grants received amounting to US$77,839,506

10 research centres

Research

237 peer reviewed papers published

produced by 71 female scientists & 182 male scientists

4 international core donors
AusAid
Cida
DFID
Sida

Representation on 42 global, 11 regional and 93 national research initiatives and policy review committees

119 collaborating universities worldwide

Clinical Services

208,605 patients treated in 2 hospitals and 1 treatment centre
57% of total patients below 5 years of age
2,770 vitamin A capsules distributed to children under-5
4 emergency responses to cholera outbreaks in Sierra Leone, Kenya, Somalia, and the Philippines

39,000 lives saved
Global partnerships

Developing collaborations with scientists, researchers, health professionals, government and NGO representatives from around the world is central to icddr,b’s research. Today, more than ever, a concerted global effort is essential to make significant advances in addressing the critical public health issues facing those living in poverty. icddr,b contributes a unique perspective to global knowledge benefiting from its proximity to the issues, the breadth and cohort of researchers, and its relationship with the Government of Bangladesh, which allows for rapid translation of research evidence into policy action.
Working across a range of critical public health issues, icddr,b generates evidence that informs national, regional and global policy and practice.

- Unprecedented exposure to the most pressing public health challenges
- Multidisciplinary researchers and dedicated field workers committed to developing high-quality, low-cost and sustainable innovations
- 50 years experience working with national and global policy-makers and implementers

For this report, a cross-section of research and activities from 2012 have been selected to capture the range and scope of icddr,b’s outputs.
icddr,b is working with the Government of Bangladesh to implement at least two to four new vaccines in the country over the next five years to ensure better health in the critical 1,000 day window in the life of a child, starting from conception to 2 years of age, and following that in all age groups in the population as a whole.

Vaccines and improving immunisation coverage are some of the most powerful interventions for impacting the lives of children living in impoverished settings globally. Vaccination cannot be thought of as a discrete entity, but as one that exists alongside other interventions and multifactorial events in the life of an individual.

icddr,b’s research has contributed to global understanding and recognition of nutritional, environmental and genetic predispositions as important factors in vaccine uptake. The concentration of population, disease prevalence, and the multidisciplinary expertise of icddr,b has positioned Bangladesh as a country conducive to large-scale vaccine feasibility studies and trials.

Oral Cholera Vaccine in Endemic Settings

In 2011, a feasibility study using the oral cholera vaccine Shanchol demonstrated that this two-dose vaccine could be delivered to over 141,000 people in a high-risk urban population within a period of 43 days, using the existing EPI system of Bangladesh. In 2012, scientists from icddr,b’s Centre for Vaccine Sciences also conducted a study in rural Bangladesh using the local health facilities, including the EPI services, to successfully deliver the cholera vaccine to over 35,000 people. Together, these Gates Foundation-funded studies demonstrate that the vaccine can be delivered effectively to all age groups, using the existing national health systems in both urban and rural settings. Following, the feasibility study in Bangladesh, other countries have also carried out large cholera control interventions using the Shanchol vaccine. In Haiti, 50,000 people have been vaccinated in highly cholera-prone settings. In Thailand, 45,000 people and, in Guinea, 170,000 people, have been given the oral cholera vaccine. Establishment of a cholera vaccine stockpile is being facilitated by the WHO for use in epidemic and outbreak settings globally.

Vaccine Studies Inform National Policy with Global Implications

icddr,b’s Centre for Vaccine Sciences conducted the first-ever study to assess the efficacy of human rotavirus vaccine in a GAVI-eligible country in Asia. The results from this study have been published widely, are highly cited, and have influenced the Government of Bangladesh to apply to the GAVI Alliance for the inclusion of rotavirus vaccine into its national immunisation programme. Already in use in a selected area of icddr,b’s Matlab field site, it is hoped that by 2015, the rotavirus vaccine will be included in the EPI for delivery throughout Bangladesh. On the basis of evidence from icddr,b, the pneumococcal conjugate vaccine (PCV) is also scheduled for inclusion in Bangladesh’s EPI by early 2014. GAVI has called for a pneumococcal conjugate vaccine impact study in Bangladesh, and plans are underway to secure funding. Study was funded by PATH.

Testing Polio Vaccines

icddr,b is contributing to the global fight against polio by undertaking vital research on polio vaccines, and the design of schedules for national immunisation programmes. For the first time in Bangladesh, research is being conducted with monovalent, bivalent, inactivated polio vaccine (IPV) and fractional inactivated polio vaccine (fIPV). The findings of two major studies which began in 2012 in collaboration with Centers for Disease Control and Prevention (CDC) in Atlanta will help guide the Global Polio Eradication Programme.
INTEGRATED WASH INTERVENTION YIELDS PROMISING RESULTS

icddr,b has a special interest in assessing health impacts on communities receiving water, sanitation and hygiene interventions, with a particular focus on diarrhoea, and respiratory diseases and nutrition.

0.6 billion people lack adequate sanitation facilities globally.

Over 780 million people still use unsafe drinking-water sources.

Globally, 1.5 million children die of diarrhoea every year.

30% could be saved by improving sanitation.

