



Contents

Our Research	5
Our Training Programmes	41
Our Services	51
Our Institution	63
Our Finances	67

Board of Trustees

Chairperson

Dr Nicolaus Lorenz, Switzerland

Member-Secretary (ex-officio)

Dr Alejandro Cravioto
Executive Director, ICDDR,B

Members

Prof. M Jalal Abbasi-Shavazi, Iran
Mr M Musharraf H Bhuiyan, Government of Bangladesh
Dr Norma Binsztein, Argentina
Dr Thomas Cheasty, United Kingdom
Dr Mary Ann D Lansang, Philippines
Dr Ann Larson, Australia
Mr Carel de Rooy, UNICEF, Bangladesh
Dr Jose Ignacio Santos, Mexico
Dr Mary Elizabeth Wilson, USA

(Joined in 2010)
Prof. Dr Md Suhrab Ali, Bangladesh
Prof. N K Ganguly, India
Mr Md Humayun Kabir, Government of Bangladesh
Dr Elizabeth Mason, WHO
Dr Edward J Mills, Canada
(Left in 2010)
Mr Shaikh Altaf Ali, Government of Bangladesh
Dr Timothy Evans, WHO
Datuk Dr Raj Bte A Karim, Malaysia
Prof. Charles Stephen Mgone, Tanzania

May 2011

© 2011 International Centre for Diarrhoeal Disease Research, Bangladesh

ISBN 978 984 551 322 7

Who we are

ICDDR,B is an international health research organisation dedicated to improving health and saving lives. Our mission is simple: to help solve critical public health challenges facing the people of Bangladesh and beyond—especially those who are most vulnerable—by generating knowledge, and translating it into policy and practice.

Located in Dhaka, Bangladesh, with nine rural and urban field sites around the country, we convert our world-class research into realistic interventions and treatment. With excellent training facilities and influential advocacy on health policy, we address some of the most critical health concerns facing the world. Our research programmes span the major health issues of our day: nutrition, child health, reproductive health, chronic disease, communicable diseases, vaccine sciences, HIV/AIDS and climate change.

We have a global reputation for research, but at the same time provide vital humanitarian services to some of Bangladesh's poorest people, with over 150,000 visiting one of our hospitals or clinics every year.

While our research activity in particular is funded by competitive grants, our work in general is supported by over 50 donor countries and organisations. These include: the Government of Bangladesh, UN agencies, foundations, universities, and private sector companies. They all share our vision for improving the health of people living in low- and middle-income countries, such as Bangladesh.

Anthropologists, Biochemists, Clinical pharmacists, Communication specialists, Demographers, Dieticians, Enteric microbiologists, Environmental microbiologists, HIV counsellors, Immunologists, Medical anthropologists, Microbiologists, Molecular microbiologists, Nursing officers, Nutritionists, Paramedics, Parasitologists, Pathologists, Pharmacists, Physicians, Public health specialists, Radiologists, Research physicians, Social scientists, Statisticians, System engineers, Veterinarians, Virologists ...



Letter from the Executive Director

2010 was a year of intense activity at ICDDR,B. As we began to restructure the organisation in line with our Strategic Plan 2020, we had our eyes firmly set on the future. But, with this being the 50th anniversary of our founding, we also took time to look back at our past.

From modest beginnings as a cholera research laboratory in East Pakistan, addressing the needs of the immediate population, ICDDR,B has become a leading public health research institution dedicated to improving the health and wellbeing of people across the world. The discovery and development of Oral Rehydration Solution (ORS) saved millions of lives worldwide, and put our institution on the international stage. We were able to attract scientists of the highest calibre to work here in Bangladesh, and to collaborate with the world's leading academic and research institutions. Our history continues to guide the activities of staff in our clinical facilities, research laboratories, and field sites.

Our research is uniquely informed by our clinical services and this close relationship led to the development of ORS and explains why our humanitarian services in the Dhaka, Mirpur and Matlab hospitals remain central to our work. Our proximity to health challenges exposes us daily to the diseases that disproportionately affect the poor. ICDDR,B exemplifies the importance of building viable scientific institutions in low-income countries.

Successfully scaling-up treatments and interventions requires policy change, and so advocacy is a key objective for the next ten years in national and international arenas. But policy change requires evidence. For over 40 years, our demographic surveillance

operation at Matlab has amassed data of remarkable breadth and quality. A detailed record of the health of more than 225,000 people, it demonstrates the impact of interventions as well as the history of the nation. Our work at Matlab has informed predictive modelling, influencing health policy worldwide; for example, the WHO recommendation that pregnant women be vaccinated with tetanus toxoid is based on evidence in Matlab's data.

Our global reputation was established through our work in enteric diseases, but our reputation for scientific excellence has meant that we have broadened our focus to take in the whole life-cycle. Programmes today include nutrition, child health, reproductive health, chronic and communicable diseases, vaccine sciences, HIV/AIDS and climate change.

Our achievements in 2010 illustrate the way in which we are now an international multi-disciplinary health research organisation. In the wake of humanitarian crises in Pakistan and Haiti, we sent emergency response teams to both countries. Here in Bangladesh, working with our government counterparts, we dispatched teams to investigate outbreaks of Nipah virus, anthrax and hepatitis E. Meanwhile, our research work continues and papers from our scientists gain a growing audience, including in the most-cited interdisciplinary science journal, *Nature*. ICDDR,B also received its first patent from the Director of U.S. Patent and Trademark Office for a technique developed to diagnose tuberculosis.

We want to see research turned into action, and so we were delighted to see our work underpinning the new Domestic Violence Act, as well as informing the National Neonatal Health Strategy, Guidelines and Action Plan. As Bangladesh is congratulated for its progress towards meeting Millennium Development Goals 4 and 5, we take pride in knowing that our work is playing a key role in this success. Meanwhile we continue to strengthen our infrastructure, with the opening of our new BSL-3 laboratory, and the ISO accreditation of our existing facilities.

As our key achievements of 2010 show, the history of ICDDR,B continues to provide a reliable guide for us as we continue to build our future.



Alejandro Cravioto
Executive Director



OUR RESEARCH

Rigorous scientific research is integral to ICDDR,B. It underpins and informs everything else we do: our clinical and humanitarian services, our interventions, treatments, training and advocacy. Research highlights from 2010 are featured in alphabetical order.

Developing a national action plan to reduce newborn deaths in Bangladesh

Bangladesh has made significant progress towards achieving Millennium Development Goal 4: a reduction in child mortality by two-thirds by 2015. Between 1991 and 2004, deaths among children under-five declined from 133 deaths per 1,000 live births to 65¹. However, reducing newborn deaths has been a harder challenge. In the same period, newborn deaths declined from 52 to 37 deaths per 1,000 live births. Newborn deaths now (in 2004) account for 57% of all under-five deaths, compared to 39% in 1991, with death rates being highest, and intervention coverage lowest, among poorer families in rural areas and some parts of the country².

In response to the scale of the newborn health problem in Bangladesh and slow progress with neonatal interventions, the Government of

Bangladesh, along with other partners, approved the National Neonatal Health Strategy (NNHS) and Guidelines in 2009. This provides a strategic framework and guidelines for implementing cost-effective interventions for promoting neonatal health, as well as preventing neonatal mortality and ill health in Bangladesh. In 2010, the focus has been on the development of a national action plan which is expected to guide the implementation of the national strategy. Along with the national working team, ICDDR,B has been actively involved in the development of the strategy and action plan, and contributing scientific evidence.

In 2010, our researchers worked with the Government of Bangladesh to develop standard operating procedures for newborn care in referral facilities. Responding to the priorities of the NNHS, ICDDR,B joined the Government of Bangladesh, UNICEF, Saving Newborn Lives, the Bangladesh Peri-natal Society and other partners to initiate operations research on the management of neonatal infections. The study aims to evaluate the quality and coverage of multiple community-based approaches for managing neonatal infections within Bangladesh's current health service-delivery system.

“The next five years will be critical in moving neonatal health forward. We know what needs to be done. We now require a careful and well thought out plan to work together to achieve our goals.”

Dr Shams El Arifeen, Head, Child Health Programme, ICDDR,B

Around the world,
nearly 8 million children
under the age of five die every year,
almost a 1,000 every hour³



A photograph of a village street at sunset. In the foreground, a person is riding a rickshaw with a colorful, patterned canopy. To the right, two green auto-rickshaws are parked or moving slowly. The street is dusty and lined with trees and simple buildings. The sun is a bright yellow circle in the sky, partially obscured by a wire. The overall atmosphere is quiet and rural.

A village in our Matlab surveillance area, where detailed demographic records allow us to track emerging health threats posed by chronic diseases

80%
of deaths due to chronic diseases
occur in low- and middle-income countries*

ICDDR,B launches the Centre for Control of Chronic Diseases in Bangladesh

Chronic diseases, such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes, are by far the leading cause of mortality in the world today, representing 60% of all deaths. Out of the 35 million people who died from chronic diseases in 2005, half were under 70 years, and half were women. This invisible epidemic is an under-appreciated cause of poverty and hinders the economic development of many countries. Contrary to common perception, 80% of deaths due to chronic diseases occur in low- and middle-income countries. Bangladesh is no exception. Today, cardiovascular disease is the biggest killer, but diabetes, stroke and cancer are major contributors.

On 26 April 2010, ICDDR,B launched the Centre for Control of Chronic Diseases in Bangladesh (CCCDDB). This centre of excellence under the United Health Group Global Chronic Disease Initiative, is a partnership among ICDDR,B, BRAC, Johns Hopkins Bloomberg

School of Public Health and the Institute of Development Studies, with the programme secretariat based at ICDDR,B. Since its inauguration, researchers in the CCCDB have published the results of a systematic review into the interaction between chronic diseases and poverty in low- and middle-income countries, as well as the early findings of a pilot study they conducted on the prevalence of diabetes and pre-diabetes among adults in urban and rural Bangladesh. This study suggests that nearly one-third of the urban population, and one in every six adults in the rural population has glucose abnormality, either diabetes, or pre-diabetes.

“ICDDR,B is a unique environment where new research at the highest level of excellence can take place. As head of this new Centre, I look forward to developing a range of innovative and globally relevant evidence-generating research programmes.”

Dr Louis Niessen, Head, Centre for Control of Chronic Diseases in Bangladesh



.....
In agricultural Bangladesh, contact with
animals is a fact of everyday life

Bangladesh: the centre of emerging zoonotic diseases

Cross-species disease transmission and the emergence of new epidemic diseases are now considered the most important challenge for global public health. Almost 75% of emerging infectious diseases are those transmissible between humans and animals, a process known as zoonosis. Bangladesh is at the centre of the global map of emerging zoonotic diseases. The recent epidemic of avian influenza in chickens and its spread to humans has caused significant concern among health professionals, scientists, environmental workers and policy-makers. Tuberculosis, rabies, kala-azar (visceral leishmaniasis) and food-borne zoonosis are common in Bangladesh, and new diseases continue to emerge, including Nipah virus and viruses causing encephalitic disease. In relation to infectious diseases, our increasing interdependence with animals and their products may be the single most critical risk factor to our health and wellbeing. As we do not know what the next infectious disease threat will be—an existing disease or something new—we must build our capacity, and that of other countries in our region, to respond to whatever arises.

“In Bangladesh, zoonotic diseases are common because of the close proximity of animals to people. Fortunately, we are well equipped with resources and manpower, and are able to support the Government of Bangladesh in responding to these outbreaks.”

Dr Stephen P Luby, Head, Infectious Diseases & Vaccine Sciences Programme, ICDDR,B

Conducting anthrax outbreak investigations and advising on control and prevention

A higher than usual number of anthrax outbreaks was reported during 2010, largely relating to domestic animals. This raised health alarms, as the country’s rural population depends heavily on cattle and other domestic animals for farming and consumption. In response, ICDDR,B experts were invited to join a team from the Government of Bangladesh’s Institute of Epidemiology, Disease Control and Research (IEDCR) and Department of Livestock Services. Between August 2009 and October 2010, 14 outbreak investigations were conducted.

These investigations focused on identifying the factors behind these outbreaks, and advising

on control and prevention measures. On 19 August 2010, a team from ICDDR,B travelled to Shahjadpur, in the north of Bangladesh, to investigate a suspected anthrax outbreak among 26 local people. Collaborating with IEDCR, our team investigated the clinical and exposure histories of suspected human and animal cases, and collected specimens for analysis in our laboratories back in Dhaka. When the specimens were found to contain the bacteria that cause anthrax, the IEDCR quickly took steps to inform the population in the affected districts, and began public education to prevent the spread of the disease.

