

FINAL REPORT

WHO PROJECT

Mapping of Centres / Institutions on Tropical Diseases in Bangladesh

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Acronym

AIDS - Acquired immune deficiency syndrome
AUSAID – Australian Agency for International Development
AUW – Asian University For Women
BAU – Bangladesh Agriculture University
BCC – Behavior Change and Communication
BMRC - Bangladesh Medical Research Council
BRAC - Bangladesh Rural Advancement Committee
BRCS - Bangladesh Red Crescent Society
BSMMU - Bangabandhu Sheikh Mujib Medical University
CDG – Core Donor Group
CHRC - Community Health Research Centre
CIDA – Canadian International Development Agency
CMC – Chittagong medical College
CNTD – Centre for Neglected Tropical Disease
DF – Damien Foundation Bangladesh
DFID - The Department for International Development, UK
DGHS - Directorate General of Health Services
DMC - Dhaka Medical College
DOTS – Direct Observed Treatment
DU – Dhaka University
GFATM – Global Fund for AIDS, TB and Malaria
GHSI - Global Health Share Initiative
GoB – Government of Bangladesh
GTZ – German Society for Technical Cooperation
HIV – Human immunodeficiency virus
HSR - Health Systems Research
IACIB - Institute of Allergy and Clinical Immunology of Bangladesh
ICDDR,B – International Centre for Diarrhoeal Disease Research, Bangladesh
IDS - Integrated Disease Surveillance
IEC – Information, Education and Communication
IEDCR – Institute of Epidemiology, Disease Control and Research, Bangladesh
ISC - IZUMI Supporting Community, Japan
IT - Information Technology
JFHA - Japan Food Hygiene Association
JHU - Johns Hopkins University, USA
JICA – Japan International Cooperation Agency
JU – Jahangir Nagar University
KAP – Knowledge, Attitude and Practice
LLIN - Long Lasting Insecticide Net
LM – Leprosy Mission Bangladesh
MARIB - Malaria Research Initiative Bandarban
MDR-TB - Multi-Drug Resistant Tuberculosis
MGH - Massachusetts General Hospital, USA
MIEP - Malaria Institute of East Pakistan
MMC – Mymensingh Medical College

MoHFW - Ministry of Health and Family Welfare
MoU - Memorandum of Understanding
MPH – Master in Public Health
MSF - Medicins Sans Frontiers Bangladesh
NGO – Non-Government Organization
NHLHI - National Heart Lung and Blood Institute, NIH
NIID - National Institute of Infectious Diseases, Japan
NIPSOM – National Institute of Preventive and Social Medicine
NISB - National Influenza Surveillance, Bangladesh
NLEP - National Leprosy Elimination Programme
NTP - National Tuberculosis Control Programme
OxHA - The Oxford Health Alliance Vision 2020
RIHN - Research Institute for Humanity and Nature
RMC – Rajshahi Medical College
SEARO – WHO Regional Office for South East-Asia
SIDA - Swedish International Development Cooperation Agency
SOP - Standard Operating Procedures
SSMC - Sir Salimullah Medical College
STHI - Soil transmitted helminthes infections
TB – Tuberculosis
TOT – Training for Trainer
UGC - University Grants Commission
UH&FPO – Upazilla Health and Family Planning Officer
UNDP – United Nations Development Programme
UNICEF - United Nations Children's Fund
USD – US Dollar
USDA - United States Department of Agriculture
WFP - World Food Programme
WHO – World Health Organization

Executive Summary

Bangladesh, the most densely populated country in the world with a high burden of communicable diseases. Tropical diseases comprise of a major group of diseases, some of them often neglected, but nevertheless responsible for a major share of the mortality and morbidity in Bangladesh. A number of major tropical diseases that pose a significant threat to the health and well-being of the Bangladeshi population are short-listed, and on the basis of which, the centres, institutions and NGOs of national and international importance that are contributing significantly to the area of Tropical diseases, are mapped. The objective of the current work is to identify the key institutes in the field of Tropical disease on the basis of their scientific expertise, infrastructure, local and international funding sources and by the way they are contributing to the Tropical disease control.

Bangladesh has six divisions. All institutes in each division are mapped first. Then those working in the field of Tropical disease and their investigators are identified through mostly their web-based information including publications, direct conversation though spot visit or through cell phone or e-mail communications in need.

In the context of Bangladesh we considered as topical disease which are public health threat like Diarrhoeal diseases by Cholera, Enterotoxigenic *E. coli* (ETEC), *E. histolytica*, Cryptosporidia; vector-borne diseases such as Malaria, Visceral Leishmaniasis (Kala-azar), Filariasis, Dengue and others such as intestinal helminth infections and Leprosy.

Comparative analysis of mapping shows that unfortunately the numbers of institutions which are involved in tropical disease research are too small in Bangladesh. None of the non-governmental institutions are involved in research except the ICDDR,B, but they are providing services to the people affected by tropical disease like malaria, filaria, kala-azar, and leprosy. Most of the national universities and medical colleges currently are not involved in tropical disease research due to lack of experts, funds and infrastructure. Most publications in tropical disease research in Bangladesh belongs to the ICDDR,B and other international institutes from abroad.

In conclusion there is an urgent need for capacity build up for tropical disease research in the national institutions in Bangladesh. This hardly can be achieved by the support only from the Government of Bangladesh. Thus international donor agencies should come up with help to set up infrastructures and experts in Tropical disease research in Bangladesh.

1. Team Member

The project entitled “Mapping of National Centres / Institutions on Tropical Diseases in Bangladesh” assigned by WHO/SEARO to Dr. Dinesh Mondal has been implemented by his team below.

1. Dr. Dinesh Mondal (Project-in-Charge)
2. Dr. Hafizur Rahman
3. Mr. Rajib Chowdhury
4. Mr. Shakhawat Hossain
5. Mr. Debashis Ghosh

2. Diseases covered

Tropical diseases which are covered by this project are.

Vector-borne diseases:

1. Malaria
2. Filaria
3. Visceral leishmaniasis
4. Dengue

Others:

1. Leprosy
2. Intestinal helminth infections
3. Tuberculosis
4. Diarrhoeal diseases: Cholera, ETEC, E. histolytica and Cryptosporidium associated diarrhoeal illness

3. Project outline

The project aims to identify the national and international institutions which are involved in tropical diseases research/service in Bangladesh.

Timeline of the project: 1st October, 2011 to 30th September, 2011

Deliverables: Final Report

4. Mapping strategies & Methodology

We mapped all institutions which are potentially may be involved in tropical disease research / service in Bangladesh using information from Directorate General of Health Services, Bangladesh Medical Research Council, University Grant Commission, and Non Governmental Organization Affairs Bureau. The first list of the potential institution/organization in tropical disease research / service was checked for their activities and only those which are involved in tropical research / service activities were finally mapped for collection of information using the questionnaire attached in the annex 1. However the questionnaire could not be applied especially for the public institutes due to very little if any research activities on tropical diseases (except IEDCR and NIPSOM) and we provided their information in a descriptive way. Information was collected for the institution profile, number of projects on tropical disease, funding profile, output of the research / service activities and for the principal investigator (s) through searching in the institution's web site, institute's annual report, Pubmed, and personal communication with the Head / Principal Investigator (s) in need.

Finally we compared institutions on tropical disease research /service based on their strength of activities assayed by the number and volume of projects, strength of network within the country, publications, and fund-raising capacity for tropical disease research / service.

5. Bangladesh & Tropical diseases

5.1 A snap shot of Bangladesh

History

Bangladesh emerged in 1971 as an independent and sovereign country. Formerly, the land was known as East Pakistan as one of the provinces of Pakistan. The citizens of Bangladesh fought a nine-month War of Liberation against the Pakistan army under the leadership of Father of the Nation Bangabandhu Sheikh Mujibur Rahman.