High-impact Water, Sanitation and Hygiene (WASH) Results

Inadequate access to safe water and sanitation services, coupled with poor hygiene practices, sicken and kill thousands of children every day in Bangladesh and globally. In a search for ways to comprehensively improve these conditions in rural and poverty-stricken areas, scientists from icddr,b’s Centre for Communicable Diseases conducted an innovative pilot study on the impact of providing a combination of health messages and specialised materials to improve water storage and treatment, hand washing, sanitation and nutrition. Among the pilot findings, handwashing with soap increased from 17 to 75 percent, while 62 percent of households continued treating their tubewell water with chlorine tablets 13 months after the intervention.

Behavioural change communications were targeted at young children and their mothers as well as fathers and caregivers of young children. Interventions included specially-constructed plastic containers storing clean water and soap to wash hands, custom-built hoes to remove human and animal waste, potties for children, and products such as soapy water made with detergent and chlorine tablets.

“This pilot study was crucial to help with decisions on the most viable interventions for the larger WASH Benefits trial,” said Dr. Stephen P. Luby, formerly director of icddr,b’s Centre for Communicable Diseases and now Professor of Medicine at Stanford University and principal investigator of the WASH Benefits Project. “It also allowed us to refine our data-collection instruments, behaviour change communication materials and methods, and the overall study design.” he added.

Funded by the Gates Foundation, WASH Benefits will provide the Water, Sanitation and Hygiene sector with crucial new information on the child health benefits of combining interventions.
icddr,b’s ongoing research into kala-azar prevention, case detection, diagnosis, and treatment provides valuable inputs into the Government of Bangladesh’s drive to eliminate the disease from the country by 2015.

Kala-azar (also known as visceral leishmaniasis) is one of the world’s most fatal neglected diseases. It is a health problem in much of South Asia, the Middle East, and Africa – especially where population density is high and poverty prevalent.

2nd largest parasitic killer in the world after malaria
500,000 infections
>50,000 deaths worldwide each year
20 million Bangladeshis (18% of the total population) are at risk, with a trend of rising prevalence
100% fatality observed within two years if left untreated
0 vaccines currently available

Informing Global Guidelines for Post-Kala-azar Dermal Leishmaniasis

Post-kala-azar dermal leishmaniasis (PKDL), which occurs after infection with kala-azar, is a serious threat for the success of the kala-azar elimination programme across Pakistan, Bangladesh, and India. Those with PKDL carry the parasite with potentials for its spread to others sustaining endemicity. In response to this growing threat, the World Health Organization developed its first global guidelines for management of PKDL in 2012, drawing on research evidence from icddr,b and with input from Dr. Dinesh Mondal, a kala-azar expert in icddr,b’s Centre for Nutrition & Food Security.

Kala-azar Research Centre Opens with Technical Assistance from icddr,b

Opened in 2012, the Kala-azar Research Centre (KRC) is located in the Mymensingh district of northern Bangladesh, one of the most endemic kala-azar regions in the country. The first of its kind in Bangladesh, the 25-bed KRC will provide free treatment to kala-azar patients over the next five years.

Early diagnosis and treatment are key components in the fight against kala-azar. Based on icddr,b study findings from 2010, a urine-based test will be used for the primary diagnosis of kala-azar at the KRC. This method replaces costly, time-consuming, invasive and painful diagnostic techniques that require skilled personnel and are difficult to implement in resource-limited settings. In addition, icddr,b promotes the use of insecticide-treated bednets to prevent kala-azar, which is transmitted by the sand fly.

The KRC is a collaboration among the Bangladesh Ministry of Health and Family Welfare, the Drugs for Neglected Diseases initiative (DNDi), the Japan International Cooperation Agency (JICA), and the Japan Science and Technology Agency (JST).
MONITORING SPREAD OF EMERGING INFECTIOUS DISEASES

Bangladesh is especially vulnerable to emerging and reemerging infectious diseases caused by internal migration, urbanisation, and climate change. Bangladesh does not currently have the capacity to monitor or address the changes that are occurring. icddr,b is working closely with the Government of Bangladesh and partner organisations to establish a range of systems to measure these changes, including strengthening surveillance of emerging vector-borne diseases, measuring the scale of migration from environmentally-affected coastal areas to urban slums, and improving estimation of national burdens of disease to better inform allocation of finances.

Improving Preparedness for Emerging Infectious Diseases

In a society where humans and animals live in close proximity, Bangladesh is burdened with significant threats for emerging infectious zoonotic diseases, such as new strains of avian influenza. Using evidence to inform local, national and global guidelines for prevention and treatment, icddr,b is at the forefront of surveillance and research, most notably in partnership with Bangladesh's Institute for Epidemiology, Disease Control and Research (IEDCR) and the Centers for Disease Control and Prevention (CDC) in Atlanta.

AVIAN INFLUENZA INVESTIGATION

April 2012: The deputy civil surgeon of Kurigram district in northern Bangladesh reports a possible outbreak of influenza-like illness among nursing students residing in a local dormitory. Rapid investigation of outbreaks of infectious disease is critical.

A collaborative investigation team from icddr,b’s Centre for Communicable Diseases and IEDCR are dispatched to investigate. Results from nasal and throat swabs taken by the team identify the H1N1 strain of influenza in 78 percent of students who became ill. Students are treated by local health officials.

After investigating possible sources for the outbreak, the team determines that it most likely started when a hospital patient transmitted it to one of the nursing students. Crowded living conditions in the dormitory most likely contributed to the rapid spread of the infection.