Between August and October 2010,
over 600 cases
of cutaneous anthrax
were recorded in Bangladesh*


Investigating a Nipah virus outbreak in central Bangladesh

Nipah virus is an emerging zoonotic virus, whose natural host is fruit bats. The virus causes respiratory diseases or severe illness, characterised by an inflammation of the brain known as encephalitis. In January 2010, physicians at Faridpur Medical College Hospital in central Bangladesh recognised a cluster of encephalitis cases within their district. A subsequent field investigation by researchers from ICDDR,B, working in collaboration with the Government of Bangladesh's Institute of Epidemiology, Disease Control and Research (IEDCR) suggested that the first victims acquired Nipah through drinking raw date palm sap, with subsequent transmission through person-to-person contact.

In our research, we investigated all isolated laboratory-confirmed Nipah-positive cases. Among the nine cases identified between December 2009 and April 2010 was a doctor working in the paediatric department of Faridpur Medical College Hospital. Without using personal protective equipment, the doctor had performed physical examinations of two young girls aged five and seven years, both of whom had been admitted to the hospital with encephalitis. One of these two children died, and the doctor died shortly after. Of the 17 people infected with the virus, 15 died. Our research suggests that fruit bats in a local wildlife reservoir were the source of this outbreak.

Developing surveillance to detect disease outbreaks

Since 2005, our researchers have worked closely with the Government of Bangladesh's Institute of Epidemiology, Disease Control and Research (IEDCR) to develop a sophisticated surveillance system that can detect disease outbreaks, such as Nipah virus. Starting in 2007, we have also been collaborating with the IEDCR to develop a hospital-based influenza surveillance system that can identify clusters of patients, healthcare workers, and/or poultry workers with severe acute respiratory illness and influenza-like illness. Twelve hospitals across the country now take part. "The Government of Bangladesh is benefiting greatly from this partnership with ICDDR,B", says the Director of the IEDCR Professor Mahmudur Rahman. "ICDDR,B's technical and scientific support makes it possible for us to respond to public-health emergencies in a timely and appropriate manner."

A low-angle photograph of a date palm tree against a clear blue sky. A man, wearing a colorful striped shirt and a white dhoti, is climbing the trunk of the tree. He is barefoot and has a rope tied around his waist. A large, round, brown object, likely a date fruit, is visible on the trunk. A bamboo 'skirt' is wrapped around the trunk, protecting the sap from contamination by bats carrying the Nipah virus.

"It is ICDDR,B's technical and scientific support that makes it possible for Bangladesh to respond to public health emergencies in a timely and appropriate manner."

Professor Mahmudur Rahman, Director of the Institute of Epidemiology, Disease Control and Research, Government of Bangladesh

.....
A date palm collector uses a bamboo 'skirt' to protect the sap from contamination by bats carrying the Nipah virus



ICDDR,B researcher
working with
Mycobacterium Tuberculosis
in our new BSL-3
laboratory

In 2010, BSL-3 laboratory takes ICDDR,B into new era

As a world-class research organisation, we understand the need for cutting-edge laboratory facilities, reflecting the changing epidemiology of infectious diseases in Bangladesh. On 19 July 2010, the BSL-3 facility and biosafety programme was successfully certified as compliant with the requirements of the 5th edition of the CDC/NIH BMBL Guidelines and the CDC BSL-3 checklist by the Biosafety Biosecurity International. All work conducted in this laboratory must be carried out following the guidelines written in the ICDDR,B BSL-3 Biosafety and Biosecurity Programme Manual, which adhere to WHO LBM (2003), CDC/NIH BMBL (2009), and the Bangladesh Biosafety Guidelines (2009).

ICDDR,B has long conducted vital research on emerging infectious diseases. Our fully operational BSL-3 core facility, the first of its kind in Bangladesh, provides the perfect setting

to nurture a community of experts specialising in biosafety-related issues. The BSL-3 lab is a step into a new era for us, building upon our recognition as a world-class institution for research and diagnostics, and offering a far safer working environment. The lab will enable us to work with indigenous or exotic agents that could cause potentially lethal diseases through inhalation. The lab is not only an asset for ICDDR,B's scientific community, but also for the Government of Bangladesh. As part of the biosafety programme, our Laboratory Sciences Division organises laboratory safety training to disseminate the knowledge and science of biosafety across Bangladesh. The training sessions focus on safe laboratory design, general laboratory safety, chemical safety, waste management, and biosafety principles and practices.



Lab accreditation maintains ICDDR,B's reputation as world-class organisation

We are proud of our reputation as a world-class health research organisation. We strive to maintain international standards in everything we do, from scientific research to running one of the best diarrhoeal disease hospitals in the world. Our emphasis on international standards is reflected in our laboratories where high quality platforms have received international accreditation. ICDDR,B has divided the international accreditation process and laboratory quality improvement into phases:

- In 2010, Phase II was to obtain accreditation of the Clinical Laboratory Services against ISO 15189 standard. The process was initiated in 2009 and we are currently awaiting accreditation, which will mark its completion.

- Phase III is primarily focused on quality improvements meeting various standards: ISO 15189 for medical laboratory testing services, ISO 17025 for testing and calibration services and Good Clinical Laboratory Practice (GCLP) for all other research-related activities. Phase III was initiated in 2010 and is expected to be completed by late 2011.

ICDDR,B is also an active partner of the WHO laboratory network CHOLDInet, an international laboratory network for cholera and other enteric diseases, under the patronage of GLaDNet (the Global Laboratory Directory and Network).

Eliminating kala-azar from Bangladesh through detection and insecticides

Kala-azar, also known as visceral leishmaniasis, is a major neglected tropical disease. It affects the immune system, giving rise to secondary infections, such as pneumonia, diarrhoea, and tuberculosis—causing persistent fever, fatigue, and loss of appetite as well as enlargement of the spleen and liver. If left untreated, kala-azar can kill. Some 50 thousand people die from kala-azar every year. In Bangladesh, 20 million people are thought to be at risk, the majority clustered in the north-eastern border area with India.

The disease is caused by the bite of an infected female sandfly, which thrives in the cracks and crevices of mud plastered houses, in heaps of cow dung, in rat burrows and in bushes and vegetation around the house.

Our researchers have an ambitious and achievable vision, not just for preventing kala-azar in Bangladesh, but eradicating it. They believe this is possible because human beings are the only reservoirs of the disease and the female sandfly is the only vector. In addition, the oral drug miltefosine is highly effective against kala-azar, and the fly is vulnerable to most commonly available insecticides. In 2005, the Health

Ministers of Bangladesh, India and Nepal signed a Memorandum of Understanding to eliminate kala-azar from the Indian sub-continent by 2015. Active case detection, proper management and vector control are key strategies.

In 2010, our researchers took part in a multi-centre study on kala-azar vector control supported by TDR (a tropical disease programme executed by the World Health Organization, and sponsored by UNICEF, UNDP, the World Bank and WHO). Finding no current vector control programme in Bangladesh, our researchers evaluated the feasibility of both impregnating bed nets with long-lasting insecticide, and insecticide spraying. A second study now aims to find ways of improving case detection and management. Without the immediate attention of policymakers and donors however, the elimination of kala-azar from Bangladesh by 2015 may not be achievable. ICDDR,B will continue to advocate for both policy and funding support of the ongoing research.

90%
of all kala-azar cases
occur in Bangladesh, Brazil, India,
Nepal and Sudan*

“Kala-azar mostly affects impoverished people, and so we offer nutritional interventions, as well as trying to eradicate the disease.”

Dr Dinesh Mondal, Scientist, Parasitology, ICDDR,B

Kala-azar: diagnosis and cure, as well as prevention

As with many public health issues addressed by ICDDR,B, research on kala-azar focuses not only on prevention, but also on diagnosis and cure. In 2010, researchers evaluated a promising, simple and quick means for the diagnosis of kala-azar. A study was undertaken to evaluate the rK-39 strip test using urine samples as a non-invasive means for the diagnosis of kala-azar. The rK-39 strip test was performed using urine from 100 suspected kala-azar cases, along with 25 disease control (malarial febrile cases) and 50 healthy control (from endemic and non-endemic areas).

The sensitivity and specificity of the rK-39 strip test using urine samples was 95% and 93.3% respectively, compared to serum-based rK-39 test. The urine rK-39 strip test would be a promising non-invasive point-of-care tool for the rapid screening of kala-azar in remote rural areas where there is a high prevalence of kala-azar. In another pilot study, our researchers evaluated the safety and efficacy of sodium stibogluconate (SSG) in patients with kala-azar. The study findings provided strong evidence on the efficacy of SSG in the treatment of kala-azar.

During the study, we enrolled 200 confirmed cases of kala-azar for treatment with SSG at a dose of 20 mg/kg per day for 28 days according to the national guideline during the time of this study, and followed the patients for six months after treatment. We also evaluated the efficacy of



Tiny but deadly—a female sandfly, the carrier of the parasite that causes kala-azar

KAtex in urine, and polymerase chain reaction (PCR) in blood for diagnosis of kala-azar in these patients. All patients who received SSG injections for more than 20 days were cured. However, the cure rate in the ‘intention-to-treat’ population was 95%. The findings have helped the kala-azar programme in taking informed decisions about the appropriate role of SSG as an alternative drug for treatment of kala-azar in Bangladesh.



Investigating the prevalence of malaria in southeastern Bangladesh

Malaria is endemic in Bangladesh, and poses a major health threat, with 1.5 million people living in the southeast of the country most at risk. Even the smallest malarial epidemic outbreak in this densely-populated region could cause more deaths than in regions of sub-Saharan Africa where most funding to combat malaria is currently distributed.

In 2006, ICDDR,B began malaria-related activities in Bandarban, a southeastern district of Bangladesh where malaria prevalence is as high as 12%. Most control strategies and surveillance methods are focused on ‘symptomatic’ malaria and the prevention of illnesses. People suffering from malaria usually develop headaches, nausea, fever, vomiting, and flu-like symptoms that can quickly become life threatening by disrupting the blood supply to vital organs. Children are especially vulnerable. However, some people can carry the disease without ever developing these symptoms.

A large-scale survey, begun in 2009, has revealed a large reservoir of ‘asymptomatic’ malaria infections in Bandarban. So we have decided to develop new intervention strategies

“Knowledge generated from our research projects will help us better understand the social aspects of malaria in Bangladesh, enabling us to develop more strategically-appropriate interventions.”

Dr Wasif Ali Khan, Scientist, Clinical Sciences Division, ICDDR,B

specifically targeting asymptomatic carriers, in an attempt to identify high risks for malaria transmission. 2010 achievements include our surveillance site receiving permanent membership of the INDEPTH network, and the successful launch of surveillance projects covering a population of 20,000. Collaborating with Johns Hopkins University, we also began a study and entitled ‘Mapping Malaria Epidemiology in Bangladesh’, and two studies in collaboration with the Medical University of Vienna, Austria.

Half the world’s
populations are at risk of malaria,
leading to 250 million cases,
and 1 million deaths every year*

ICDDR,B receives first patent from Director of US Patent and Trademark Office

The key to an efficient tuberculosis (TB) control programme is early detection—outcomes improve, and the spread can be limited. The challenge is case detection. Until now, tests to positively identify active TB within a person were inaccurate or time-consuming. The classic sputum test took five weeks, and provided results which were not always accurate. But then our scientists made a breakthrough. “I had a eureka moment”, recalls Dr Rubhana Raqib, a senior scientist and head of the nutritional biochemistry lab. “I realised that using blood serum from potential TB patients could actually expedite TB detection rates, and with almost 90% accuracy.” Previously, scientists had tried to use blood samples to detect TB by finding antibodies in the serum, like an HIV test. However, with the serum test (ELISA), many people with a positive test result did not have active TB.

To solve this problem, Dr Raqib and her

colleagues, including former ICDDR,B Executive Director, David Sack, developed a new type of test using antibodies produced by lymphocytes when cultured in the laboratory for up to three days. Lymphocytes are the cells in the body that produce antibodies that can be detected in the ELISA test. By detecting antibodies produced in the laboratory, rather than those found in the patient’s serum, the test successfully identifies patients with active TB. Importantly, it differentiates people who might have antibodies in the serum from a previous vaccine, for example, from those with active TB. For the patient, the test simply involves drawing a sample of blood, while the result is available within three days. This groundbreaking technique marks a new direction in TB detection. As a result, ICDDR,B was issued a patent from the Director of the U.S. Patent and Trademark Office, the first in ICDDR,B’s history.