Geographical location

Bangladesh territory is one of the largest deltas of the world. The total land area is 147,570 square kilometers (56,977 square miles). It is a low-lying country which stretches in latitude between 20°34' and 26°38' north and in longitude between 88°01' and 92°41' east. The country has borders with India on three sides adjoining West Bengal, Tripura, Assam, and Meghalaya. Only a small strip in the southeast has border with Myanmar. The Bay of Bengal lies on the south. The country is covered with a network of rivers and canals forming a maze of interconnecting channels. Bangladesh mostly comprises floodplain areas, with scattered hills at the eastern and the northern parts. The northern part is in the Himalayan valleys, and the southern part in the coast of the Bay of Bengal. Bangladesh is recognized as one of the victims of tropical disease and the worst victim of global climate change effect without being responsible for its underlying causes. The country manifests all the direct and indirect effects of climate change, such as global warming, sea-level rise, and melting of glaciers. The human health has to bear enormous costs as a result.

Climate

The climate of the country is tropical, with a hot and rainy summer and a dry winter. January is the coolest month, with temperatures averaging nearly 26 °C (78 °F), and April is the warmest, with temperatures ranging from 33 °C to 36 °C (91 °F to 96 °F). Most places receive more than 1,525 millimeters of rain a year, and areas near the hills receive 5,080 millimeters mostly during the monsoon (June-September) and little in the winter (November-February). The humidity varies from 73% to 86%, the highest in the monsoon and the lowest in the winter. The average high humid climate makes the country vulnerable to many of tropical diseases.

Population and Demography, Religion and Culture

The majority (about 89.35%) of the people are Muslim. followed by Hindu (9.64%), Buddhist (0.57%), Christian (0.27%), and others (0.17%). Over 98% of the people speak Bangla. English, however, is widely spoken by people in the literate communities.

The last census in Bangladesh was done in 2011. The preliminary counts show a population of 142,319 thousand which, after adjustment, can be as high as 152,111 thousand. Bangladesh is a country with the highest population-density, with 964 living per square kilometer as of the 2011 census estimate. With the highest adjustment rate of 6.88% (as required in the 1974 census), the figure can be as high as 1,031 per square kilometer.

According to Sample Vital Registration Survey 2009, two-thirds of the population (62.6%) live in rural area and the rest in urban area (37.4%). The current national population growth rate is 1.35% as per provisional estimate of the 2011 census; the rural to urban migration rate is 21.9%; the male to female ratio is 100.3:100. The average household-size is 4.68. The 15-49 years age-group constitutes the largest segment (53%) of the population, followed by 33.3% in _14 years age-group. The age-groups of 50-59 years and 60+ years comprise 7.2% and 6.8% of people respectively. Adult (5+ years) literacy rate is 58.4% (as of 2009). The life-expectancy is 67.2 years (66.1 years for males and 68.7 years for females). The high population density as well as high illiteracy is risk factors for tropical diseases in Bangladesh.

Governance

Bangladesh has a unitary form of government, with no state or province. For purposes of smooth running of the government programs, the country is divided into 7 administrative divisions. There are several districts under a division. There are 64 districts in the country. Each district is again divided into several upazilas (sub-districts). There are 483 upazilas in the country. The upazilas are then divided into unions, and each union is divided into 9 wards. There are 4,501 unions and 40,509 wards in the country. The urban areas have 6 city corporations and 308 municipalities. The country is governed by the Parliamentary Democracy, and it has a unitary National Parliament, named Bangladesh Jatiya Sangsad. There are 40 ministries and 12 functional divisions. The Ministry of Health and Family Welfare is one of the largest ministries of the Government.

Economy

Bangladesh has an agrarian economy, although the contribution of agriculture to GDP has been decreasing over the last few years. Yet, it dominates the economy, accommodating the major rural labor-force. The principal industries of the country include readymade garments, textiles, chemical fertilizers, pharmaceuticals, tea-processing, sugar, leather goods, etc. The principal minerals include natural gas, coal, white clay, glass-sand, etc. From marketing point of view, Bangladesh has been following a mixed system (public and private) that operates on the free-market principles. The GDP growth rate is 6.66% (FY2010-11) (Bangladesh Bank 2011) and GDP per-capita (current price as per 2009 estimate) is US\$ 692 (International Monetary Fund (IMF) - World Economic Outlook October 2010).

5.2 Burden of Tropical diseases in Bangladesh

Malaria

Malaria is now a localized disease of Bangladesh endemic in 13 districts of eastern and northern parts of the country. During the last decade, the annual average of positive cases of malaria in Bangladesh was 57,365 cases. The percentage of *Plasmodium falciparum* malaria varied from 72 to 89%. The rests are *Plasmodium vivax* malaria. Few cases are mixed of *Plasmodium falciparum* and *Plasmodium vivax*. Reported prevalence is 0.06% in the country; but 0.34% in the high endemic area. Estimated prevalence in the country is 0.24% but 1.34% in the high endemic area. Over 26 million people of Bangladesh are at high risk of malaria. Most vulnerable groups are <5 year children and pregnant women. About 0.08% annual deaths in Bangladesh is attributed to malaria.

Kala-azar

Kala-azar has been prevailing in Bangladesh for centuries as an endemic disease with epidemic outbursts in around 20 years. With use of DDT as a control measure for malaria, prevalence of Kala-azar was reduced remarkably. However, re-emergence of the disease was noticed since 1994-95. From 1999 to 2009, a total of 67,758 cases and 225 deaths were reported from 34 districts of Bangladesh.

Dengue

The medical communities of Bangladesh were fairly unfamiliar about the presence of Dengue in Bangladesh before 2000. The outbreak started in summer of 2000 and since then every year some cases are being reported. However, case fatality rate has been decreased.

Filariasis

Filariasis is a mosquito borne parasitic disease causing swelling of the limbs, urogenital organs, breasts, etc. with long term disability. In Bangladesh, the disease is prevalent all over the country with the highest endemicity in northern part of the country. The exact figures of filariasis in

Bangladesh are not known. It is reported that the disease is endemic in 34 out of 64 districts of the country. Districts with high endemicity of filariasis are Nilphamari, Thakurgaon, Dinajpur, Rangpur, Panchagar, Kurigram, Gaibandha, Chapai Nowabgonj, Rajshahi and Lalmonirhat. It is estimated that about 70 million are at risk of infection, while 10 million people are with various forms of clinical deformity and another 10 million people are microfilaremics.

Diarrhoea

Diarrhea is a highly prevalent communicable disease in Bangladesh. Diarrhoeal diseases are listed as second cause of mortality of children under 5 years. Cholera, Rota virus, ETEC, Cryptosporidium, Shigella and E. histolytica are the most common causative agents for diarrhoeal illness in the country. In this project we covered Cholera, ETEC, Cryptosporidium and E. histolytica associated diarrhoeal diseases since these are typically uncommon in the developed world.

Leprosy

Bangladesh has achieved leprosy elimination at national level by 1998. It was 2 years ahead of WHO set target year. The elimination is defined by the WHO to reduce registered prevalence to less than 1 case per 10,000 populations. After achieving elimination at national level the National Leprosy Elimination Programme (NLEP) is consolidating its effort to achieve sub national (district level) elimination. The NLEP is experiencing very slow decline of leprosy prevalence, though grade 2 deformity is still remaining high around 12% among the newly detected cases per year, where the desired target is to reduce deformity grade 2 to less than 5%. Integration of leprosy services into the general health services and involvement of the NGOs in leprosy services have created ample scope for sustainability of the services. But, integration still needs firm foundation to continue routine leprosy services. Further challenges remain in some pocket endemic areas of the country, in reduction of fund flow in capacity building of the service providers and in activities of awareness rising of the community.