The team recommends that better protective equipment should be regularly supplied to students in clinical settings, especially for those living in crowded conditions where infections can spread more rapidly.
Community-based mHealth Intervention Saves Mothers from Eclampsia

Although Bangladesh has made significant advances in maternal mortality reduction, more than 12,000 women a year still die from pregnancy complications. Haemorrhage and eclampsia are the dominant direct obstetric causes of deaths, together responsible for more than half of all maternal deaths. Magnesium sulphate used in treating eclampsia is rarely available even in comprehensive emergency obstetric care facilities. In addition, even with training, skilled community birth attendants (CSBA) are reluctant to deliver the potentially lifesaving treatment.

In a small, poor, rural village in Sirajganj district on the Jamuna River, researchers from icddr,b’s Centre for Child & Adolescent Health are testing an innovative service, combining mobile technologies to connect CSBAs with trained nurse and doctors. Mobile phones are preloaded with tollfree phone numbers connecting mothers and family members to CSBAs who, in turn, are connected to trained nurses and doctors. The CSBAs are able to call the tollfree hotline for advice from professionals on managing complications, including instructions on how to administer magnesium sulphate.

The study is funded by an AusAID Development Research Award.

SAVED BY A PHONE CALL

4.30 am
Mobile call to skilled community birth attendant by mother-in-law reporting pain and swelling of legs in birthing mother

6.00 am
Birth attendant arrives at patient’s house, finding high blood pressure and fully-dilated cervix
Birth attendant gets ready for delivery, prepares magnesium sulphate, in case of eclampsia

7:00 am–7:30 am
Delivery occurs, mother is unconscious and convulsive
Birth attendant uses mobile to call doctor who instructs administration of magnesium sulphate
Mother regains consciousness

8:00 am–11:00 am
Convulsions stop, mother referred to local health centre for further treatment
Mother and baby saved

Listening and following the advice through mobile communication not only saved the life of this mother and child, it also averted the cost of a visit to the district health facility
Setting a Global Example for Translating Research into Policy

In recent years, icddr,b has made efforts to shift the balance of its research portfolio from discovery to delivery and delivery evaluation.

Between 2011 and 2012, scientists from icddr,b’s Centre for Reproductive Health conducted 23 training sessions and produced 10 knowledge translation briefs on a range of reproductive health issues from antenatal care to the management of STDs. These briefs have been well-received and are being recommended as a model of good practice by USAID.

At the Health Systems Research Symposium in Beijing, China, a special panel on Knowledge Translation in Bangladesh highlighted icddr,b projects and included three icddr,b experts. The Beijing symposium provided a valuable opportunity for icddr,b’s scientific community to share a common platform with international researchers, policy-makers, funders and other stakeholders where they could share new evidence, identify opportunities, and build better understanding across inter-disciplinary boundaries.

China’s Minister of Health, Dr. Chen Zhu addresses the Second Global Symposium on Health Systems Research in Beijing where icddr,b’s knowledge translation work was highlighted.
TACKLING SEVERE ACUTE MALNUTRITION: A SIGNIFICANT GLOBAL CHALLENGE

Combatting severe acute malnutrition is a global humanitarian priority

20 million children affected globally

Over 1 million deaths each year, globally

600,000 deaths in Bangladesh

Morsalin was nine months old when he was admitted to icddr,b’s Dhaka Hospital on 1 January 2012, critically ill and on the verge of death. He was suffering from acute watery diarrhoea and fever. His tiny body weighed just 5.5 kg and was bloated due to oedema. He measured only 63 cm in length. His skin was covered with multiple lesions. Morsalin had the telltale signs of severe acute malnutrition (SAM).

After receiving treatment for diarrhoea, Morsalin was admitted to the Nutritional Rehabilitation Unit (NRU). He was put on a dietary management regimen comprising low-cost, culturally-acceptable, and indigenous food ingredients to improve his nutritional status. This approach pioneered in the NRU has also been proven to be highly effective in community settings.

Morsalin’s parents were taught how to prepare a range of low-cost meals. They were also encouraged to make toys from scrap materials and to play games with Morsalin to aid his development.

Day by day, Morsalin’s body began to heal slowly as his nutritional status improved. On 22 February 2012, the baby boy who arrived with an almost lifeless body was discharged healthy and smiling. He weighed 5.95 kg, and his height was 64.4 cm.

Morsalin lives in Keraniganj, a working class suburb of Dhaka city, with his parents and five-year old sister. His father is a tailor and mother is a housewife. Morsalin’s parents are not among the poorest of Dhaka’s residents—rather a lack of awareness of easily-available, low-cost, highly-nutritious food led to Morsalin’s brush with death.

Building Global Capacity to Treat Severe Acute Malnutrition

Close to three million children suffer from severe and moderate acute malnutrition in Bangladesh, yet there is no national programme to address this problem. icddr,b researchers have prepared a position paper on community-based management of severe acute and moderate malnutrition, having already demonstrated that hospital protocols can be successfully implemented at the upazila (subdistrict) health complexes, with some modifications.