“This diagnostic technique is a great example of how open minds and cross-disciplinary research can be a huge boon for scientists and generate scientific progress.”

Dr Rubhana Raqib, Head, Nutritional Biochemistry, ICDDR,B



In 2009,
there were an estimated
9.4 million new cases
of TB worldwide
and an estimated 1.7 million deaths*

Investigating the threat of tuberculosis among prison inmates in Dhaka Central Jail

Pulmonary tuberculosis (TB) consumes people from within. Symptoms include coughing (sometimes coughing up blood), fever and long relentless wasting. Bangladesh's National Tuberculosis Control Programme (NTP) provides free treatment to patients. But pulmonary tuberculosis is a particular threat in crowded settings, such as prisons.

In developing countries, prison populations often have prevalence rates of TB that are five to ten times higher than the rest of the population—20 to 30 times in some cases. However, there are little data available on the burden of TB among prisoners. As a result, policy-makers cannot assess the resources needed, evaluate the success of current treatment, or measure any actual improvement. To address this knowledge gap, our researchers embarked on a study of inmates in the Dhaka Central Jail, Bangladesh's largest prison.

We collaborated with the NTP to determine the prevalence of TB, its drug resistance and transmission rate among the 10,000 inmates

living in a facility built to house 2,600. Congested accommodation drastically increases the transmission rate among the inmates. Certain risk factors for TB infection inside the jail have also been identified. These include longer prison terms, a previous history of imprisonment, malnutrition, a previous history of TB infection, or previous exposure to TB patients. The study's results show a tuberculosis rate about 20 times higher than national levels.

Active screening proved to be effective in controlling TB inside the prison as TB cases decreased substantially over the study period. Transmission could not be stopped totally as some inmates who entered the prison with TB were missed, and went on to infect others. Subsequently, we have started active screening of inmates on entry, and a significant number of cases have been detected and isolated, which considerably reduced TB transmission. We now plan to expand our activities to other prisons across the country.

Breakthrough in understanding how cholera bacteria become deadly

A team led by Dr Shah M Faruque, head of Molecular Genetics at ICDDR,B, has discovered how harmless bacteria can become the cause of many instances of the severe form of diarrhoea known as cholera—a disease killing hundreds of thousands of people a year, mainly in poorer parts of the world. This is a breakthrough, with far-reaching implications in predicting when new types of the cholera-causing bacteria *Vibrio cholerae*, will next start infecting people.

Published in the science journal *Nature*, renowned for breaking outstanding discoveries, the work of Dr Faruque and his Dhaka-based research team was a collaboration with Dr John Mekalanos of Harvard Medical School in Boston, USA.

Their findings explain how bacteria become infected with their own viruses. These then allow the bacteria to produce substances that interact with the intestinal cells, and produce the large quantities of water and electrolytes known as

diarrhoea. While some of these mechanisms are already known, Dr Faruque and his collaborators have shown how these different viruses interact to make the bacteria a more effective pathogen. The newly-identified ‘TLC phage’ helps explain how the bacteria get vital information to live in difficult environments like the human intestine.

“We discovered and characterised the ‘TLC phage’ which changes, albeit slightly, the chromosomal sequence of the cholera bacterium”, said Dr Faruque. “This subtle change enables an incoming toxigenic CTX phage genome to be incorporated and in doing so a harmless strain of *V. cholerae* is transformed into a dangerous killer.”

The World Health Organization estimates that cholera kills more than 100,000 people every year, and infects more than three million. Recent epidemics in sub-Saharan African countries, such as Zimbabwe and Mozambique, and more recently in the flooded areas of Pakistan highlight the continuing threat of cholera and the need for studies like ICDDR,B’s so that we can better understand the disease. “We hope that our knowledge will help save lives and have far-reaching implications in public health research”, says Dr Faruque.



Dr Shah M Faruque (centre) with members of his research team, Dr M Kamruzzaman, Assistant Scientist (left), and Fazlul Hasan, Research Officer (right)

Vibrio cholerae O1
cells labelled by
incorporating a
gene for Green
Fluorescent Protein
and observed under
fluorescent light

.....

**Cholera kills
more than 100,000 people
every year,
and infects more than 3 million***



.....
Poor sanitation in urban slums
creates conditions in which viruses
such as hepatitis E can thrive

Responding to a hepatitis E outbreak in Rajshahi city

In March 2010, a jaundice outbreak was reported in Rajshahi city in the northwest of Bangladesh. Hepatitis, a general term meaning inflammation of the liver, is characteristically signalled by the development of jaundice, and is most prevalent where sanitation standards are low. A joint team from ICDDR,B and the Institute of Epidemiology, Disease Control and Research (IEDCR) conducted research identifying 2,162 suspected jaundice cases in 30 out of 35 wards. Those living in any ward of Rajshahi City Corporation, and having symptoms, were verified either by a health worker or supported by ICDDR,B laboratory evidence.

Approximately 108 probable cases were identified from ten wards with the highest number of cases during the investigation. Six or seven cases were randomly selected from each ward to interview. The water distribution system

in different wards of Rajshahi was also observed to identify pathways for contaminated water. The study found that those who drank municipal tap water, and had no formal education, were more likely to suffer from jaundice.

Preventing hepatitis E transmission requires the provision of safe drinking-water and improved sanitation, which is difficult to achieve in the short-term in a place with such poor resources. Boiling all drinking-water, for instance, may not be feasible when natural gas is scarce, and fuel costs are high. Long-term improvements in the quality of public water supply, along with the promotion of water filters at the point of use, could help prevent future outbreaks.

Severe hepatitis E infection
occurs more frequently in pregnancy
and regularly induces
a mortality rate of 20%
among pregnant women in the third trimester*

Research leads to passing of Bangladesh's first Domestic Violence Act

On 5 October 2010, Bangladesh's Parliament made history when it passed the country's first-ever Domestic Violence (Resistance and Protection) Act. To reach this milestone, policy-makers and human rights group drew heavily on the pioneering work of ICDDR,B researchers who had documented the problem of domestic violence in Bangladesh.

Contributing to the World Health Organization's 'Multi-country Study on Women's Health and Domestic Violence against Women' report, our researchers demonstrated that most violence against women was perpetrated by their husbands. It also found that most women remained silent about their predicaments, with barely 2% seeking official help from the police or other institutions. However, protecting women, or providing support for them, has long been difficult without a legal framework.

Leading our team was Dr Ruchira Tabassum Naved, a Gender & Reproductive Health Specialist, who switched focus from nutrition. "My interests became firmly ensconced with gender issues, especially involving violence against women", she says. "It was this burning

passion that kept my research interests going."

In 2007, on behalf of ICDDR,B she joined the Citizen's Initiative against Domestic Violence (CIDV) coalition. Drawing upon a previous bill drafted by the Law Commission, the CIDV drafted a new bill that was submitted to the Ministry of Women and Children Affairs (MOWCA). Several consultations took place between the MoWCA and CIDV. The bill was then placed before the Bangladesh Parliament in 2010 and was finally passed.

Dr Naved is eager to pay tribute to the women who shared their experiences and insights with her and her team, because they, in a sense, are the bill's authors. Many expressed hope that their stories would be followed by concrete measures for the prevention of future violence against other women. As one participant said, "I have told you everything. Do see to it that women do not ever have to suffer this again."

"Women are marginalised in Bangladesh's male-dominated social structure. If we want women to move forward, we have to address structural issues first."

Dr Ruchira Tabassum Naved, Head, Gender, Human Rights and Health, ICDDR,B





Grand Challenges Explorations: ICDDR,B consistently wins recognition

In addition to Dr Md Abdul Quaiyum's success (see opposite page), ICDDR,B researchers have received grants in four earlier rounds of the Gates Foundation's Grand Challenges Explorations programme.

2008 Dr Nur Haque Alam wins award to study the effectiveness of food supplemented with L-isoleucine and vitamin D in aiding the recovery of children hospitalised with pneumonia and diarrhoea.

2009 Dr Dinesh Mondal wins award to test the hypothesis that periodic deworming, combined with micronutrients and vitamin A supplements might reduce the risk of active visceral leishmaniasis (kala-azar).

2009 Dr GH Rabbani wins award to investigate how stoves with lower biomass fuel emissions can reduce acute lower respiratory infections among children caused by air pollution.

2010 Dr Firdausi Qadri wins award to develop improved immunisation regimens to maximise the immune responses to Vivotif in children living in developing countries.

31% of maternal deaths in Bangladesh are due to bleeding, primarily during the postpartum period*

Development of diagnostic tool to prevent deaths from postpartum haemorrhaging

Innovation has kept ICDDR,B at the forefront of developing life-saving solutions to global health problems. In November 2010, Dr Md Abdul Quaiyum, an associate scientist in the Reproductive Health Unit, was awarded a US\$100,000 Grand Challenges Exploration grant from the Bill & Melinda Gates Foundation to develop a simple, life-saving diagnostic technique aimed at preventing women dying from postpartum haemorrhaging.

Dr Quaiyum has pioneered the use of a birth mat, which a mother can lie on immediately after giving birth. The mat comes with instructions advising women that if the mat is more than 50% covered in blood, they need to be referred to a hospital. With the help of the Gates Foundation, Dr Quaiyum is taking this a step further, and

developing a biodegradable version designed to absorb no more than 500ml of fluid. If the mat stops absorbing blood, this indicates that the woman is haemorrhaging and should immediately be transferred to a hospital or health centre.

“Very early in my career, I realised that health interventions directed at the mother have a strong multiplier effect and ripple out to her community”, says Dr Quaiyum. “This is especially important in a country like Bangladesh where mothers are fundamental figures in our community.”

If tests are successful, Dr Quaiyum envisages the mat gaining wide use during home deliveries, and making a significant contribution to reducing maternal deaths from blood-loss after birth in Bangladesh and other low-income countries.

“Being a researcher allows me to develop innovations that improve not only the lives of individuals, but the condition of societies.”

Dr Md Abdul Quaiyum, Associate Scientist, Reproductive Health Unit, ICDDR,B

ICDDR,B plays pioneering role in HIV/AIDS research, surveillance and advocacy

The prevalence of HIV infection continues to be low in Bangladesh. However, high-risk behaviours are common in the most-at-risk groups as well as in the general population. HIV prevalence rates in one group of ‘people who inject drugs’ (PWID) has already reached epidemic levels, and infection may easily spread to other PWID groups and sex workers, and then to the general population.

For 20 years, researchers at ICDDR,B have pioneered HIV/AIDS research, surveillance and advocacy in Bangladesh. With our partners, we conduct annual HIV surveillance for the Government of Bangladesh, collecting data to monitor the progress of the epidemic and changes in behaviour that carry risk of infection. Dr Tasnim Azim, head of our HIV/AIDS programme, and principal author of ‘20 Years of HIV in Bangladesh: Experiences and Way Forward’ (World Bank/UNAIDS), argues that Bangladesh has stayed ahead of the epidemic because it has been proactive from the beginning and always acted on evidence.

In 2010, the key achievements of our HIV/

AIDS research programme include:

- Monitoring HIV/Sexually Transmitted Infections (STIs) epidemics and risk factors that foster HIV transmission.
- Researching to better understand the risk factors of transmission of HIV/STIs among the most vulnerable people.
- Identifying factors that make adolescents and youths increasingly vulnerable to HIV.
- Determining ways that HIV is transmitted between groups most vulnerable and at-risk and the general population to limit its further spread.
- Developing strategies for care and support of people in Bangladesh infected by HIV.
- Coordinating our research with other groups active in HIV/AIDS, and supporting their work.

In line with its our research agenda, ICDDR,B’s Dhaka Hospital offers free clinical services to anyone suffering from HIV/AIDS-related complications.

“Bangladesh has stayed ahead of the HIV/AIDS epidemic because it has been proactive from the very beginning and has always taken evidence-based action.”

Dr Tasnim Azim, Head, HIV/AIDS Programme and Virology, ICDDR,B

.....

The crowded streets of Dhaka City, where HIV prevalence has risen among intravenous drug users





"We are interested in developing preventive materials that not only work in research labs, but also those that vulnerable people are actually interested in and will use in their daily lives."