Tuberculosis

Tuberculosis (TB) has been a major public health problem and one of the leading causes of adult mortality in Bangladesh. World Health Organization ranks Bangladesh 6th among the world's 22 high-burden TB countries. Translating the estimates of 2007 by WHO on estimated population of 2009 it is found that every year about 66,437 people die due to tuberculosis in Bangladesh. National Tuberculosis Control Programme (NTP) under Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare (MoHFW) performs tuberculosis control activities and provides service through 800 DOTs centers, 1000 microscopy centers and 35 external quality assurance centers all over the country. The World Health Organization estimated that in 2007 there were approximately 387 TB cases per 100,000 populations of which 223 per 100,000 population new cases were occurring each year in Bangladesh. Of these, approximately 100 per 100,000 were infectious cases, i.e., they able to transmit TB in the community. It is further estimated that about 45 persons per 100,000 people die of TB every year. Although the HIV prevalence is still low, HIV poses a threat to TB control.

The HIV prevalence in adult TB patients was about 0.1% as revealed in three limited surveys conducted in 1999, 2001, 2006, and 2007. The multi-drug resistant tuberculosis (MDR-TB) rate among the new cases of TB was estimated to be 3.5%. This rate among the re-treatment cases was estimated at 20%.

6.0 Health Institutions and organizations in Bangladesh

In Bangladesh in the public sector there are 31 university, 17 medical colleges, 7 postgraduate medical institutions, 62 district hospitals, 12 chest hospitals, 5 infectious disease hospitals, 3 Leprosy hospitals, 3 institutes of health technology. In the private sector there 54 medical and dental colleges, 12 institute of health technology, one international research institute for health sciences, and 2072 Non-Governmental Organization (NGO) and 34 universities. Bangladesh Medical research Council (BMRC) is a focal point of Medical research in Bangladesh.

6.1 Potential Institutions and Organizations involved in Tropical Disease control in Bangladesh

The name of the institutions and organizations which were thought to be potentially involved in tropical disease research, training, teaching, service are shown in the Table 1 below. However, those which were confirmed by their activities that those had been contributing to tropical disease research are highlighted in italic fonts.

Table 1 Potential institutions and organization in tropical disease research in Bangladesh

Name
Public
<i>Bangladesh Medical Research Council (BMRC), Dhaka</i>
Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka
Dhaka University (DU), Dhaka
Jahangir Nagar University (JU), Dhaka
Bangladesh Agriculture University (BAU), Mymensingh
Dhaka Medical College (DMC), Dhaka
Sir Salimullah Medical College (SSMC), Dhaka
Mymensingh Medical College (MMC), Mymensingh
<i>Chittagong Medical College (CMC), Chittagong</i>
Rajshahi Medical College (RMC), Rajshahi
Sylhet MAG Osmani Medical College, Sylhet
Sher -e-Bangla Medical College, Barisal
Khulna Medical College, Khulna
Rangpur Medical College, Rangpur
<i>Institute for Epidemiology, Disease Control and Research (IEDCR), Dhaka</i>
<i>National Institute of Preventive and Social Medicine (NIPSOM), Dhaka</i>
Private
<i>International Centre For Diarrhoeal Disease Research, Bangladesh (ICDDR,B), Dhaka</i>
<i>Bangladesh Rural Advancement Committee (BRAC), Dhaka</i>
<i>Malaria Research Initiative Bandarban (MARIB), Bandarban</i>
<i>Asian University For Women (AUW), Chittagong</i>

Damien Foundation Bangladesh (DF), Dhaka
Leprosy Mission Bangladesh (LM), Dhaka
Institute of Allergy and Clinical Immunology of Bangladesh (IACIB), Dhaka
Medicins Sans Frontiers Bangladesh (MSF), Dhaka

7. Government institution's details and their contribution to tropical disease research, training and teaching

7.1 Bangladesh Medical research Council (BMRC): Central Organization For Medical Research in Bangladesh

Profile: BMRC was established in 1972 by order of the President as an Autonomous Body under Ministry of Health and Family Welfare. The objectives, rules & regulations of the Council were formulated by resolution of the MOH&FW in 1974 & 1976.

As per resolution of the Government, BMRC is the focal point for Health Research. The objectives of BMRC are to identify problems and issues relating to medical and health sciences and to determine priority areas in research on the basis of health care needs, goals, policies and objectives.

BMRC has a General Body with 54 members representing post-graduate medical institutes, medical colleges, universities, learned societies, medical institutions, health related organizations, various divisions and departments of ministries dealing with medical education, services and research. The General Body elects the Executive Committee. It is headed by the Chairman, Executive Committee, elected from among the members of the General Body. The Mission of the Council is to create effective and quality health care facilities for the whole population of the Country by promoting health research through strengthening of research facilities, training and dissemination of research results. The main activities of the Council include: organization and promotion of scientific research in various fields of Health Science, training of manpower in the field of health research and dissemination of research results for proper utilization and policy advocacy of most critical health concern facing the country today.

Contact details:

Director : Prof. Dr. Habebe Millat

Address

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Activities: Research Promotion and Coordination

- BMRC identifies priority Health Research areas.
- BMRC provides grants for conduction of Research on identified priority areas.
- For Research management and coordination BMRC has established Research Cells in 8 Medical Colleges.

- Health Systems Research (HSR) and Community Based Studies are coordinated / managed through HSR Unit and Community Health Research Centre (CHRC) of BMRC.

Priority Research Areas & Research Funding

BMRC is the principal organization in the country which promotes medical research in the Medical Colleges of the country. BMRC invites applications on prescribed proforma for grants from energetic and devoted research workers on identified priority areas. The proposals that are received are evaluated by the Scientific Review Committee and noted experts in the subject. Once the formalities are completed the investigator is provided with grants and whatever guidance is required. Its Priority research areas are: Safe Motherhood, Child Health Care, Acute Respiratory Infection (ARI), **Infectious Diseases**, Nutrition, Non-Communicable Diseases, Health Systems Research (HSR) and Occupational and Environmental Research.