Continuing their efforts to share best practice in case management, scientists from icddr,b’s Centre for Nutrition & Food Security provided training this year to paediatricians and other health professionals in Bangladesh. Doctors and nursing staff from hospitals and clinics across the

TREATMENT PROTOCOL SAVES LIFE
country have been trained and are now promoting best practices in rural areas; particularly in the northwestern agricultural regions of greater Rajshahi and Rangpur where food shortages are common. While the case-fatality rate in hospitals treating the condition is still as high as 20 to 30 percent, training in management of severe acute malnutrition has succeeded in reducing the fatality rate to just five percent. It is now imperative to scale up this treatment to the various hospitals in the country, including upazila health complexes. The next challenge is the development of large-scale programmes for community management.

With funding from UNICEF, researchers are also continuing to develop low-cost, locally-produced, soy and rice-based ready-to-use therapeutic foods (RUTF) for home and community use. This food uses locally-available and acceptable ingredients, does not require cooking or refrigeration and can be kept at room temperature for months.

At the global level, icddr,b contributed to the revision of the global guidelines for management of child malnutrition with WHO and the development of the global nutrition research agenda for the New York Academy of Science and WHO.

Additional support for icddr,b’s work on SAM comes from our core donors, WHO, and IAEA (International Atomic Energy Agency).
icddr,b is searching for new approaches to achieving the goal of zero new infections and zero deaths relating to HIV and AIDS

Methadone Maintenance Treatment Piloted

The HIV epidemic in Bangladesh is low and driven by People Who Inject Drugs (PWID); there are an estimated 21,800 to 23,800 PWID in the country. Intake of methadone (a synthetic opioid) inhibits cravings for drugs and allows the PWID to cease their compulsive drug-use and its associated risks and harms. Methadone is administered orally under medical supervision.

Scientists from icddr,b’s Centre for HIV & AIDS, in collaboration with the National AIDS/STD Programme and the Department of Narcotics Control of the Government of Bangladesh (GoB), established and piloted a Methadone Maintenance Treatment (MMT) clinic with support from the United Nations Office on Drugs and Crime (UNODC) and Family Health International (fhi360).

By 2012, attendance at the clinic had grown to 180 PWID. The findings of the Opioid Substitution Therapy (OST) pilot showed improvements in HIV-related risk behaviour, psychological well-being and quality of life of PWID. Additionally, icddr,b advocated and provided technical assistance for establishment and operating a new MMT satellite clinic at a drop-in centre in old Dhaka, operated by CARE Bangladesh. The success of the OST pilot project has led the Ministry of Health and Family Welfare of GoB to incorporate OST in its health sector programme. Expanding innovations, such as MMT services, will scale up and continue to reduce risks of transmission of HIV throughout Bangladesh.

Modelling HIV/AIDS Epidemic in Bangladesh

icddr,b, UNAIDS, and the Government of Bangladesh’s National AIDS/STD Programme (NASP) are collaborating to model the HIV/AIDS epidemic in Bangladesh. Understanding the dynamics of the epidemic in Bangladesh will provide information on how early interventions can prevent an HIV epidemic in a country where prevalence remains low. As early and targeted prevention efforts have played a role in controlling the HIV epidemic in Bangladesh, lessons learnt from Bangladesh will also benefit other countries regionally and globally.
The challenge of achieving equitable health coverage in urban areas is a central and growing focus for icddr,b that draws on existing expertise in community engagement, information and communication technologies, financing, and social determinants of health.

Bangladesh is rapidly urbanising, with projections that half of its citizens will live in cities by 2050. Factors ranging from economic opportunity to climate change have resulted in an influx of rural migrants at a rate of over 1500 a day in Dhaka, the country’s capital and fastest-growing megacity in the world. Most of these new migrants settle in slums lacking even the most basic amenities of clean water and sanitation, and soon join the swelling ranks of the working poor. Despite their critical role as the engine of urban economic development, the health needs of the poor are largely overlooked notwithstanding the high concentration of health services and expertise in urban areas.

Mapping Project Informs Urban Health Strategy for UK Development Agency

Scientists from icddr,b’s Centre for Equity & Health Systems undertook a comprehensive visualisation of the urban health landscape in Dhaka, using GIS maps and an associated facility survey. It revealed gaps in effective healthcare coverage in and around urban slums including:

- lack of coordination of primary healthcare services accessible to the poor, particularly in relation to vouchers/subsidies
- absence of an effective referral system
- confusion around the roles and responsibilities of implementing agencies
- lack of collaboration between ministries responsible for health
- need for improved systematic monitoring and evaluation

Funded by DFID, these findings have informed their new urban health programme, providing evidence to justify substantial new investments in urban health as well as guiding the design of an effective health strategy in the urban setting. There are plans to work with a consortium of major NGOs involved in urban service delivery, with the purpose of strengthening coordination among them so that quality care, referral support, and effective coverage are assured for the poorest.

The GIS visualisation tool has application in other urban contexts globally, and is being demonstrated to stakeholders in local and national governments, donor partners, and implementers.

Innovating Healthcare Financing

Dr. Tanvir M. Huda and Dr. Jahangir Khan of icddr,b’s Centre for Equity & Health Systems both contributed extensively to the first-ever healthcare financing strategy of Bangladesh: Healthcare Financing Strategy 2012-2032. The strategy was recently approved by the Bangladesh Ministry of Health and Family Welfare. Dr. Khan is now piloting a scheme for financing healthcare of informal workers, and Dr. Huda contributed to the design of a health scheme initiated by the Government of Bangladesh for people living in poverty.
**Influencing Health Policy in Bangladesh**

The Government of Bangladesh’s National Health Sector Programme is the largest sector-wide health programme in the developing world, working to improve access to and the quality of health services for Bangladesh’s population of 160 million.