Dr Sharful Islam Khan, Project Director of RCC HIV Programme, ICDDR,B

Voluntary testing services help facilitate monitoring and surveillance of HIV/AIDS in Bangladesh

Using drop-in centres to reduce HIV transmission among those most at risk

The Global Fund Rolling Continuation Channel (RCC) for HIV Programme in Bangladesh was designed to reduce HIV transmission among groups in Bangladesh most at risk from HIV infection. This RCC Programme has three Principal Recipients: the National AIDS/STD Programme, ICDDR,B and Save the Children, USA. It was initiated in December 2009 and ICDDR,B is responsible for ensuring provision of HIV prevention services for males who have sex with males (MSM) and *hijra* (people who are transgendered), as well as strengthening capacities of community-based organisations. Our earlier research and evaluation studies on MSM and *hijra* is the basis on which this project has been built.

Three Sub-recipients—Bandhu Social Welfare Society, Light House and Padakhep Manabik Unnyan Kendra—have been selected to carry out most of the activities. They work together with their consortium partners. Before starting HIV prevention services with MSM and *hijra*, the numbers that can be accessed for services and geographical distribution was determined through a nationwide assessment. This was conducted in 65 districts. The highest proportions were found in Dhaka, followed by Rajshahi, Chittagong and Sylhet. In addition, it was found

that in most areas *hijra* were scattered in different localities.

Based on these findings, the distribution of drop-in centres and methods for service delivery were refined. Finally, it was decided to set up 65 drop-in centres in 40 districts to cover a total of 33,000 people: 29,305 MSM/MSW (male sex workers) and 3,695 *hijra*. By the end of December 2010, most drop-in centres were in operation. A strong system of participatory monitoring and evaluation has been established to ensure the quality and efficiency of these services.

Bangladesh is one of 189 countries that have pledged to achieve the Millennium Development Goals (MDGs) by 2015, and is one of only six developing countries on track to reach some of these goals. Our work on HIV and AIDS is in line with MDG 6 (combating HIV/AIDS, malaria and other diseases). Target 6A is to have halted by 2015 and begun to reverse the spread of HIV/AIDS. Target 6B is to have achieved, by 2010, universal access to treatment for HIV/AIDS for all those who need it. Target 6C is to have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.

In Bangladesh, HIV prevalence remains low
less than 0.1%
in the general population*

Collaborating institutions

Collaborations with leading academic institutions around the world has long been a cornerstone of ICDDR,B research programmes. This map shows the institutions our scientists collaborated with in 2010.

USA

Albert Einstein College of Medicine of Yeshiva University
Aquaya Institute
Barnard College
Brigham and Women's Hospital
Centers for Disease Control and Prevention
Columbia University
Christian Reformed World Relief Committee
Dartmouth Medical School
Emory University
Georgetown University
Gynuity Health Projects
Harvard Medical School
Harvard University
Infectious Disease Research Institute, Seattle
Johns Hopkins Bloomberg School of Public Health
Johns Hopkins University School of Medicine
Massachusetts General Hospital
Medgar Evers College, City University of New York

National Institutes of Health
Oklahoma State University
PATH
Pathfinder International
Reckitt Benckiser Inc.
Robert Wood Johnson Medical School, University of Medicine & Dentistry of New Jersey
Rollins School of Public Health
Save the Children
Smiling Sun Franchise Program, USAID
TechLab, Inc., Virginia
The City University of New York
The Consortium for Conservation Medicine, New York
The University of Chicago
University at Buffalo
University of California, Davis
University of Colorado, Boulder
University of Florida
University of Maryland

GlaxoSmithKline
University of California Davis
University of Michigan
University of Missouri
University of North Carolina
University of Tennessee
University of Virginia
University of Washington
Western Human Nutrition Research Center, USDA,

MEXICO

National Autonomous University of Mexico

More than the sum of our parts: how collaboration drives innovation

In September 2010, a senior delegation from ICDDR,B visited Stanford University's Global Health Programmes in Medicine to build upon a newly-agreed five-year Memorandum of Understanding (MoU). This MoU provides a framework to support shared global health activities, and offer possibilities for two-way research, capacity-building, exchange visits, fellowships and funding. Stanford's residency and fellowship programmes are keen to send residents and fellows to ICDDR,B for clinical and teaching experience.

UK

Brunei University
Department for International Development
GlaxoSmithKline
Institute of Child Health, London
London School of Hygiene & Tropical Medicine, University of London
University of Aberdeen
University of Sussex
The Wildlife Trusts

SWEDEN

European Centre for Disease Prevention and Control
Huddinge University Hospital
Karolinska Institute
Karolinska University Hospital
Stockholm University
Swedish Institute for Infectious Disease Control
University of Gothenburg
Uppsala University

ICELAND

University of Iceland

FRANCE

Conservatoire Nationale des Arts et Métiers
Institut Pasteur

AUSTRIA

International Atomic Energy Agency
Medical University of Vienna

SWITZERLAND

Alliance for Health Policy and Systems Research
Bern University Hospital
International Organization for Migration
Nestlé Research Centre
Novartis Consumer Health Schweiz AG
Swiss Tropical Institute
University Hospital, Liestal
University of Basel

THE NETHERLANDS

Erasmus University Medical Centre
KNCV Tuberculosis Foundation
Leiden University Medical Center

NEPAL

BP Koirala Institute of Health Sciences

PAKISTAN

Aga Khan University

INDIA

Banaras Hindu University
National Institute of Cholera & Enteric Diseases
Rajendra Memorial Research Institute of Medical Sciences

JAPAN

Aichi Medical University
Institute of Tropical Medicine, Nagasaki University
Kyoto University
Research Institute for Humanity and Nature
University of Tokyo
University of Tsukuba

SOUTH KOREA

International Vaccine Institute

AUSTRALIA

Commonwealth Scientific and Industrial Research Organisation
The University of Adelaide
The University of Melbourne
The University of Sydney
University of New England

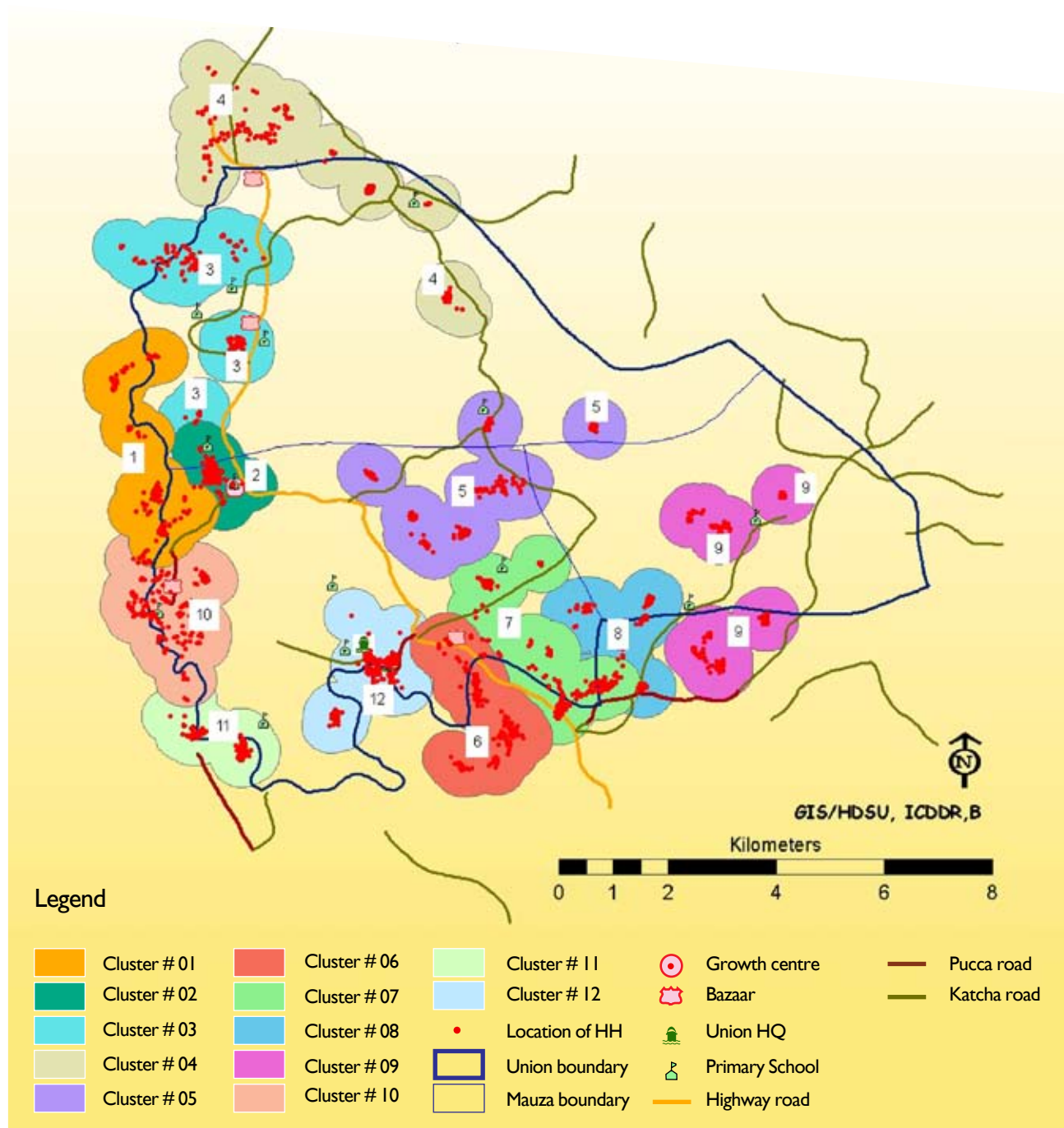
In the coming years, partnership opportunities include:

- Interventions to reduce pollution and add comfort in the home through specially designed cooking stoves.
- Assessment and study of the consequences of manmade changes to ecosystems.
- Introduction of an IT-based 'health box' equipping health workers with tools for improved primary healthcare.
- Study of childhood bronchial asthma.
- Monitoring infectious disease agents in the community.
- Researching childhood tuberculosis.
- Visits from Stanford residents and fellows to ICDDR,B for clinical experience and to act as tutors on our fellowship programme.
- Linking of the Department of Family Medicine at Stanford with ICDDR,B staff clinic doctors and the Travellers Clinic.

A map of our surveillance area in southeastern Bangladesh, produced by our GIS unit and used in the study of malaria

Household cluster of Kuhalong Union in Bandarban District

(buffer = 500 m)



Mapping Disease: satellite technology is helping us make new discoveries

ICDDR,B's Geographic Information System (GIS) unit was established in 1994 to provide our scientists with the maps necessary for their research. Initially, the GIS unit dealt with only with the Matlab area, but it has gradually expanded its coverage, and now provides maps for research projects across the country.

Thanks to rapid developments in computer software and satellite imagery, there is now enormous scope to expand GIS activities in a range of different fields. Any kind of spatial information can be extracted from high-resolution images, which can help researchers visualise a wide range of spatial relationships, such as disease patterns and population distributions.

Matlab

As part of our Matlab-based Health and Demographic Surveillance System, our GIS unit collects spatial data identifying objects such as tubewells, ponds, rivers, roads, and health and educational facilities as well as villages and *baris* (clusters of households). Since the Matlab GIS has been integrated into our Health and Demographic Surveillance Unit, whenever a member of the population gets his or her Demographic Surveillance System identification number, he or she is automatically linked to the corresponding spatially-referenced objects of the Matlab GIS. Continuous updating of the spatial databases is also done whenever a new *bari* is generated, or new roads or facilities are created. Data is used to monitor and manage ongoing projects, as well as to produce, plot and analyse thematic maps.

GIS also allows researchers at Matlab to better understand health services and equity, as well as to study the epidemiology and ecology of the cholera virus in Bangladesh.

In addition to Matlab-based mapping, GIS has also been used in Dhaka to track *Aedes* larvae and dengue outbreaks. GIS' ability to link remote sensing data to existing, locally-gathered information gives researchers a new, synthesised perspective. New development of software and more powerful and different types of satellite images offer the hope of expanding GIS activities in the public health field even further in the near future.

Bandarban

Bandarban is one of our malaria surveillance sites. Our GIS unit has collected spatial data identifying objects such as households, schools, markets, religious places, ponds, health and educational facilities as well as *para* (neighbourhoods) and clusters. Our researchers have been using this data to plan, monitor and manage current surveillance, as well as to produce, plot and analyse thematic maps. GIS is also allowing our scientists to evaluate the efficacy of our malaria protection and prevention programmes.