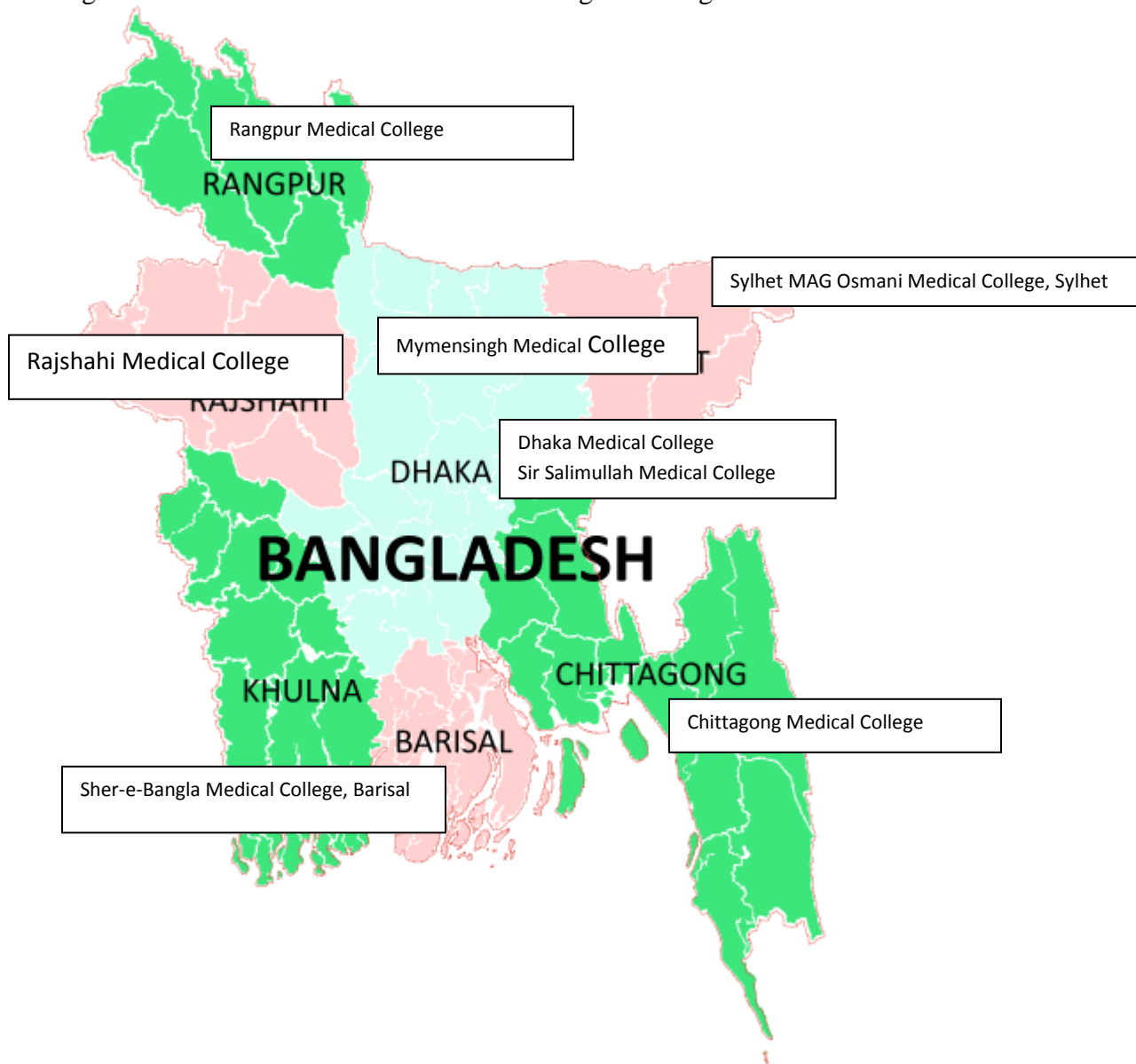
In its programme of research management and co-ordination, BMRC has established research cells in 8 medical colleges (Fig 1). BMRC conducts regular programmes for the training of research workers and takes the responsibility to function as a focal point for all health research in the country. It also provides advisory services to young scientists and assists in publishing research work.

Bangladesh Medical Research Council has an Ethical Review Committee (ERC) which serves as National Ethical Committee of the Country. Each and every Project Proposal approved by the Scientific Review Committee must get ethical clearance before funding by the Council.

The Ethical Committee also provides ethical clearance to research studies not funded by the BMRC involving human subjects to be conducted in Bangladesh by Bangladeshi or foreign researchers. The Ethical Committee of BMRC has formulated Human Tissue Transplantation policy in the Country.

Funding: Ministry of Health & Family Welfare, Government of Bangladesh (89%); World Health Organization (9%); Revenue (2%). Nine percentage of the total budget is allocated for infectious diseases.

Fig. 1 Research Cells in Public Medical Colleges in Bangladesh



Publications:

1. Bangladesh Medical Research Council Bulletin – 3 issues in a year (Pubmed indexed)
2. Research Information and communication on Health – 2 issues in a year
3. Current awareness service – 1 issue in a year
4. Others: Proceedings (Workshops in research methodology); Report on unpublished research results of BMRC funded projects etc.

Contribution of BMRC Research Cells of medical colleges in tropical disease research:

Mymensingh Medical College:

The MMC research cell is working on kala-azar, post-kala-azar dermal leishmaniasis (PKDL) for many years in collaboration with World Health Organization, IEDCR, BMRC, Tokyo University, Japan. The research cell published 13 publications in the last 10 years on tropical diseases; 12 with kala-azar and 1 with malaria

Principal Investigator:

Prof. Dr. Akram Hossain; Department of microbiology; MMC

Ongoing project: Real time PCR for diagnosis of PKDL

Publication: 3

Tropical Disease: kala-azar

Funding: BMRC; MMC; Self

Collaboration: Tokyo University, Japan and limited to capacity build up.

Rajshahi Medical College:

RMC research cell has been working on tropical disease which are endemic in Rajshahi Division of Bangladesh. These are kala-azar & Nipah virus.

Principal Investigator:

Dr. MA Salam, Associate Professor, Department of Microbiology, RMC

Ongoing project: Comparison of different diagnostic method for visceral leishmaniasis

Funding: The project is going on in collaboration with ICDDR,B. No other funding is mentioned.

Dhaka Medical College

DMC has been contributing to tropical disease research especially Dengue since 2000. DMC possess one of the few centre for special care unit for patients with Hemorrhagic Dengue Fever. The research unit of DMC is in the national surveillance network for Dengue. There are 5 publications mainly on clinical aspects of Dengue in Bangladesh. Research works on tropical disease are limited to collaborative work with IEDCR, ICDDR,B and BMRC (when available). No definite principal investigator and funding agency for tropical disease research are currently available.

Chittagong Medical College

Thirteen districts in Chittagong division are the highly endemic for malaria. The CMC research cell is also involved in malaria research and has been contributing to malaria research for many years.

7.2 Institute for Epidemiology, Disease Control and Research (IEDCR)

Profile

Name: Institute for Epidemiology, Disease Control and Research (IEDCR)

Established: 1978. Previously it was known as Malaria Institute of East Pakistan (MIEP)

Divisions:

- Administration
- Epidemiology
- Medical Entomology Bionomics & Control
- Parasitology
- Virology
- Microbiology & Micology
- Zoonosis
- Biostatistics

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Vision and Mission: Not defined

Contribution to Tropical diseases: Malaria; Kala-azar; Dengue; Nipah virus; Anthrax; and Dairrhoea

Strengths

Expertise: Disease surveillance; Outbreak investigation and response; Research & Training. There is 19 supportive scientific staff. The Director is the Principal Investigator of research projects and is the inly Scientist in the institution.

Facilities: BSL-2 Lab; BSL-3 Lab; RT-PCR

Basic research: No

Product development: No

Clinical trials: Yes

Funding:

- Ministry of Health & Family Welfare
- Ministry of Fisheries & Livestock
- Directorate General of Health Services
- World Health Organization
- International Centre For Diarrhoeal Disease Research, Bangladesh (ICDDR,B)
- CDC, USA
- IANPHI
- University of Cambridge, UK

Activities:

Research

On Going Research

- Detection of Insecticides Resistance status of Mosquitoes of Dhaka city and its suburbs
- Visceral Leishmaniasis in Bangladesh
- Efficacy of liposomal amphotericin B for treatment of visceral leishmaniasis in Bangladesh
- Present status of the patients of the phase IV Clinical Trial of Miltefosine in adults and children with visceral leishmaniasis.