In contrast to some countries, which despite overwhelming evidence, struggle to adopt and implement health innovations, the Government of Bangladesh is remarkably receptive to research and evidence, particularly from icddr,b. This unique relationship is based on trust and many decades of close collaboration. Many icddr,b researchers provide technical expertise to policy committees, placing Bangladesh at the centre of innovations in health. Bangladesh is one of a handful of countries on track to meet MDGs 4 and 5, and to do so ahead of time.

In 2012, a few examples of icddr,b’s extensive input into Bangladesh’s health policies included:

- assisting in the revision of Bangladesh’s maternal health strategy
- contributing to the first-ever healthcare financing strategy of Bangladesh: Healthcare Financing Strategy 2012-2032
- Dr. Tahmeed Ahmed chairing a committee constituted by the Government of Bangladesh to prepare a draft of the new National Nutrition Policy
- helping to develop National Operating Procedures for Newborn Care in primary and secondary hospitals
- icddr,b’s findings used as the official source to report national MDG5 and other related maternal health indicators
- informing the extension of the national Expanded Programme on Immunisation (EPI) to include pneumococcal protein conjugate vaccine and rotavirus vaccines (upon approval by GAVI Alliance)

**Bangladesh Demographic and Health Survey**

Under-5 child mortality reduction in Bangladesh remains an absolute priority for icddr,b. The 2011 Bangladesh Demographic and Health Survey (BDHS) showed that neonatal deaths account for 60% of all under-5 child deaths, with pneumonia and infections the principal causes. icddr,b continues to focus research on childhood pneumonia and respiratory tract infections, particularly at its field site in the south of Dhaka at Kamalapur (an area four times more densely populated than Manhattan). icddr,b seeks to influence and campaign for global investments in interventions that might reduce mortality from respiratory viruses, particularly influenza and respiratory syncytial virus (RSV).
One interesting finding from the BDHS was the impressive decline in deaths from diarrhoea. It is no longer a major cause of death for children below 5 years in Bangladesh. This change reflects the widespread uptake of ORS and zinc interventions.

icddr,b provided extensive technical assistance to the BDHS and, in 2012, icddr,b centre directors, Dr. Shams El Arifeen, Dr. Peter Kim Streatfield, and Dr. Tahmeed Ahmed played a leading role in developing the associated policy briefs which have been highly influential and widely referenced by the Government of Bangladesh and other development agencies working in Bangladesh.

Informing ORS and Zinc Scale-up in 10 Countries

icddr,b has joined as a lead partner for Bangladesh on the Essential Medicines Diarrhoea and Pneumonia Working Group, co-led by UNICEF and CHAI (Clinton Health Access Initiative). Formed in 2011, the Working Group has identified 10 high-burden countries in need of expanded national scale-up of diarrhoea and pneumonia treatment. icddr,b drafted Bangladesh’s national scale-up plan for use of ORS and zinc and is currently working with the Government of Bangladesh to ensure that the plan is endorsed and adopted into policy.

Bangladesh’s experiences were shared, to great appreciation, at a recent meeting of the Working Group in Washington, DC. icddr,b will continue to leverage the Working Group’s convening power to share technical expertise and convey evidence and lessons from Bangladesh to participating NGO implementers.

In icddr,b’s Dhaka Hospital, health workers treat patients using rice-based ORS. Replacing glucose with cooked rice powder leads to demonstrably quicker recovery from diarrhoea.
GLOBAL RECOGNITION
PUBLISHING AND AWARDS

Publishing output

- The number of original papers published by icddr,b scientists across all fields has remained steady over a three-year period, with a modest increase to 237 papers in 2012. The 332 international publications that carried the work of icddr,b scientists included: The Lancet-3 papers, JAMA-2 papers, The Lancet Infectious Diseases-2 papers, Proceedings of the National Academy of Sciences-4 papers, Clinical Infectious Diseases-8 papers, PLOS Pathogens-1 paper, Environmental Health Perspective-3 papers, International Journal of Epidemiology-1 paper, Journal of Infectious Diseases-4 papers, Emerging Infectious Diseases-6 papers, Journal of Immunology-2 papers

- Publications also included 27 book chapters/monographs, and 68 letters/editorials

- Of the peer-reviewed papers published, 71 were by female scientists, and 182 by male scientists, representing an improvement in the gender balance ratio from 3.42 in 2011 to 2.56 in 2012

- icddr,b alone is responsible for 17 percent of all peer-reviewed papers generated in Bangladesh, representing the institution’s position as a leading research institution in the country

Awards

Dr. Firdausi Qadri received the Institut de France Christophe Mérieux Award for her work in vaccines and also was elected a Fellow of TWAS (The World Academy of Sciences)

Associate Scientist and Consultant Physician Dr. Mohammod Jobayer Chishti received the Australian Alumni Excellence Award 2012 for ‘Innovation and Research’

Dr. Mohammad Aminul Islam, Associate Scientist and Coordinator, Food Safety Research Group, received the International Fellowship for a one-year mentored research project with Stanford University, USA. Also selected as a 2012-2013 Fellow of Global Health Equity Scholars, sponsored by the Fogarty International Center.
icddr,b has a concentration of highly-knowledgeable and skilled public health experts. The Bangladeshi and global community of researchers, policy-makers, health professionals, and students beat a track to icddr,b to observe, learn, conduct research, collaborate, and share knowledge.