Contributing to the bank of human knowledge through publication and involvement in the global health conversation

A scientist's reputation is based on peer review of his or her work. Our researchers continue to publish in the highest-ranking journals, ensuring the international reputation of ICDDR,B as well as recognition of our contribution to global health research. In 2010, some of those publications included:

NATURE

Satellite phage TLC ϕ enables toxigenic conversion by CTX phage through *dif* site alteration.

Hassan, F., Kamruzzaman, M., Mekalanos, JJ, and Faruque, SM.

doi:10.1038/nature09469

N ENGL J MED

Influenza immunization in pregnancy – antibody responses in mothers and infants (letter).

Steinhoff MC, Omer SB, Roy E, Arifeen SE, Raqib R, Altaye M, Breiman RF, Zaman K

LANCET

HIV prevention, treatment, and care services for people who inject drugs: a systematic review of global, regional, and national coverage.

Mathers BM, Degenhardt L, Ali H, Wiessing L, Hickman M, Mattick RP, Myers B, Ambekar A, Strathdee SA; for the 2009 Reference Group to the UN on HIV and Injecting Drug Use (Ambekar A, Azim T, Bastos FI, Guarinieri M, Hickman M, Jianhua L, Kamarulzaman A, Malinowska-Sempruch K, Maxwell JC, Murthy P, Myers B, Onigbogi OO, Owiti F, Panda S, Stimson G, Strathdee SA, Sulliman F, Toufik A, Toufiq J, Tyndall M, Wiessing L, Zabransky T, Zhusupov B).

Jun 5;375(9730):2024-31.

LANCET

Effect of parent's death on child survival in rural Bangladesh: a cohort study.

Ronsmans C, Chowdhury ME, Dasgupta SK, Ahmed A, Koblinsky M.

LANCET

Efficacy of pentavalent rotavirus vaccine against severe rotavirus gastroenteritis in infants in developing countries in Asia: a randomised, double-blind, placebo-controlled trial.

August S, Zaman K, Anh DD, Victor JC, Shin S, Yunus M, Dallas MJ, Podder G, Thiem VD, Mai LTP, Luby SP, Tho LH, Coia ML, Lewis K, Rivers SB, Sack DA, Schödel F, Steele AD, Neuzil KM, Ciarlet M.

J CLIN MICROBIOL

Cholera between 1991 and 1997 in Mexico was associated with infection by classical, El Tor, and El Tor Variants of *Vibrio cholera*.

Alam M, Nusrin S, Islam A, Bhuiyan NA, Rahim N, Delgado G, Morales R, Mendez JL, Navarro A, Gil AI, Watanabe H, Morita M, Nair GB, Cravioto A.

2010 Jul 28

J CLIN MICROBIOL

Diagnostic limitations to accurate diagnosis of cholera

Alam M, Hasan NA, Sultana M, Nair GB, Sadique A, Faruque ASG, Endtz HP, Sack RB, Huq A, Colwell RR, Izumiya H, Morita M, Watanabe H, Cravioto A.

2010 Aug 25

INT J EPIDEMIOL

How well does LiST capture mortality by wealth quintile? A comparison of measured versus modelled mortality rates among children under-five in Bangladesh.

Amouzou A, Richard SA, Friberg IK, Bryce J, Baqui AH, Arifeen SE, Walker N.

Apr;39

BMC PUBLIC HEALTH

Partner notification for sexually transmitted infections in developing countries: a systematic review.

Alam N, Chamot E, Vermund SH, Streetfield K, Kristensen S. January.





OUR TRAINING PROGRAMMES

Training is one of our foundational mandates. For our research to be effective the knowledge we generate needs to be shared. Throughout our history we have maintained an emphasis on training activities that make a life-saving contribution to global health through capacity-building. The training we offer today to both nationals and internationals is informed by expertise, experience, learning and research accumulated over five decades. Since ICDDR,B was internationalised in 1978, our experts have trained more than 30,000 students, health workers, government officials and doctors from more than 80 countries.

icddr,b

EDGE FOR

LIFESAVING SCIENCE



.....
Dr Ramendra N Mazumder of ICDDR,B
explaining the salient features of diarrhoeal
disease management to doctors from
Bangladeshi Government institutions

Exporting knowledge

In 2010, we trained 1,882 individuals from 23 countries, thanks to financial contributions from the World Health Organization and the James P Grant School of Public Health.

Because of our decades of research, we are a leading provider of epidemic information in the developing world. Our courses in epidemiology are undertaken by students from all over the globe, who are offered priceless opportunities to become immersed in the world of medicine, epidemiology, and raw research. Our Technical Training Unit makes ICDDR,B and indeed Bangladesh, a key exporter of knowledge about the health needs of the developing world. The direct consequence is a worldwide increase in vital knowledge, and saved lives.

In 2010, training was also offered in:

- Biostatistics
- Child survival strategies
- Diarrhoeal disease management
- Family planning
- Health and demographic surveillance
- Laboratory management
- Qualitative research.

Field Experience: Matlab—a day in the life of a medical student



ICDDR,B offers a unique opportunity to students from within Bangladesh and around the world. In her diary of a day at Matlab, Jessica Sayre, a fourth year medical student from the University of Vermont in the United States, captures what it is all about.

8:30am Fresh flatbread, omelettes, lentils, vegetables, and sweet rice pudding. Yum! Over breakfast, chat with Dr Sharif, a medical officer from ICDDR,B in Dhaka, and Mary, charge nurse from the Longer Stay Unit in Dhaka.

9:15am To the hospital. Matlab campus includes a guest house, hospital, prenatal care offices, research offices and mosque, all surrounded by beautiful rice paddies. Tour Long Stay Unit with Dr Sharif: most patients are infants with malnutrition and diarrhoea, and complicating conditions, such as electrolyte imbalances and pneumonia. One new patient, who came in overnight presents with three days of acute watery diarrhoea, fever, moderate

dehydration and severe hypernatremia. We calculate the best way to fluid resuscitate her while bringing down her serum sodium slowly. Dr Sharif is worried that she will have convulsions if the sodium level drops too precipitously. We'll keep a close eye on her through the day.

10:30am Dr Sharif sits us down for a teaching session—fluid management in severely malnourished children presenting with dehydration.

11:30am My interest is pediatrics, so I head to the Kangaroo Maternal Care (KMC) ward where they take care of premature and low birth-weight neonates. Instead of using incubators, the ward is kept warm and infants kept between mothers' breasts until they are healthy enough to be discharged. KMC Ward has been very successful in reducing infant mortality.

1:00pm Lunch in the hospital canteen, far from the crowded, busy streets of Dhaka!

3:00pm Afternoon rounds with Dr Sharif. Infant with hypernatremia begins convulsing, nurses quickly administer diazepam and phenobarbital.

4:00pm Mary, nurse from Dhaka, takes us on a tour of surrounding villages, including home of Parboti, a nurse at the Matlab Hospital.

8:00pm Dinner in the guest house with Mary and Dr Sharif.

9:00pm Final ward round with Dr Sharif—infant with hypernatremia is doing well and has not had any more convulsions.

10:00pm A long, but fulfilling day. Goodnight.

Hands on experience: Student numbers jump by 50%

ICDDR,B aims to attract students not only within Bangladesh but also globally. Students (18 years and above) enrolled in an educational institution or who have recently graduated and possess diverse interests can seize and build upon the opportunities provided at ICDDR,B. The students who come here are given opportunities in real-life global health settings. Our Field Experience Programme was revitalised in 2009 with some important initiatives such as a computerised student database. In addition, during 2010 we focused on strengthening policies and guidelines and introducing new tools for monitoring and evaluation, with a more efficient database for field experience. The Student Welfare Unit was also more responsive towards ensuring the welfare of overseas students. All these efforts

resulted in an increased capacity of ICDDR,B for hosting and providing support to various target groups (students, fellows, interns, volunteers) to accomplish their public health practicum, masters or doctoral dissertations. Subsequently, in 2010, enrollment to the Field Experience Programme increased by 50%, with more than 100 students from 23 countries, including the United States, Norway, Canada, Nepal, New Zealand, Japan, Vietnam, Laos, and Cameroon.



Medical student, Jessica Sayre checks the status of a child in the Matlab Hospital

Pakistan floods

Our global response team steps in

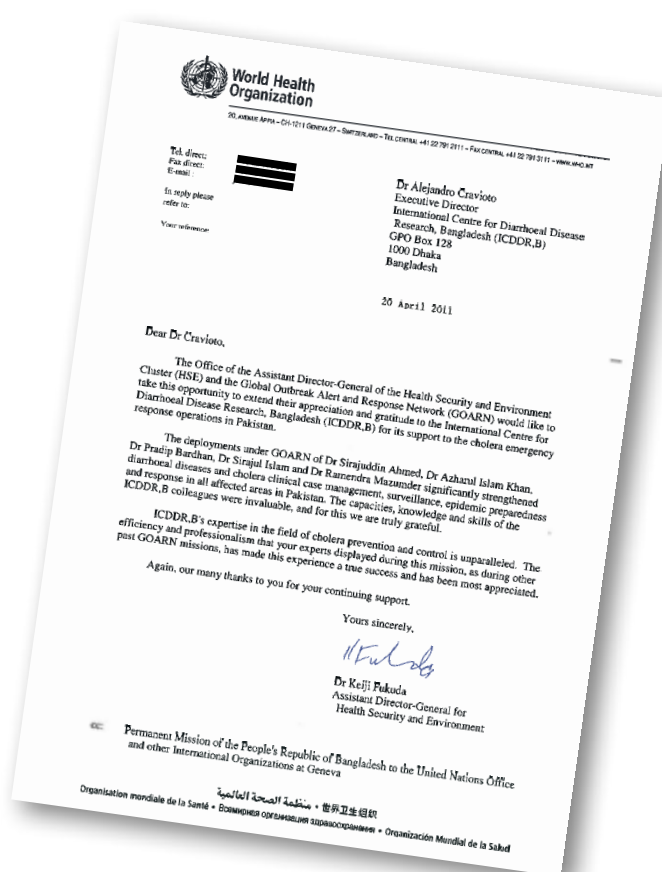
Following the floods that engulfed Pakistan in the summer of 2010, our global response team went there on a three-week mission. In the worst affected areas, floodwater had wiped out much of the healthcare infrastructure, leaving the population especially vulnerable to water-borne diseases, such as skin infections, gastroenteritis and diarrhoea.

Working in Peshawar and Sindh provinces—the most severely-affected regions of Punjab—our five-member team assisted the World Health Organization and the Director General of Health Services of the Government of Pakistan in their efforts to provide emergency health relief. To help with the emerging health crisis, they visited the majority of the 40 treatment centres established by WHO and partner agencies. Here they trained local health workers in the treatment of diarrhoea, and promoted the use of ORS. In collaboration with WHO's emergency teams, local authorities and partners, the team also helped strengthen case management for diarrhoeal disease and cholera outbreaks,

provided technical and operational support to local health authorities, and helped with local training on surveillance, epidemic preparedness and response.

In the capital, Islamabad, the team conducted a three-day 'train-the-trainers' course, to increase the capacity of staff involved in different Diarrhoea Treatment Centres around the country. Also in the capital, ICDDR,B microbiologist Dr Md Sirajul Islam assisted staff at the National Institute of Health so they could isolate and identify the pathogens responsible for causing diarrhoea epidemics.

Letter from the WHO Assistant Director-General for Health Security and Environment thanking us for our assistance in Pakistan, and commenting that, "ICDDR,B's expertise in the field of cholera prevention and control is unparalleled".



A severely dehydrated baby
recovering in a diarrhoea
treatment centre set up
with technical assistance
from ICDDR,B's emergency
response team in Pakistan
.....



Haiti cholera epidemic

‘Cholera warriors’ take action

ICDDR,B’s epidemic control team have been dubbed ‘cholera warriors’ by the international media, and are increasingly called upon to offer their expertise in countries experiencing cholera outbreaks. Since 2009 alone, they have responded to urgent calls from Zimbabwe, Papua New Guinea and Pakistan.

On 12 January 2010, Haiti was rocked by a massive earthquake that killed 230,000 people, left 1.5 million homeless and destroyed the country’s infrastructure. “I knew Port-au-Prince has suffered an earthquake but the scale of the damage was beyond my expectations. It looked like a city ravaged by war”, said ICDDR,B clinician Dr PK Bardhan.