Previous Research

- National HIV sero-surveillance (8th round) in collaboration with ICDDR,B (2007)
12700 HIV testing done in IEDCR Lab
 - Dengue prevalence and entomological survey in Dhaka city (2006, 2007, 2008)
 - Social meaning of Dengue (2006-07)
 - Behavioral and Biochemical Risk factors for major Non-Communicable Diseases, Bangladesh. (2007)
 - Identification of the circulating strain of seasonal influenza virus in Bangladesh (2007)
 - Co-infection of Hepatitis B and Hepatitis C infection among HIV positive individuals (2007)
 - Sero-prevalence of Hepatitis C with its Genotype (2007-08)
 - Cure assessment of Kala-azar by detection of antigen in urine (2007, 2008)
 - Epidemiology of Influenza in Bangladesh (2007)
 - Gastro-enteritis situation in flood affected thanas in and around of Dhaka City (2008)
 - National Health Accounts (2007-08)

- Sero-prevalence of HIV among pregnant women (2007-08).
- Phase IV clinical trial of oral Miltefosine for treatment of Kala-azar (2006-08)
- Phase III Combination trial of Liposomal Amphotericin B (Ambisome) and oral Miltefosine for treatment of Kala-azar (2007-08)
- Entomological Attributes and Seroprevalence of Dengue
- Evaluation of Knowledge, attitude, practice and behavioral pattern regarding Avian Influenza among community volunteers and household members

Recent outbreak investigation:

Serial Number	Outbreak notification	Place of occurrence	Suspected Outbreak	Steps Taken by IEDCR	Conclusion
1.	Hospital Based Nipah Surveillance January 2011	Bhanga, Faridpur	Nipah Encephalitis	1. Epidemiological investigation 2. Animal investigation 3. Environmental investigation	Nipah outbreak
2.	Hospital Based Nipah Surveillance January 2011	Rajbari, Faridpur	Nipah Encephalitis	1. Epidemiological investigation 2. Animal investigation	Nipah outbreak
3.	Nipah surveillance system at Rangpur, Event based surveillance, Civil surgeon of Lalmonirhat and mass media on 1 February	Hatibandha, Lalmonirhat	Unknown disease	1. Epidemiological investigation 2. Anthropological investigation 3. Animal investigation 4. Environmental investigation done on February 2 and continued	Nipah outbreak
4.	Personal; Communication from the Principal of Shaheed Ziaur Rahman Medical College Hospital and Civil Surgeon on 14 February	Shaheed Ziaur Rahman Medical College Hospital Campus, Bogra	Diarrhoea	1. Epidemiological investigation 2. Laboratory investigation 3. Environmental investigation done on February 15, 2011	Mixed pathogen diarrhoea (cholera & shigella) outbreak
5.	Kamalapur urban surveillance project on March 13	Kamalapur urban surveillance site, Dhaka	Avian influenza	1. Epidemiological investigation 2. Anthropological investigation 3. Animal investigation 4. Environmental investigation done on March 13, 2011	H5N1 outbreak
6.	Kamalapur urban surveillance project	Kamalapur urban surveillance site, Dhaka	Influenza outbreak	1. Epidemiological investigation 2. Anthropological investigation 3. Animal investigation 4. Environmental investigation done on March 28, 2011	H9N2 outbreak
7.	Several newspaper reported diarrhoea outbreak in Kishorganj District Hospital from 16 April 2011	Boila, Tarapasha and Shatal of the Kishorganj Sadar upazila	Diarrhoea	1. Epidemiological investigation 2. Anthropological investigation 3. Environmental investigation done on April 19, 2011	Cholera outbreak

8.	Civil Surgeon of Tangail reported two children deaths with unknown cause on 23rd April	Tangail	Suspected pesticide poisoning	1. Epidemiological investigation 2. Anthropological investigation on April 25, 2011	Suspected pesticide poisoning
9.	UHFPO of Shathia, Pabna on May 14, 2011	Shathia, Pabna	Cutaneous anthrax	1. Epidemiological investigation 2. Anthropological investigation 3. Animal investigation 4. Environmental investigation done on May 16, 2011	Cutaneous anthrax

Recent Training:

- Consultative workshop for review of the draft strategies and guideline for Integrated Disease Surveillance (IDS) system with plan of Action
- Consultative workshop for review and updating of draft National Guidelines for Management, Prevention and Control of Nipah and other encephalitis
- Refresher Training for Physicians on Standard Operating Procedures(SOPs) On Avian Influenza in Human
- Refresher Training for Physicians on Standard Operating Procedures(SOPs) On Avian Influenza in Human
- Two days Consultative workshop with Public Health Specialist and information Technology(IT) personnel for drafting a strategy and guideline for use of information technology in disease surveillance system of Bangladesh
- One day training on Establishment of Institutional Disease Surveillance at the District & Upazilla Level
- One day training on Anthrax
- One day training of Personel at points of entry for IHR implementation
- One day training on Anthrax
- One day training on Anthrax
- A one day training on Seasonal, Avian & Pandemic Influenza Training on Influenza Surveillance for Program Managers, Physicians, Paramedics and MIS personnel of Dhaka City Corporation and NGO partners
- Training on National Influenza Surveillance, Bangladesh (NISB)for Lab Technologist

- Training on National Influenza Surveillance, Bangladesh (NISB)
- Efficacy and safety of liposomal amphotericin B in Bangladeshi patients with visceral leishmaniasis
- Training on Surveillance of Influenza A (H1N1)/Swine Flu
- Training on Disease Outbreak Investigation of UH&FPO
TOT on Guidelines and SOP for Isolation Management
- 3 Month's Certificate Course on Clinical Epidemiology
- TOT on containment and Mitigation of Influenza Pandemic for Members of DRRT and URRT
- TOT on Rapid containment for District and Upazilla RRT members
- Training on Emergency Health Information system for district level Health Professionals
- Training on SOP on Pandemic Influenza (H1N1) 2009 [Swine Flu] for Health Personnel of all UH&FPO
- Training on SOP on Pandemic Influenza (H1N1) 2009 [Swine Flu]
Orientation on Pandemic (H1N1) 2009 [Swine Flu] for Health Personnel of Dhaka City Corporation
- Training on medical Technologist of Peripheral Labs on use of Rapid Diagnostic Kits and Shipment of Infectious Materials
- Training on data management system for statistical assistant at all levels. A Training on data management system for statistical assistant at all levels
- Training of Laboratory staff in bio-safety practices
- Training of Immigration Officials at Zia International Airport on Influenza A (H1N1) [Swine Flu]
- Orientation on Influenza A H1N1 (Swine Flu): Training of port health officers on Swine Influenza

Publications:

IEDCR resulted in about 270 publications in the last 10 years as a result of independent and collaborative research. However about 50 publications were related to the tropical diseases

publications by Prof. Dr. Mahmudur Rahman, Prof. Dr. Be-Nazir Ahmed, Prof. Dr. el-Masum and Dr. M. Elias contributed a lot especially to Kala-azar and Entomological research as a whole.

7.3 National Institute of preventive and social medicine (NIPSOM)

Profile of the institute

Name of the institute: National Institute of preventive and social medicine (NIPSOM)

Agency: It is government public health teaching and research institute

Established: The institute established in 1978

Divisions:

- Administration
- Community Medicine
- Epidemiology
- Health Education
- Maternal and child health
- Medical Entomology
- Microbiology and Mycology
- Nutrition and Biochemistry
- Occupational and Environmental Health
- Parasitology
- Population Dynamics
- Public Health and Hospital Administration

Address and contact information:

Director: Prof. Saroj Kumar Muzumdar

Address: Mohakhali, Dhaka-1212; E-mail: nipsom@dhaka.net; director@nipsom.org
website: <http://www.nipsom.org/contact.html>

Vision: The institute will provide higher level of education to produce a quality Public Health workforce in the country. This Public Health workforce is dedicated for conduction of research and promotion of health to reach Millennium Development Goals (MDGs) and other public health challenges.

Mission: The mission of this institute is to develop NIPSOM as a center of high credibility in academic, research, training and service delivery to support the government in the field of public health activities in order to improve the quality of health care. It also strives for continuous updating of the curriculum to keep pace with international standards so that students both local and foreign are attracted to be enrolled in the institute, which is intended to be a Collaborative Center of WHO/UNFPA. Considering the economic situation of the country NIPSOM is also

trying to find out ways and means for generation more revenues and sharing of costs through teaching, training, research and service delivery for enabling the institute to perform more efficient academic and research activities.

Contribution to the tropical diseases: Every year faculty members facilitating several training programme and workshops as these are desired by Directorate General of Health Services (DGHS). Apart from the conducting training and workshops, few faculty members also conducting research on Visceral leishmaniasis, filariasis, Soil transmitted helminths infection and leprosy.