104 international students from 40 institutions in the USA, Norway, Canada, the Netherlands, Japan, Sweden, Australia, and UK trained at icddr,b.

9 senior scientists are on the faculty of the James P. Grant School of Public Health housed on icddr,b’s Dhaka campus.

icddr,b boasts the only clinical fellowship for doctors and nurses in Bangladesh, and offers rotations to clinicians from the USA and Europe.

Hundreds of Bangladesh’s government officials and health professionals routinely turn to icddr,b each year for technical training in diarrhoeal diseases, nutrition, epidemiology, and statistical and scientific report writing.

A STUDENT’S STORY: SAMANTHA TULENKO

Student field experience at icddr,b has meant enriching cultural and intellectual experiences—experiences such as watching a mother in the short stay ward saving her newborn son with oral rehydration solution, listening to a top physician explain the ingenious development of ORS at this very centre, taking tea breaks full of traditional snacks and conversations with Bangladeshi co-workers about their families, or more casually about the beautiful patterns of their salwar-kameez.

It has meant adventures, like riding the public bus (no AC!) to visit wells where the biochemistry labs collect their water samples, and pumping them myself to collect and take for testing later, braving the heat with other international students to lunch at a local restaurant that specialises in mouth-watering naan and spicy vegetable curry.

It was the opportunity to meet with scientists at the top of their field to debate the future directions that interventions will take in Bangladesh as well as conducting research and providing recommendations as an environmental advisor on a team in icddr,b’s Centre for Reproductive Health.

These experiences and more have taught me about life in Dhaka and what a career in global public health might mean.

icddr,b, with its global scientific networks, Bangladesh field sites, extensive topics of research, and numerous healthcare facilities, has been open for me to explore. I have put my academic background to the test in real research, made lifelong friends, and gained invaluable insight about the field of public health and about my own future.

Samantha Tulenko is a senior at the University of North Carolina at Chapel Hill where she is studying for a BSc in Public Health. She visited Dhaka on a 7-week international field experience programme.
ICDDB’s hospitals provide vital humanitarian services to their local communities and serve as dynamic laboratories for research. Effective treatment protocols are tested and refined across a range of fields: diarrhoeal diseases, nutrition, maternal and child health, and respiratory infections.

The high demand for clinical services provided by icddr,b and the rising costs of providing lifesaving care remains a challenge for the institution.
Despite the increase in patients treated, the Dhaka Hospital did not experience the usual post-monsoon cholera peak that normally causes tremendous stress on hospital capacity. The reasons for this have yet to be determined.
Global Experts

In 2012, icddr,b deployed teams of physicians and laboratory scientists to help manage cholera outbreaks in Somalia, Kenya, Sierra Leone, and the Philippines. The responses were in collaboration with WHO’s Global Outbreak Alert and Response Network and AmeriCares, the US-based emergency response organisation and supported by generous funding from WHO, Merck & Co. Foundation, and the Conrad N. Hilton Foundation.

Building Regional Capacity to Monitor and Treat Cholera

Scientists from icddr,b’s Centre for Food & Water Bourne Diseases collaborated with the Kathmandu-based Centre for Molecular Dynamics in Nepal (CMDN) to build regional capacity for cholera detection and management during a cholera outbreak in June 2012. Training on the basic techniques in collection and processing of the clinical and environmental samples enabled CMDN staff to collect and isolate more outbreak strains of V. cholerae. With a commitment to providing long-term technical and surveillance support, a collaborative research project ‘Epidemiology and Ecology of Vibrio cholerae causing endemic cholera in Nepal’ is now underway.

Building Capacity in Bangladesh

During the 2012 pre-monsoon spike in diarrhoeal diseases, icddr,b provided technical assistance to Dhaka South City Corporation and the Directorate General of Health Services (DGHS) under the Ministry of Health and Family Welfare to establish two temporary diarrhoea treatment centres within existing government facilities in Dhaka and Tongi. icddr,b’s experts prepared the treatment protocol, trained doctors and staff, advised on infrastructure improvements, and provided 50 diarrhoea cots. The treatment centres were also supported by MDF Belgium.

FREETOWN, SIERRA LEONE

Sept 2012: With only a few days notice, my hospital colleagues and I were dispatched to Freetown to address the cholera outbreak that had infected over 19,000 and killed 274. New cases had reached almost 2,000 a week, an incredibly high rate. Almost as soon as we hit the ground, we began an intensive 4-day training for doctors and nurses in cholera prevention and treatment methods. At the same time, my colleagues began a 3-day training for 20 lab technicians in methods to reliably identify cholera in patients while AmeriCares began distribution of cholera kits with essential medicines and supplies throughout the country.

It was a tough trip but we made great progress. Fatality rates after our work there fell by as much as half in some districts—saving hundreds of lives and reducing thousands of debilitating infections. As in many countries where we respond, cholera outbreaks of this magnitude had not been seen in decades, meaning treatment methods were severely out of date or non-existent. Our priorities were to fill the critical demand for training and medical supplies, then work on further capacity building. Preparedness is the best prevention tool, one that has been so successful in Bangladesh.