With 60% of people having no access to drinking-water and the sewerage system largely destroyed, the population was highly vulnerable to water-borne diseases. Ten months after the earthquake struck, the first case of cholera was reported. Having been cholera-free for over a century, Haitians were completely unprepared, and the disease spread rapidly.

Our team of ten clinicians, microbiologists, and nursing officers were invited to Haiti by the humanitarian organisation, Project Hope, the Pan-American Health Organization (PAHO), and the Centers for Disease Control and Prevention (CDC), Atlanta. They had two key objectives: to reduce the death rate from cholera through training healthcare workers and sharing simple prevention techniques with the public; and to train the country’s medical and health professionals in the management and treatment of cholera.

Laboratory analysis vital

Immediately on arrival, microbiologist Dr Sirajul Islam set up a mobile lab in the National Public Health Laboratory in Port-au-Prince, where he could process swabs sent back by teams in the field—an essential part of the epidemic management process as it informs which antibiotic is effective for treatment. Out of 57 samples, 43 were found to be cholera-positive. Laboratory Analysis is vital in a cholera outbreak and Dr Islam identified the strain of cholera as *Vibrio Cholerae* 1, biotype El Tor, serotype Ogawa.

Direct training

It was clear to everyone that local doctors, nurses and other health workers had very limited understanding of how the disease was transmitted and of the right clinical management techniques. Training was provided directly to medical doctors, nurses, paramedics, and social workers. “We trained several hundred people including doctors, nurses, pharmacists, sanitary health workers, engineers, and lab technicians”, said Dr Bardhan.

“Decades of practice and research at ICDDR,B have made me and my colleagues experts at handling situations like we found in Haiti. When we work abroad we feel proud that we are not only representing ICDDR,B but the entire nation of Bangladesh.”

Dr PK Bardhan, Head, Special Care Unit, Dhaka Hospital and member of emergency response team



A three-year-old cholera patient near death at a hospital in Les Cayes, Haiti makes a full recovery within a few hours of receiving treatment from ICDDR,B/Project Hope team members



Public education

There was also an urgent need for ordinary people to understand what cholera is, how it is spread, and how it can be treated. Working with Project Hope, our team used radio and TV interviews to spread key messages on the importance of personal hygiene and of taking ORS. They spoke to schoolchildren and church groups, and to thousands of workers, in Port-au-Prince, most of whom were heads of household.

Briefing policy-makers

Team members also briefed policy-makers including Haiti's Health Minister, and its outgoing President, René Préval. In order to control the number of cases and fatalities, our team made clear, the Government had to improve sanitation and ensure safe drinking water.

Life-saving measures

Sometimes immediate life-saving intervention was necessary. In Les Cayes Hospital, for example, a severely-dehydrated patient was found alone with no IV fluid. Medical staff couldn't find her collapsed vein to start rehydration, and she was near death. "We took permission from the doctor to start an aggressive flow of IV fluid", recalled nursing officers, Momtaz Begum and Cathrine Costa. "Our intervention was successful and enabled us to demonstrate to the doctor and nurses how dramatically and quickly the patient's condition could be changed with the administration of rehydration fluids." The response was immediate. "The doctors started running from bed to bed to reassess patients they had previously given up on!"



OUR SERVICES

Our research is uniquely informed by our clinical services. In fact it was this close relationship that led to the discovery and development of ORS and is why our humanitarian services in the Dhaka, Mirpur and Matlab hospitals remain central to our work and our philosophy today. Evidence supports the word on the street: get to an ICDDR,B hospital and they won't let you die. With a fatality rate of less than 1%, ICDDR,B continues to save lives on a daily basis. Our reputation for offering treatment to all free of charge means that there is a steady flow of patients walking through our doors 24 hours a day.

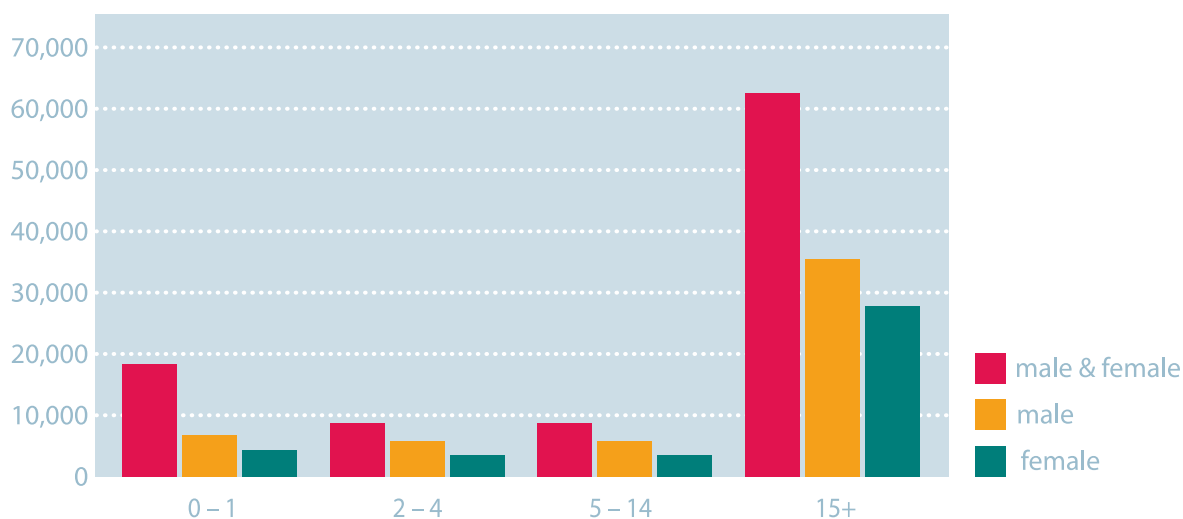
icddr,b
EDGE FOR
LIFESAVING SCIENCE

Busiest year ever for clinical services

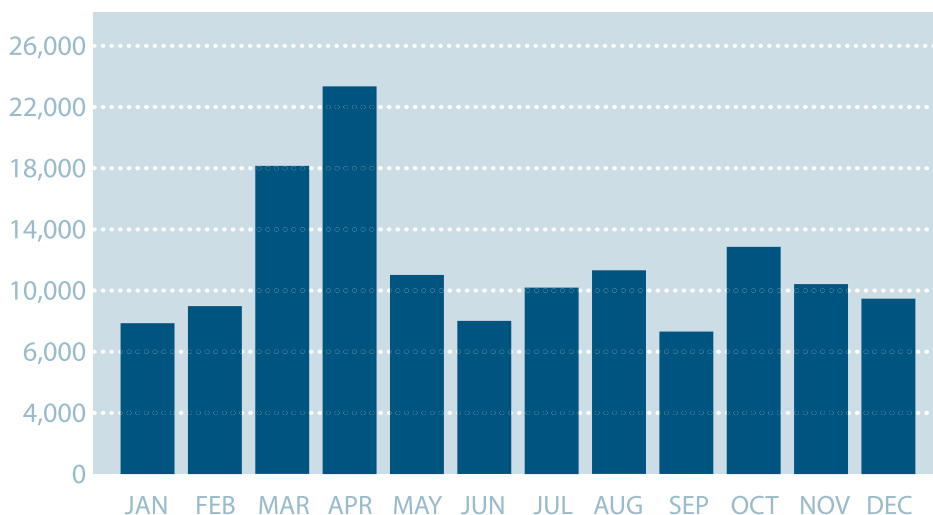
For ICDDR,B's hospitals and clinics, 2010 was the busiest year to date, with over 142,000 patients receiving treatment at the Dhaka Hospital alone. This year, April was the busiest month, with almost 24,000 patients admitted during the year's first seasonal peak.

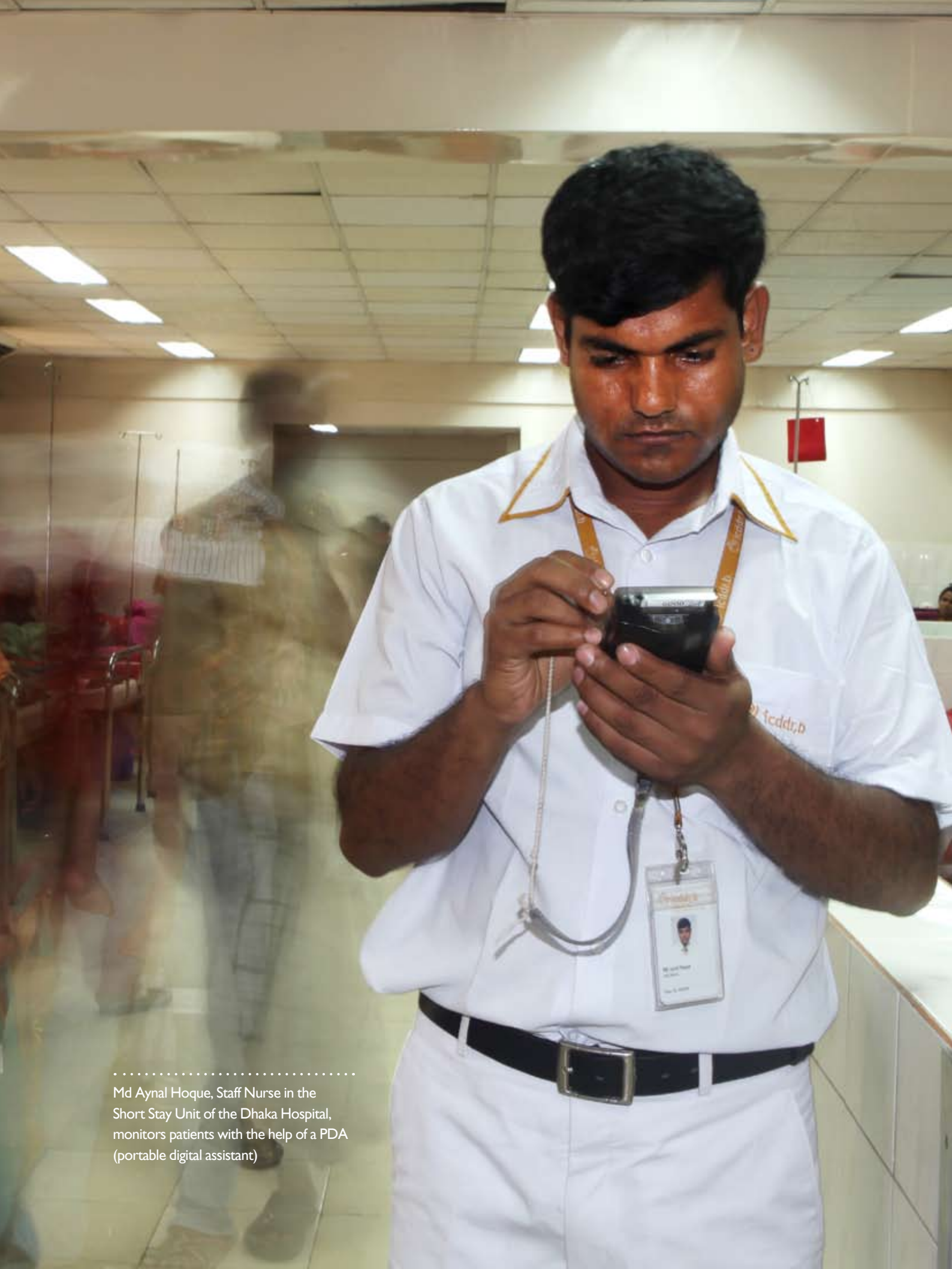
The highest number of patients admitted throughout the year belonged to the 0-5 years age group (70,961), followed by patients aged 15 years and over (62,931).

Distribution of patients admitted to the Dhaka Hospital by age group and sex, 2010



Monthly patient visits, 2010 Dhaka Hospital, ICDDR,B





.....
Md Aynal Hoque, Staff Nurse in the
Short Stay Unit of the Dhaka Hospital,
monitors patients with the help of a PDA
(portable digital assistant)



In 2010, the Dhaka Hospital staff
cared for over
142,000 patients

.....
Nurse Rehana Sultana prepares a
syringe pump to administer medication
to a patient in the Dhaka Hospital's
Special Care Unit

Basic Life Support training saves lives in the Dhaka Hospital

Patients on the brink of death need urgent, immediate treatment. This calls for a cool head and rigorous, dedicated training.

Here is a real life example: one day in May 2010, a baby boy, just 38 days old, was admitted to the Dhaka Hospital's triage area suffering from severe dehydration. He was barely breathing, and there was almost no pulse. The senior staff nurse on duty, Radha Rani Datta, and staff nurse Moti Lal Baidya immediately started CPR. Oxygen was pumped into the baby's tiny lungs with the use of an 'ambubag', while an intravenous line was inserted into his vein to administer saline.