Strengths

Expertise: There are some expert faculty members/scientist who are conducting research activities every year and out of those few are involve with tropical diseases, i.e. Professor Dr Shireen Akhter (Department of Medical Entomology), Professor Dr Akhtasrun Naher (Department of Microbiology & Parasitology).

Infrastructure: In the institute have 12 departments:

- Bio-statistics
- Community Medicine
- Epidemiology
- Health Education
- Maternal and Child Health
- Medical Entomology
- Microbiology and Mycology
- Nutrition and Biochemistry
- Occupational and Environmental Health
- Parasitology
- Population Dynamics and Public Health and
- Hospital Administration.

The institute is providing every year Master in Public Health for 148 students under above-mentioned departments. All students have to carry out one year pilot research activities as part of their syllabus.

Programmes: Every year faculty members facilitating several training/courses/ workshops as these are desired by Directorate General of Health Services (DGHS). Apart from the conducting training and workshops, few faculty members also conducting research on Visceral leishmaniasis, filariasis, Soil transmitted helminthes infection and leprosy.

Basic Research: Faculty members conducting research activities every year on their own research field. Apart from basic research, some operation or implementation research studies also conducting some faculty members. The following research studies have conducted on tropical diseases.

Professor Dr Shireen Akhter as Principal Investigator:

- Cost-effectiveness of residual spraying, long lasting insecticide treated bednets and environmental management for visceral leishmaniasis (sandfly) control in Bangladesh
- Community based Visceral leishmaniasis vector control through insecticide treated bed nets: Feasibility, Cost and Coverage
- Usefulness, feasibility and cost of vector control monitoring system in a kala-azar endemic district in Bangladesh
- Evaluation of the feasibility and usefulness of a monitoring and evaluation toolkit for Visceral leishmaniasis vector control in national programmes

Professor Dr Akhtarun Naher as Principal Investigator:

- Soil transmitted helminthes infections (STHI) among primary school children's in Trishal sub-district of Bangladesh
- An intervention programme on stigma and early sign of Leprosy in a rural area of Bangladesh

Product Development: Currently there is no research study which is related to drug development, diagnostics and vaccine development.

Clinical Trail: There is no clinical trail has been conducted.

Funding: Professor Dr Shireen Akhter received financial support from WHO/TDR, Geneva, Switzerland which is USD 120,000 (Phase-1: USD 20,000; phase-2: USD 20,000; phase-3: USD 40,000; phase-4: USD 40,000) and Professor Dr Akhtasrun Naher received fund from the Government of Bangladesh providing fund under Ministry of Health and Family Welfare; and Ministry of Science and Technology which is about USD 7000 (STHI project: Tk. 200,000; Leprosy project: Tk. 300,000) for conducting research. But government fund are not adequate to conduct research continuously or consistently. Institute did not receive any fund from NGOs.

Output:

Publications:

- Das M, Banjara MR, Chowdhury R, Kumar V, Rijal S, Joshi AB, Akhter S, Kroeger A and Varghese B. 2008. Visceral leishmaniasis on the Indian sub-continent: a multi-center study of the cost of three interventions for the control of the sandfly vector, *Phlebotomus argentepis*. *Annals of Tropical Medicine and Parasitology*. 102 (8):729-741.
- Joshi AB, Das ML, Akhter S, Chowdhury R, Mondal D, Kumar V, Das P, Kroeger A, Boelaert M and Petzold M. 2009. Chemical or non-chemical vector control as a contribution to the elimination of *Visceral leishmaniasis* on the Indian Subcontinent:

Cluster Randomized Trials in Bangladesh, India and Nepal. *BMC Medicine*. 7:54. doi:10.1186/1741-7015-7-54.

- Mondal D, Chowdhury R, Huda MM, Maheswary NP, Akther S, Petzold M, Kumar V, Das ML, Gurung CK, Ghosh D, Kroeger A. 2010. Insecticide-treated bed nets in rural Bangladesh: their potential role in the visceral leishmaniasis elimination programme. *Trop Med Int Health*. 15(11):1382-9. doi: 10.1111/j.1365-3156.2010.02635.x.
- Chowdhury R, Huda MM, Kumar V, Das P, Joshi AB, Banjara MR, Akhter S, Kroeger A, Krishnakumari B, Petzold M, Mondal D and Das ML. 2010. The Indian and Nepalese programmes of indoor residual spraying for the elimination of visceral leishmaniasis: performance and effectiveness. *Annals of Tropical Medicine & Parasitology*, 105(1):31-45.
- Chowdhury R, Dotson E, Blackstock AJ, McClintock S, Maheswary NP, Faria S, Islam S, Akter T, Kroeger A, Akhter S and Bern C. 2011. Comparison of insecticide-treated nets and indoor residual spraying to control the vector of visceral leishmaniasis in Mymensingh District, Bangladesh. *Am.J.Trop.Med.Hyg*, 84(5): 662–667, doi:10.4269/ajtmh.2011.10-0682.
- Huda MM, Mondal D, Kumar V, Das P, Sharma SN, Das ML, Roy L, Gurung CK, Banjara MR, Akhter S, Maheswary NP, Kroeger A, Chowdhury R. 2011. Toolkit for monitoring and evaluation of indoor residual spraying for visceral leishmaniasis control in the Indian sub-continent: application and results; *Journal of Tropical Medicine* (paper has been accepted and available at: doi:10.1155/2011/876742).

Paper presented in the conferences:

Professor Shireen Akhter was presented research findings in various national and international meeting and workshops.

Professor Dr Akhtarun Naher also presented research findings in national and international meeting and workshop.

Investigator contact details:

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8.0 Private institution / organization and their contribution to tropical disease research, training, teaching and service

8.1. Institute of Allergy & Clinical Immunology of Bangladesh (IACIB)

Institute of Allergy and Clinical Immunology of Bangladesh (IACIB) is a non government organization registered under Ministry of Social Welfare and NGO affairs Bureau, Government of the People's Republic of Bangladesh and was founded in 1995. IACIB is committed to advancement of National as well as International health. The Institute enjoys good recognition for its achievement and establishment of Filaria Hospital, teaching, research and services in the field of filariasis elimination and Neglected Tropical Diseases (NTDs).

IACIB is led by its founder Prof. Dr. Moazzem Hossain, Professor of Microbiology, a WHO fellow on Immunology, Vaccinology & Bio-technology. He was the Director, Disease Control, under Ministry of Health and Family Welfare and has unparalleled contribution for filariasis elimination program in Bangladesh and establishment of Microbiology department in Medical Colleges.

The goal of IACIB is to improve the health of the population. IACIB members are working towards achieving the goal. Thus different activities are under taken by this organization.

This NGO has several activities, however Filariasis, Leishmaniasis, Malaria, and Soil Transmitted Helminth infections are the tropical disease which are covered by this organization. The significant contribution of IACIB to control filariasis with mass drug treatment is highly appreciated in Bangladesh and abroad. The only one filaria hospital in the country is the the contribution of IACIB in Syedpur under Nilphamary district. The hospital has been providing the following services.

- Outdoor services
- Indoor services
- Surgery / hydrocelectomy
- Physiotherapy
- Diagnostic services
- Community Home Based Morbidity Control (CHBMC) services
- Social Mobilization
- Training to GO-NGO Collaborative programs
- Filaria health club and community development program
- Satellite Clinic services
- Tobacco Control Activities
- Primary Health Care Services
- Communicable Disease Control Services
- Research

Principal Investigator / Scientist: Prof. Moazzem Hossain, Chairperson

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Green Super Market, Green Road,
Dhaka - 1205, Bangladesh.
Tel : 880-2- 8122074, 8115646
E-mail: iacib1995@gmail.com
web: www.iacib.org

Donors: Ministry of Health & Family Welfare; Ministry of Science, information and communication, GoB; DGHS; GFATM; Canadian CIDA; UNDP; AUSAID; WHO; JICA.