Dr. Azharul Islam Khan, Chief Physician and Head of the Diarrhoeal Diseases Unit
In 2012, icddr,b made significant progress toward the delivery of a competency-based Human Resources Systems, drawing on the external advice of Mercer Consulting. This involved streamlining the banding structure and job families, and introducing functional and behavioural competencies. A clearer career path now exists, with fairer opportunities for progression and mentoring of junior staff. Efforts to embed the new structure and processes will continue in 2013.

In 2011, core donors had worked with icddr,b to develop clear objectives and reporting indicators as part of an agreed log-frame. It was designed not only to improve icddr,b’s ability to quantify outputs associated with core donor funding, but to enhance icddr,b’s ability to track, monitor, and evaluate progress in implementing the Strategic Plan 2020. Ambitious targets against baseline data have been set to support efforts to improve efficiency, develop environmental and gender reporting, and encourage total research outputs even further. Performance data from 2012 will be collated and reported in 2013.

icddr,b has long recognised gender as an important social determinant of health outcomes. In icddr,b’s Strategic Plan 2020, gender, human rights and health are regarded as cross-cutting themes in all scientific research and discussion. In 2012, the Internal Research Council, which approves all research proposals, made it mandatory for all proposals to use the gender analysis tool developed by Dr. Ruchira Tabassum Naved, according to WHO guidelines. As a hallmark of ethical research, it is hoped that use of the tool will reduce bias in research, improve predictive validity, and widen the scope of funding and publication.

icddr,b is committed to environmental responsibility, promoting sustainability and environmental awareness at all levels of decision-making. Excellent progress has been made towards implementing several initiatives to make operations of the institution more environmentally efficient, including a new HVAC system that has reduced power consumption by 25 percent, and new AC settings that have reduced consumption by 15 percent. Several initiatives intended to reduce water, energy, and engine oil consumption as well as solid waste generation will continue to be implemented in 2013.

The finance team continued to focus on budgetary control and reducing operating costs. icddr,b successfully increased indirect cost recovery across all projects, which provided an additional US$246,057. Despite a rising patient load, the hospital costs were successfully contained in 2012 after peaking in 2010/2011. A review of the hospital strategy, and continuation of cost containment is necessary. A full financial report is on pages 24-25.
This report is a summary discussion of the financial activities of icddr,b (the Centre) for the fiscal year ended December 31, 2012.

Table 1 shows a total increase in net assets of $2.6 million. Current and other assets increased by $6.6 million. The major increase was due to payments by DFID and Sida in December 2012. Current and other liabilities increased by $2.5 million largely due to an increase in contributions in advance of $2.8 million.

Loans and advances decreased by $1.2 million from $7.7 million to $6.5 million, largely due to a tighter control on advances to the suppliers.

Table 1: NET ASSETS

<table>
<thead>
<tr>
<th>Amount (in US$’000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
</tr>
<tr>
<td>Current and other assets</td>
</tr>
<tr>
<td>Capital assets</td>
</tr>
<tr>
<td>Current and other liabilities (including ESPF)</td>
</tr>
<tr>
<td>Net assets</td>
</tr>
<tr>
<td>Restricted</td>
</tr>
<tr>
<td>Unrestricted</td>
</tr>
<tr>
<td><strong>Total net assets</strong></td>
</tr>
</tbody>
</table>

Unrestricted net assets, the part of net assets that can be used to finance day-to-day operations without constraints established by donors or other requirements, increased by $3.7 million. This is mainly due to the surplus for the year of $2 million and other gains in the endowment funds.

Table 2 shows that total revenue increased from $53m to $55m. $38 million is from restricted projects and $13 million from unrestricted grants. The revenue includes partner income of $6.8 million (2011: $4.6 million). Total expense and programme cost increased by $615K and $847K, respectively, from last year. This is mainly due to increases in local salary and supplies. Management and administration expenses went down by $275K due to close monitoring of salary allocation to projects. A surplus of $2m was recorded in 2012, compared to $189K (restated) for 2011. Following a 2012 board resolution, 75% of the surplus will be transferred to cash reserves and subject to cash flow in order to improve the Centre’s financial stability. The target for cash reserves is $8m, which represents about four months’ unrestricted expenditure.

Table 2: CHANGES IN NET ASSETS

<table>
<thead>
<tr>
<th>Amount (in US$ ’000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
</tr>
<tr>
<td>Revenue</td>
</tr>
<tr>
<td>Contributions</td>
</tr>
<tr>
<td>Transferred from endowment funds</td>
</tr>
<tr>
<td>Other revenue</td>
</tr>
<tr>
<td>Total revenues</td>
</tr>
<tr>
<td>Expenses</td>
</tr>
<tr>
<td>Programme</td>
</tr>
<tr>
<td>Management and administration</td>
</tr>
<tr>
<td>Fundraising</td>
</tr>
<tr>
<td>Total expenses</td>
</tr>
<tr>
<td><strong>Increase (decrease) in net assets</strong></td>
</tr>
</tbody>
</table>

Budgetary Highlights

The $2 million surplus for 2012 well exceeds the forecast surplus of $0.75 million. This was made possible by a combination of the cost containment measures, better budgetary control and the impact of depreciation policy change. In addition, management more closely monitored salary allocation to projects and donor receivables. In 2012, the Centre also stopped accruing expenditure on the basis of purchase orders or commitments. icddr,b also attained savings of $331K in international salary costs, $262K from supplies, $550K from foreign exchange differences and $175K from travel. An under recovery of indirect cost of $104K and of other receipts of $193K offset these savings. There was also a Capital Work In Progress adjustment of $610K. Management will continue to take aggressive steps to identify areas of inefficiency and control costs by monitoring performance on a monthly basis.