After few minutes the baby started to breathe by himself, and his heart beat returned. Once out of immediate danger, the baby was then

transferred to the Special Care Unit, where he subsequently made a full recovery.

Staff at both the Dhaka and Matlab hospitals continue to face such challenges in saving patients' lives. That is why, in April 2010, a series of 'Basic Life Support' training sessions were organised for both medical and nursing staff. To support this training, all clinical areas have been supplied with 'ambubags', which help patients breathe. In addition, Short Stay Unit staff have compiled their own clinical guidelines to help with the treatment of very sick patients.

These initiatives are based on ICDDR,B's hospital management philosophy—to provide vital training for its staff to ensure the best quality patient care possible.

.....
Staff nurse Moti Lal Baidya (left)
and Senior staff nurse, Radha Rani
Datta (right) whose quick action
saved the life of a child



Mirpur's Diarrhoea Treatment Centre celebrates its first anniversary

In recent years, our sophisticated Diarrhoeal Disease Surveillance System revealed that increasing numbers of people were coming to the Dhaka Hospital from one particular area—Mirpur, a suburb in the north of the city. Over a period of two months during the severe flooding of 2007, approximately 50,000 patients came from here. The startling revelation was that 42 lives had been lost in the length of time it took to travel from Mirpur to ICDDR,B's main campus in Mohakhali, and that many other patients had arrived severely dehydrated. Following another sharp rise in diarrhoeal disease in March 2009, Bangladesh's Ministry of Health and Family Welfare responded to our evidence and asked us to open a treatment centre in Mirpur. This 60-bed facility began operations just one month later, inside an existing government facility.

From the moment the doors opened, the Mirpur Treatment Centre began to save lives. Patients arrived so dehydrated that they would never have survived the journey to our main campus. The establishment of this second treatment facility in Dhaka was an important step in extending ICDDR,B's technical and case management expertise in Bangladesh. By

December 2010, this collaborative effort had treated more than 19,000 patients, one in four of whom was suffering from severe dehydration.

On 22 April 2010, the Director General of Health Services, Ministry of Health and Family Welfare, visited the Mirpur Diarrhoea Treatment Centre. He asked ICDDR,B to provide training to the nurses and internee students of the Government Unani and Ayurvedic Degree College and Hospital, where the treatment centre is located, for a sustainable patient care system. He also publicly recognised that, with ICDDR,B expertise, treatment centres like this could be opened in other areas of Bangladesh, working in partnership with NGOs, to treat patients suffering from diarrhoeal diseases.

The Mirpur Diarrhoea Treatment Centre is an example of how ICDDR,B uses surveillance data to advocate for change and to inform public policy. It also demonstrates our expertise in the field, as well as our commitment to capacity-building and the strengthening of health systems in Bangladesh.

In 2010 alone, almost
15,000 people
 visited the Mirpur Treatment Centre

On the road to
recovery-a baby suffering
from diarrhoea is fed
oral saline at the Mirpur
Treatment Centre
.....





Fellow Nurse Shamima Nasreen
monitoring an HIV patient's vital signs



ICDDR,B leads the way in providing care for people suffering from HIV/AIDS in Bangladesh

Dr Nashaba Matin, a UK-trained physician, is the HIV clinical lead of our Jagori (the Bangla word for 'awakening') unit. She says the vital work being undertaken at Jagori is all too rare: "Unfortunately, due to the ignorance and the stigma that these patients suffer in most health-care centres in the country, we are one of the few safe havens for them." Although Jagori has only been operational for a short while, it has already made an impact. In just five years, Jagori services have been rolled out to three key cities around the country and, in 2007, several other organisations have followed our lead, opening over 50 testing centres around the country.

Other recent additions to, and strengthening of, Jagori include:

- Referrals to other specialists, such as antenatal care specialists, skin specialists, and clinical psychologists.
- Management of post-exposure prophylaxis.
- Providing training for counselling and clinical practice to other organisations upon request.
- Providing a supportive environment for people who identify themselves at risk for HIV.
- Documenting the HIV prevalence among people who identify themselves at risk for HIV.
- Contributing to the Government of Bangladesh's passive case reporting for national HIV/AIDS figures.

But Jagori is not resting on its laurels. "ICDDR,B has always had strong clinical expertise to help treat HIV- afflicted patients and I have tried to build on that", said Dr Matin. "However, I have also tried to incorporate strong counselling and testing services that I believe are missing in a national context."

Former Clinical Fellows Dr
Shoeb Bin Islam (left) and Dr
Sharifuzzamn (right) in the
Intensive Care Unit of the
Dhaka Hospital
.....



The Advanced Programme: Launch of innovative Clinical Fellowship Programme

2010 saw the launch of ICDDR,B's new Clinical Fellowship Programme. This gives physicians the opportunity to undertake advanced training and/or to acquire more specialised expertise than they would normally be offered during residency training. The scheme is the only residency programme available in Bangladesh, and aims to increase the number of skilled clinicians in general internal medicine, paediatrics and communicable diseases. The programme is designed to provide hands-on clinical training to junior doctors, with an eye to preparing some of them for academic careers in research. The Fellowship programme has both clinical and academic components, with most time spent in direct patient contact. Fellows are mentored in the various wards of the Dhaka Hospital, Matlab Hospital and Mirpur Treatment Centre, and spend the rest of the time in classroom-based skills development.

During 2010, 45 Fellows from Bangladesh

were enrolled under the programme along with 32 students from international institutions in countries such as Japan, USA, UK, United Arab Emirates and Australia. Two fellows actually completed the full programme in 2010, and one senior Fellow was invited to take part in ICDDR,B's emergency response to Haiti during November's cholera outbreak. Both are now serving as Medical Officers at our Dhaka Hospital.

Future plans include a rotation of residents from Stanford and Harvard universities in the USA. It is envisaged that they will gain exposure to common conditions that affect people living in poverty, and contribute to Fellows' clinical skills development. The Fellowship Programme is an integral part of our educational philosophy.

"The Clinical Fellowship Programme was a unique opportunity to gain understanding and confidence as a physician, as well as to clearly think through our motivation for becoming doctors."

Dr Sharifuzzaman, Clinical Fellow, 2010



OUR INSTITUTION

In the course of its 50-year history, ICDDR,B has established itself as a leading public health research institution. Our organisational infrastructure, which aspires to international standards, underpins all our activities. It ensures that our scientists can continue to build upon the organisation's remarkable legacy, generating research to address the major public health challenges of people living in Bangladesh and beyond.

icddr,b

EDGE FOR

LIFESAVING SCIENCE

New Deputy Executive Director appointed



In June 2010, ICDDR,B's Board of Trustees approved the appointment of Dr Abbas Bhuiya to the post of Deputy Executive Director. Dr Bhuiya assumed his new office on 1 July.

Dr Bhuiya joined ICDDR,B in 1980. He began his career with the Matlab Demographic Surveillance System and subsequently established the Chakaria field site of ICDDR,B. His major areas of research have been poverty, health, equity, community development, and social determinants of health. Dr Bhuiya is an adjunct professor at the James P Grant School of Public Health under BRAC University and is involved in many high-level

national and international initiatives.

As Deputy Executive Director, one of Dr Bhuiya's priorities is to increase the leadership capacity of young local scientists. "I was a young scientist once, and the mentors in my life have made all the difference to me in my career. I want to set up a working mentoring system where senior scientists not only pass on their skills, but delegate responsibility to their juniors so that they can acquire leadership skills." Dr Bhuiya is assured that the future bodes well for the institute. "We are expanding our research scope but not compromising our core responsibilities. I have no doubt that ICDDR,B will continue to serve the interests of the vulnerable residents of developing nations."

Dr Bhuiya received his BA (Hons.) and MA in Statistics from Chittagong University and another MA degree and PhD in Demography from the Australian National University. He has to his credit more than 100 articles in peer-reviewed scientific journals and books. He is also a Section Editor of the bimonthly Journal of Health, Population and Nutrition published by ICDDR,B.

ISO certification for our Procurement and Materials Unit

Our commitment to maintaining the highest of standards is reflected in our support services, where we aim to comply with international criteria. We have taken a significant step by obtaining ISO certification for our Procurement and Materials (P&M) Unit, Finance Department. This has allowed the P&M Unit to incorporate global best practices for procurement—meeting the requirements of multiple donors, as well as the Government of Bangladesh. The P&M

Unit now has a framework for continual improvement, so procurement practices are constantly revised and updated. Similarly, the unit's environmental footprint has been reduced, making it more sustainable across its activities and operations. At a time of economic uncertainty, when donors are concerned to ensure that resources are well utilised and accounted for, our ISO certification for P&M positions demonstrates that ICDDR,B is a reliable and trustworthy recipient.

Introducing the Monitoring Evaluation & Internal Audit Department

ICDDR,B's Strategic Plan 2020 is the organisation's road map for the coming decade. It is actionable, measurement-based, and employee and stakeholder centric. An important step towards successfully implementing it is to enhance the scope of the existing performance reporting mechanism. We are also aware that donors are increasingly concerned about the effectiveness of their aid. In light of these emerging needs, it was felt that an independent multidisciplinary team should be formed to carry out structured implementation of strategy, monitoring, ensuring good governance through risk management, internal auditing and facilitating periodic external evaluations mandated by key stakeholders.

In November 2009, the Board of Trustees approved the formation of a Monitoring, Evaluation and Internal Audit Department (ME&IA). In June 2010, the Board approved the appointment of the department's first director, Mr Aniruddha Neogi. The department became operational the following month.

Among the new department's goals is to ensure that all functions align their objectives with that of the Strategic Plan. A flexible, integrated and simple framework using scorecards, dashboards, and key performance indicators is being developed to help drive

accountability. A cost-effective internal audit system is being implemented by using appropriate technology and people. A 'Loss Causation Model' will be used to analyse internal audit findings to ensure that 'Root Cause' is identified. The Internal Audit function is expected to act as an enabler with the goal of advising and supporting all functions on process improvement and cost optimisation initiatives.

Uncertainties and associated risks will be managed in a planned and coordinated manner, thereby enhancing our ability to successfully achieve our objectives and optimise associated risk exposure through strengthening the existing 'Enterprise Risk Management Framework'. Periodic reporting to the stakeholders including the Executive Director and Board of Trustees will be an important objective. Efforts will be made to embed a 'Risk Culture' by encouraging identification, assessment and reporting of risks and opportunities on a continuous basis.

"What I am most encouraged by is the readiness of people to start thinking strategically. There is a huge amount of interest and energy surrounding the Strategic Plan 2020, and people seem eager to cooperate to realise the benefits."

Mr Aniruddha Neogi, Director, ME&IA, ICDDR,B



ico

KNOWLEDGE
GLOBAL



OUR FINANCES

The ability to attract funding and to spend it wisely underpin an organisation's ability to survive and thrive. We are proud of our scientists who compete internationally to secure funding and are indebted to our core donors, whose financial contributions are testimony to their belief in the global benefits of our research. As good stewards, our monitoring and evaluation ensure that every taka invested in ICDDR,B is spent to improve the health outcomes of those living in poverty.

icddr,b

EDGE FOR

LIFESAVING SOLUTIONS

Finance Report

During fiscal year 2010, ICDDR,B's revenue and expenditure including endowment and construction funds, amounted to US\$39,530,000 and US\$39,482,000 respectively. The surplus before depreciation was US\$48,000. The depreciation expense of US\$1,969,000 brought the net deficit for the year to US\$1,921,000.

ICDDR,B's total revenue primarily consists of contributions from donors in the form of restricted and unrestricted grants. In 2010 the total contribution from donors was US\$36,523,000, a decrease of US\$2,073,000 or 5% over the previous year. The unrestricted contribution decreased by US\$2,820,000 or 20% compared to the previous year, and the restricted contribution increased by US\$3,655,000 or 19%. 84% of the contributions came from 11 major donors. The breakdown of contributions is depicted in the pie chart. Total expenditure decreased by US\$1,200,000 from US\$40,682,000 in 2009 to US\$39,482,000 in 2010. The expenditure comparison by major cost components is also depicted in the bar chart.

The cumulative deficit on the operating account decreased from US\$1,388,000 in 2009 to US\$1,335,000 in 2010, largely due to the surplus before depreciation of US\$48,000.