Tropical Diseases:

Malaria

Under Malaria Control program following activities are implemented:

- 3 Upazilla project offices with warehouses and Laboratories for Malaria Parasite Examination were established in 3 Upazilas.
- Long Lasting Insecticide Net (LLIN) distribution.
- Treatment of existing net with insecticide.
- Advocacy workshop with Local Formal and informal leaders.
- BCC meeting with union and village level leaders.
- Organize folk song and popular theater for raising awareness among the general people regarding prevention and control of Malaria.
- Observation of World Malaria Day.

Diagnosis and Treatment of Malaria:

- Community based diagnosis and treatment of Malaria
- Diagnosis of malaria by RDT
- Referring severe malaria cases to Upazila Health Complexes for better treatment.
- IACIB has a MOU with Bangladesh Red Crescent Society (BRCS) to work on malaria control at Dewangonj upozila under Jamalpur district, where there is no Government program.

Leishmaniasis

IACIB has conducted the first national survey on burden of kala-azar in the country in collaboration with ICDDR,B

Soil Transmitted Helminth Infections (STHI)

School based diseases (Parasite) Control

IACIB has been working on control of Soil Transmitted Helminthes (STH) and other Intestinal parasites, Leishmaniasis (Kala-azar) control, Mosquito control and vector

control etc. The main activities under this program include social mobilization through different IEC campaign, documentary film show, diagnostic & therapeutic services. IACIB has also been working on school based approach on parasite control along with improvement of water and sanitation.

Research conducted by IACIB

IACIB has conducted a number base line survey and Intervention research studies as follows:

Basic Research & Survey:

- KAP survey among service providers and service receivers on Mass drug Administration and Morbidity control.
- Factors motivate or de motivates service providers and service receivers on Community Home Based Morbidity Control Service.
- A Different approach of Hydrocele surgery by eversion & excision.
- Different method of IEC campaign for filariasis elimination acceptable to the community.
- A study on different effective and sustainable approach for drug distribution strategy for filariasis elimination in rural areas of Bangladesh by public and private drug distributors.
- Effective and sustainable strategy for Community Home Based Morbidity Control Service.

The list of intervention research IACIB on tropical diseases is given below:

- Nutritional Profile and other associated factors responsible for filariasis in Bangladesh with support from Directorate General of Health Service, GoB.
- Pilot Study on Emerging and Re-emerging Diseases including Filariasis in Botlagari union under Syedpur upozila in Nilphamari district with support from Directorate General of Health Service, GoB.
- Delay in Health seeking, diagnosis and treatment of positive pulmonary TB patients of some TB hospitals/clinics in selected Districts and its associated factors in some selected hospital in Dinajpur, Rangpur and Nilphamari district with support form Directorate General of Health Services, GoB.

Ongoing research study (2008-2010)

A study on “Knowledge, Attitude and Practice on STH” in Bangladesh was completed with support from Directorate General of Health Service,

GoB in 2008-2009.

- b) A “Study on prevalence of Kala-Azar in Bangladesh (Base Line Survey)” was completed in collaboration with ICDDR,B with support from Directorate General of Health Service, GOB.
- c) A study is ongoing on socio-economic study of Neglected Tropical Diseases (Filaria, STH, Kala-azar) in Bangladesh in 2008-2010.
- d) A study is ongoing on epidemiology of filariasis and other Neglected Tropical Diseases (Malaria, STH, Kala-azar) in Bangladesh and its relation with social and environmental changes in 2009-2010.

Collaboration

IACIB has some collaboration with the following:

- a) One research is ongoing titled “Measuring the impact of LF related disabilities: The development of rapid assessment tools” Jointly with James cook University, Australia. (One student from Australia is doing PhD under the research)
- b) One research is ongoing titled “ELISA for the diagnosis of Wuchereria bancrofti infection using urine samples and its application in Bangladesh” Jointly with Aichi Medical University, Japan. (One student from Japan is doing PhD under the research)
- c) Memorandum of Understanding (MOU) between the Center for Excellence in Nutritional Genomics in the College of Biological Sciences at the University of California , Davis USA and Institute of Allergy & Clinical Immunology of Bangladesh (IACIB) regarding Global Health Share Initiative (GHSI) has been signed in Nov 2010 for future collaboration on oral rabies vaccine development and clinical trial.
- d) One collaborative research is ongoing with CNTD, Liverpool, UK on morbidity control in Filariasis in Bangladesh.
- e) One research is ongoing titled on morbidity control in filariasis and it’s relationship with occupation Jointly with Tsukuba University, Japan with IACIB. (One student from Japan is doing MPH under the research)

Publication:

1. Annual report
2. One publication in peer reviewed journal (Vaccine)

8.2 Bangladesh Rural Advancement Committee (BRAC)

Profile

Name of organization: Bangladesh Rural Advancement Committee (BRAC)

Vision: A world free from all forms of exploitation and discrimination where everyone has the opportunity to realize their potential.

Mission: Mission is to empower people and communities in situations of poverty, illiteracy, disease and social injustice. BRAC's interventions aim to achieve large scale, positive changes through economic and social programmes that enable men and women to realize their potential

Activities on health: General healthcare; Maternal and child health; combating disease; facilities

Publications:

- Research and Evaluation Division (RED)
- Monograph (TB & Malaria)
- Reports
- Working papers
- Book (TB)

Tropical Diseases

Tuberculosis

BRAC pioneered community-based models to bring these services to the villages in 1984. Since 1994 has formally supported the National Tuberculosis Program in the implementation of treatment with supervision, often called the directly observed therapy, short-course (DOTS) strategy. In Bangladesh, BRAC has been the principal recipient for 44 non-government organizations (NGOs) for the Global Fund to Fight AIDS, TB, and Malaria since 2004. In addition to providing partners with technical support and supervision, BRAC directly implements programs that cover 298 sub-districts (out of 483) with a population of 94 million, primarily through the activities of 85,000 shasthya shebikas, community health volunteers. In recent years, BRAC has forged partnerships with a variety of providers, industry partners, and other government authorities to create a portfolio of innovative strategies to provide referral networks and expanded access to vulnerable patients in diverse settings. It now operates 24 Medical institutions with an innovative "DOTS corner" model, Chittagong and Khulna Port Authority Hospitals, prisons and garment factories, and in engaging a number of private practitioners in referral linkages. HIV collaborative project offers HIV screening tests for the TB patients in six DOTS corners of BRAC under Dhaka and Chittagong City Corporations. In 2010, BRAC treated 95,124 TB patients with a treatment success rate of 93%. As a result of these accomplishments and the successes of the entire partnership, Bangladesh is currently on track to meet the Millennium Development Goal of halving prevalence by 2015.

Malaria

Malaria is a major public health concern in Bangladesh, affecting 13 districts that are home to 11 million people. Through a variety of prevention and curative strategies, BRAC is working to

eliminate malaria as public health threat.

The National Malaria Control Program works with 20 non-governmental organizations (NGOs) to implement control activities in affected areas. In 2007, Bangladesh successfully secured support from Global Fund to fight AIDS, TB and Malaria to strengthen and expand national malaria control activities. As the principle recipient for the NGO component, BRAC provides support to other NGO partners to improve the quality and scale of their activities.

Building on the established essential health care model, BRAC's strategy for malaria control is: to inform and educate people at the community level, promote use of insecticides treated nets and facilitate early diagnosis and prompt treatment. Diagnostic and treatment services are delivered mainly through *shasthya shebikas*, community health volunteers, and *shasthya kormi*, community health workers. BRAC covers four districts, three highly endemic districts of Chittagong Hill Tract (Rangamati, Khagrachori and Bandarban) and Moulvibazar. In addition, BRAC has established laboratories and outreach centers for blood slide examination. Awareness about malaria is a critical component to successful control: BRAC provides a variety of orientation events and uses local popular theatre shows, folk songs, loudspeaker announcements, TV and radio spots, and cable TV network.