The budget for FY 2013 reflects a projected surplus of $973K.

Table 3 is a selection of performance indicators. Overall the workforce increased by 326 to a total of 4107. Fixed term national staff increased by 111 while daily contract staff rose by 245. Most of the daily contract employees were hired for specific projects.
Table 3: OTHER PERFORMANCE INDICATORS

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>National staff</td>
<td>4,059</td>
<td>3,729</td>
</tr>
<tr>
<td>International staff</td>
<td>48</td>
<td>52</td>
</tr>
<tr>
<td>Total number of staff</td>
<td>4,107</td>
<td>3,781</td>
</tr>
<tr>
<td>Indirect cost ratio</td>
<td>40.06%</td>
<td>40.05%</td>
</tr>
<tr>
<td>Programme related costs</td>
<td>2.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Administration costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current ratio</td>
<td>1.17</td>
<td>1.07</td>
</tr>
<tr>
<td>Deferred contributions</td>
<td>74%</td>
<td>71%</td>
</tr>
<tr>
<td>Total current liabilities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The indirect cost ratio is a measure of efficiency which for the two years has not improved from 40%. While the ratio has been reduced from 64% in 2010, remains too high. The most recent Negotiated Indirect Cost rate was provisionally set at 26% with a ceiling of 32%. The ratio of programme related costs to administration costs has deteriorated somewhat.

The current ratio measures the Centre’s ability to pay its short-term obligations. Whilst satisfactory, ideally it should be double the present level. A significant portion of the Centre’s liabilities relates to contributions received in advance from donors. A substantial proportion of contributions in advance to available cash balances could increase the Centre’s exposure to liquidity risk.

For our audited financial statements, please go to: www.icddrb.org/2012_financial_statements

Dr. Simba Mandizvidza CA, CPA.
Director, Finance
Core donor funds ensure that icddr,b has long-term, predictable finance for its global public health research agenda

Donors

Recognising our supporters

icddr,b thanks the foundations, institutions, corporations, development agencies, NGOs, and multilateral bodies that support its work. A full list is included in the financial report at www.icddrb.org/2012_financial_statements.

We are especially grateful to our international core donors, Australia (AusAid), Canada (CIDA), Sweden (Sida), and the United Kingdom (DFID) who, in keeping with the Paris Declaration on Aid Effectiveness, provide long-term core funds to icddr,b to support the advancement of its Strategic Plan. Representatives from each of the development agencies meet regularly with icddr,b to monitor progress and discuss emerging research priorities and outputs of note. Every year, icddr,b reports performance against an agreed log-frame, and a joint donor report is commissioned to monitor progress.

Core donor funding has

1. enabled icddr,b to focus on and pursue its strategic research objectives rather than chase adhoc research funds;
2. increased the institution’s financial stability, making it less vulnerable to changes in the external supply-led science research-funding environment;
3. enabled icddr,b to invest in maintaining and improving core infrastructure essential to scientific advances, but for which project grants rarely provide, e.g. disease surveillance networks, laboratory upgrades, humanitarian services at icddr,b hospitals and clinics;
4. enabled icddr,b to develop and modernise its business processes—financial, HR, communications, and M&E—which are fundamental to icddr,b being able to operate to international standards.

Together these and future investments and advances will transform the institution, ensuring that icddr,b can continue to generate high-quality research knowledge, and attract funds in a highly-competitive global environment.

The research outputs of icddr,b, which focus on the public health challenges of developing nations, have value not only to the people and Government of Bangladesh but also to neighbouring countries in the region and beyond. It is the application of icddr,b’s research and its continued contribution to the global public health agenda that has attracted and retained investments by the world’s leading development agencies.
### Top ten donors in 2012

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of the donors</th>
<th>Restricted</th>
<th>Unrestricted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gates Foundation</td>
<td>7,495,434</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>USA - NIH</td>
<td>5,086,043</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Centers for Disease Control and Prevn. (CDC)-Atlanta</td>
<td>4,411,518</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Australia - AusAID</td>
<td>3,969,325</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>United Kingdom - DFID</td>
<td>3,749,835</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Canada - CIDA</td>
<td>3,017,072</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Global Fund for AIDS, TB and Malaria (GFATM)</td>
<td>3,007,231</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>UNICEF</td>
<td>2,518,956</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Sida</td>
<td>762,746</td>
<td>1,483,100</td>
</tr>
</tbody>
</table>

The research outputs of icddr,b have value not only to the people and the Government of Bangladesh but also to neighbouring countries in the region and beyond.
icddr,b’s Board of Trustees as of December 2012

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Deputy Director, Swiss Tropical and Public Health Institute
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A nurse in icddr,b’s Dhaka Hospital uses a personal digital assistant (PDA) to collect patient records.