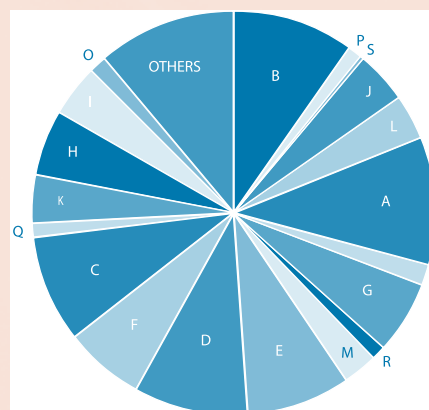
The balance of the endowment funds decreased from US\$11,154,000 in 2009 to US\$9,755,000 in 2010. The decrease of US\$1,399,000 was primarily due to the transfer of US\$1,825,000 to the operating fund and other adjustments which include undistributed income and capital.

ICDDR,B launched the building infrastructure expansion project in 2006. The objective of this project was to expand and modernize existing facilities to accommodate its growing activities. The current estimated total cost of the project is US\$32 million. Of this amount, actual expenditure of US\$12,294,000 was financed by the Government of Bangladesh and the United States Department of Agriculture.

The audited abridged financial statements for the year 2010 are annexed.

Director, Finance

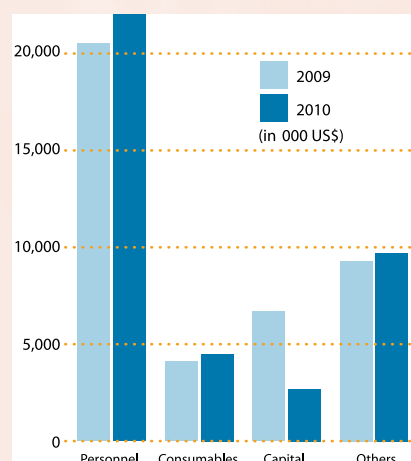
Dr Simbarashe Irvine Mandizvidza, CA, CPA



Donor contributions in 2010
(US\$36,523,000)

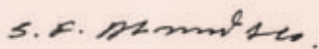
A	USA – NIH 10.3%	K	Bangladesh others 3.7%
B	Centers for Disease Control & Prevention (CDC) 10%	L	USA – other sources 3.7%
C	Canada – CIDA 9%	M	GFATM 2.8%
D	United Kingdom – DFID 8.5%	N	UNICEF 1.6%
E	Gates Foundation 8.4%	O	BRAC 1.5%
F	The Netherlands 6.6%	P	Australia – AusAID 1.2%
G	Sweden – Sida 5.9%	Q	Save the Children – USA 1%
H	Bangladesh – IHP 5.4%	R	WHO 0.9%
I	Johns Hopkins University (JHU) 4.1%	S	Rockefeller Foundation 0.4%
J	Bangladesh – USDA 4%	Others	11%

Expenditure by major cost components

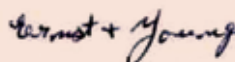


Independent Auditors' Report to The Board of Trustees of International Centre for Diarrhoeal Disease Research, Bangladesh

1. We have audited the financial statements of INTERNATIONAL CENTRE FOR DIARRHOEAL DISEASE RESEARCH, BANGLADESH (ICDDR,B) for the year ended December 31, 2010, from which these abridged financial statements were derived.
2. ICDDR,B has not recognized the assets and liabilities pertaining to the 'ICDDR,B Employees Separation Payment Fund'. Although the ICDDR,B's assets and liabilities are each understated by US\$18,924,191 there is no impact on the net financial position or the Statement of Activity under audit.
3. ICDDR,B has recognized Capital Work-in-Progress and corresponding provisions of US\$1,459,900 in terms of Accounting Policy, against which only work order has been awarded. The aforesaid accounting treatment/policy is not in accordance with generally accepted accounting principles and has resulted in overstatement of Capital Work-in-Progress, Accounts Payable and Provisions and understatement of Contribution received in advance by US\$1,459,900 in Statement of Financial Position and overstatement of contribution and capital expenditures & commitments in Statement of Activity by an identical amount.
4. In our report dated March 24/28, 2011 we expressed an opinion that the financial statements, from which these abridged financial statements were derived, present fairly the financial position of the Centre in all material respects in accordance with the accounting policies disclosed therein, subject to our observation in Paragraph 2 & 3 above.
5. In our opinion, the attached abridged financial statements are consistent, in all material respects, with the aforesaid financial statements from which they were derived and on which we issued a qualified report as indicated above.
6. For a better understanding of the Centre's financial position and the results of its operations for the year and of the scope of our audit, the abridged financial statements should be read in conjunction with the financial statements from which these abridged financial statements were derived and our report thereon.



M/s S. F. Ahmed & Co
Chartered Accountants
Dhaka, May 12 2011



M/s Ernst & Young

Gurgaon, May 16 2011

Statement of financial position

as at December 31, 2010 (US\$ 000) – Abridged


	2010	2009
Total Assets	58,293	48,380
Cash and bank	19,711	12,340
Accounts receivable	9,993	6,824
Hospital Endowment Fund Investments	5,771	6,548
Centre Endowment Fund Investments	3,985	4,606
Inventories	587	624
Fixed Assets	18,246	17,438
Total Liabilities and Fund Balances	58,293	48,380
Current Liabilities and Provisions	29,622	19,171
Fund Balances	28,671	29,209
Fixed Assets Fund	18,246	17,438
Hospital Endowment Fund	5,771	6,548
Centre Endowment Fund	3,985	4,606
Reserve Fund	2,004	2,005
Operating Fund	(1,335)	(1,388)

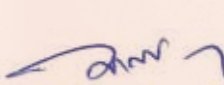
Statement of activity (operating fund) (US\$ 000) – abridged

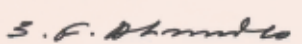
Income	39,530	40,778
Contributions:		
Operating Fund	34,050	33,215
Construction Fund	1,473	5,101
Hospital Endowment Fund	1,000	280
Other items	3,007	2,182
Expenditure	39,482	40,682
Salaries and benefits	22,053	20,562
Supplies and materials	4,885	4,104
Capital expenditure	2,777	6,693
Other items	9,767	9,323
Surplus for the year before depreciation	48	96
Depreciation (without effect on Operating Fund)	(1,969)	(1,496)
(Deficit) for the year after depreciation	(1,921)	(1,400)

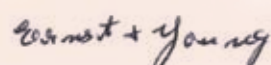
Statement of cash flow (US\$ 000) – abridged

Cash flows from operating activities	9,233	4,697
Cash used in investing activities	(1,861)	(6,422)
Net Increase/(Decrease) in cash and cash equivalents	7,372	(1,725)
Cash and cash equivalents at beginning of the year	12,339	14,064
Cash and cash equivalents at end of the year	19,711	12,339


 Executive Director,
 ICDDR,B
 Dhaka, May 12 2011


 Member,
 Board of Trustees


 M/s S. F. Ahmed & Co.
 Chartered Accountants
 Dhaka, May 12 2011


 M/s Ernst & Young
 Gurgaon, May 16 2011

This is the abridged form of the Financial Statements
 referred to in our report of same date.

Donors Contributions

(US\$ 000) – Abridged

	2010	2009
Operating Funds (I):		
Australia – AusAID	422	1,224
Bangladesh – IHP	1,970	1,021
Bangladesh/Others	1,342	1,316
Canada – CIDA	3,290	4,773
Netherlands	2,422	2,404
Centers for Disease Control & Prevention (CDC) – Atlanta	3,635	4,208
Saudi Arabia	–	50
Sweden – Sida	2,167	2,205
Switzerland – SDC	–	600
United Kingdom – DFID	3,101	3,618
Endowment Fund – Centre	832	55
Bangladesh Rural Advancement Committee (BRAC)	546	517
Gates Foundation	3,072	1,239
Global Forum for Health Research	15	155
Global Fund for AIDS, TB and Malaria (GFATM)	1,018	6
Japan – JICWELS & Others	95	115
Johns Hopkins University (JHU)	1,502	1,557
Johns Hopkins University (JHU)/USAID	14	384
Save the Children, USA	382	208
Thrasher Research Fund	95	–
The Rockefeller Foundation	138	81
USA – NIH	3,779	2,364
USA – Other Sources	1,337	1,574
UNICEF	593	809
United Nations Population Fund – UNFPA	97	108
WHO	319	681
World Bank	22	539
Other (net) (a)	1,845	1,404
	34,050	33,215
Construction Funds (II):		
Bangladesh/USDA	1,473	5,101
Endowment Fund – Hospital (III):	1,000	280
Total Contribution (I+II+III)	36,523	38,596

(a) Contributions in 2010 from 'Others' for project funds include: Akthelia Pharmaceuticals-Iceland; ActionAid International; ACME Laboratories Ltd.; Ashar Alo Society; Alive and Thrive-Bangladesh; Bhutan-Ministry of Health; BRAC Bank Ltd.; CARE Bangladesh; CHNRI; C-it -The Netherlands; Cordaid-The Netherlands; Dhaka Shishu Hospital; Drugs for Neglected Diseases Initiative (DNDi); Dutch Bangla Bank Foundation-Bangladesh; Erasmus University-Rotterdam; Food and Agriculture Organization of the United Nations (FAO); EngenderHealth; German Technical Cooperation (GTZ); Gynuity Health Projects; Islamic Development Bank (IDB); Global Alliance for Improved Nutrition (GAIN); International Labour Office (ILO); International Vaccine Institute (IVI); International Atomic Energy Agency (IAEA)-Austria; International Nutrition Foundation; INDPATH Network; Institute of Tropical Medicine (ITM)-Belgium; KNCV Tuberculosis Foundation-Netherlands; Karolinska Institute-Sweden; KNCV Tuberculosis Foundation; Leiden University Medical Center-The Netherlands; Lunds Universitet-Sweden; Malta Grants for Leprosy Research-France; MP Biomedicals Asia Pacific Ptd. Ltd.; Malaria Research Initiative Bandarban (MARIB); Marie Stopes International; Nestec Ltd.-Switzerland; Napo India Private Ltd.; Novartis Consumer Health S.A.-Switzerland; Nestle Foundation-Switzerland; Research Institute for Humanity and Nature (RIHN); The University of Melbourne; The Wellcome Trust-UK; TWAS Italy; UNDP-Bangladesh; USB Optimus Foundation; Swiss Academy of Medical Sciences (SAMS); United States-Washington; University of Cambridge-UK; University of Sydney; UNAIDS-Bangladesh; Veolia EAU-Compagnie Generale des Eaux S.C.A.- France; World Food Programme (WFP); Zephyr Biomedicals-India and donations from various individuals.

(b) Includes receivables from certain donors aggregating \$226,715 (2009: \$273,712) relating to earlier years that are considered doubtful of recovery and hence provided for. Efforts are being made for recovery of such amounts.



The full report is available for download at www.icddr.org/AR2010

If you would like to comment on the annual report,
please contact the editor at director@icddr.org

Chief Editor

Dr Alejandro Cravioto

Editor

Graham Judd

Assistant Editors

Nasmeen Ahmed
Jacqueline Christian
Malcolm Doney
Martin Wroe

Contributing Writers

Faruq Hassan

Design & Layout

Brian Cumming
Md. Inamul Shahriar
Sajid Chowdhury

Photographs

© ICDDR,B

ICDDR,B is committed to ethical
development photography and obtained
permissions from photo subjects in this
report wherever reasonable and practical

Photography

Shumon Ahmed
Cover/Graham Judd
10/Md Rabiul Hasan
13/Nipah surveillance team (ICDDR,B)
17/James Gathany
18/Malaria surveillance team (ICDDR,B)
22/Dr Shah M Faruque
24/Dr Peter Kim Streatfield
31/Bitu/Map
39/© iStockphoto.com/Roma
44, 45/Courtesy Jessica Sayre
47/Dr Ramendra N Mazumder
49/ICDDR,B emergency response team, Haiti

Printer: Print Link Printers

ICDDR,B gratefully acknowledges the support of its core donors in 2010



Australian Government
Aid Program



Canada



Kingdom of the Netherlands



Sida



UKaid
from the Department for
International Development



icddr,b

KNOWLEDGE FOR
GLOBAL LIFESAVING SOLUTIONS

ICDDR,B

GPO Box

Dhaka 1000

Bangladesh

Phone +88 02 886 0523, 882 2467

Email: director@icddr.org

Fax +88 02 881 9133, 882 3116

www.icddr.org