Since 2007, BRAC has distributed 1.8 million long lasting insecticide nets and treated 3.3 million ordinary bed nets with insecticide. A total of 277,065 malaria cases have been diagnosed, 166,230 through the support of community health volunteers.

Contact:

Bangladesh/Headquarters

BRAC Centre
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Communications

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Fax: +880-2-8823542
E-mail: info@brac.net

8.3 MARIB

Malaria research in Bandarban (MARIB) is a recently established NGO which is working on malaria research and provide clinical service to malaria patients through MARIB clinic. This organization is dedicated to malaria basic research especially on malaria drug resistance in Bangladesh.

Contacts

Contact: Harald Noedl, MD, PhD

E-mail: harald.noedl@meduniwien.ac.at

Phone: +43-699-81807989

8.4 The Leprosy Mission international (TLM)

Profile

Name of the organization: The Leprosy Mission International (TLM)

Mission:

To minister in the name of Jesus Christ to the physical, mental, social and spiritual needs of individuals and communities disadvantaged by leprosy; working with them to uphold human dignity and eradicate leprosy.

Vision:

For a world without Leprosy

Goal:

To eradicate the causes and consequences of Leprosy

Disease covered: Leprosy

Activity type:

- Services
- Leprosy control
- Prevention of Disabilities
- Training
- Health Education
- Community Based Rehabilitation

Funding:

- Voluntary donation
- Self
- TLM Trading Ltd.
- Investment income
- Others

Research: None

Contact: The Leprosy Mission Bangladesh, House # 17A, Road # 3, DOHS, Banani, Dhaka.
E-mail: dco@tlmbangladesh.org

8.5 LEPRA

Profile

Name of the organization: LEPRA

Mission & Vision: To combat Leprosy, Tuberculosis and Filariasis in Bangladesh

Activity: Disability rehabilitation; Removing stigma; Awareness raising in Bangladesh; TB Treatment provision in Bangladesh; Lymphatic filariasis drug distribution in Bangladesh; Disability management and self care group; Income generation in Bangladesh

Funding (about 10 million): Public support (40%); Trusts and Business (2%); Statutory grants and income from charitable activities (57%); Sales, investment and other income (1%).

Contact:

LEPRA Banglaesh; Navana Le Caprice,
Flat-A1, House-80, Road-07, Block-H, Banani, Dhaka.
Phone: +88 02 8828791, Fax:: +88 02 9899531,
website: <http://www.leprahealthinaction.org/category/our-work/our-projects/bangladesh/>

Publication:

- Journal “Leprosy News”.
- Research publications – 12 in peer reviewed journals

8.6 International Centre For Diarrhoeal Disease Research, Bangladesh (ICDDR,B)

Profile:

Established: 1978 (Originally it was established as Cholera Research Laboratory in 1960)

Location: Dhaka, Bangladesh

Address and Contact Information: 68, Shaheed Tajuddin Ahmed Sarani, Mohakhali, Dhaka 1212, Bangladesh. GPO box 128, Dhaka 1000, Bangladesh.

Phone: +88 02 8860523-32

Fax: +88 02 8819 133

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Email: director@icddr.org

Website: www.icddr.org

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Dr Edward J Mills, Canada

Mr Md Humayun Kabir, Bangladesh (GoB)

Dr Elizabeth Mason, WHO

Dr Zulfiqar Ahmed Bhutta, Pakistan

Mission: We will help solve significant public health challenges facing the people of Bangladesh and beyond, especially the most vulnerable, through the generation of knowledge and its translation into policy and practice.

Vision: Healthier people – Better lives through evidence-based solutions

Guiding value:

- Excellence in research, training and service
- High ethical standards
- Promotion of human rights, gender equality and diversity
- Open and responsive to change
- Partnership development
- Needs of the poor and vulnerable as a priority
- Environmental awareness and sustainability
- Transparency and accountability
- Fiscal prudence

Strength:

Expertise: About 12 Senior Scientists; 20 Scientists; 20 Associate Scientists; 20 Assistant Scientists. ICDDR,B has Clinical Sciences Division; Laboratory Sciences Division; Public Health Sciences Division; Health System & Infectious disease Division. It has Child health programme; Nutrition Programme; Programme on Infectious Diseases & Vaccine Science; Poverty and Health Programme; Health and Family Planning Systems Programme; Population Programme; Reproductive Health Programme; HIV/AIDS Programme; Gender, Human Rights and Health Programme. ICDDR,B has its own Research Review Committee and Ethical Review Committee which is recognized by the Bangladesh Medical Research Council & International Research Institutes and Universities.

Infrastructures: ICDDR,B has field sites (both urban and rural) for research activities including fields sites for tropical disease research. It also has its own hospitals for treatment of diarrhoeal patients in Matlab and in Dhaka. ICDDR,B possesses well equipped nutritional biochemistry, virology, parasitology, molecular genetics, immunology, RTI/STI, tuberculosis laboratories and also a laboratory for environmental sciences. Each division/programme has its own supportive staff including cell of biostatistics.

ICDDR,B discover, develop, deliver and evaluate deliveries of new inventions for better public health. The best discovery in the twentieth centuries as cited by the Lancet belongs to ICDDR,B. Some other remarkable achievements of ICDDR,B are:

- Thomson Reuters ranks ICDDR,B among top five institutions studying cholera.
- United Nations appoint ICDDR,B Executive Director to head independent panel probing cholera outbreak in Haiti.
- ICDDR,B sends teams to combat deadly cholera outbreaks in Pakistan and Haiti.
- ICDDR,B research team discover and characterise the "TLC phage" which changes the chromosomal sequence of the cholera bacterium, enabling incoming toxigenic CTX

phage genome to be incorporated and transforming a harmless strain of *V. cholerae* to a dangerous killer.

- ICDDR,B issued its first patent from the Director of United States Patent and Trademark Office (United States Patent US7638271) for inventing a new diagnostic method for tuberculosis, called antibodies produced by peripheral blood lymphocytes in culture supernatant, or ALS.
- ICDDR,B receives Islamic Development Bank award for Science and Technology.
- ICDDR,B team of experts sent to Zimbabwe, Papua New Guinea and Nepal to help contain cholera outbreaks.
- New 50-bed ICDDR,B treatment centre opened in Mirpur in northwest Dhaka.
- ICDDR,B receives Ibne Sina Trust Award in recognition of its important work in diarrhoeal research and treatment
- ICDDR,B shares expertise in diarrhoeal disease management with Iraqi doctors via video-conferencing
- HIV/AIDS Jagori ward opens at Dhaka Hospital
- Alliance for Prudent Use of Antibiotics awarded ICDDR,B with their Leadership Award for influence and leadership role in the prudent use of antibiotics
- ICDDR,B received ‘The Bangladesh Today Award 2006’ in recognition of their contribution through service to Bangladesh.
- ICDDR,B receives ‘Independence Day Award’. It is the highest national award in Bangladesh.
- ICDDR,B describes mortality benefit from zinc therapy
- ICDDR,B receives the prestigious ‘Gates Award for Global Health’. The Government of Bangladesh makes an equivalent contribution to match the prize money of US\$1 million of the Gates Award
- The tuberculosis initiatives begins ICDDR,B assists GoB with control of major dengue epidemic in Bangladesh. The Centre launches theme-based programmes of six major initiatives.

Publication:

- Journal of Health, Population and Nutrition
- Health and Science Bulletin
- Glimpse
- Chronic Disease News
- SUZY News
- Report and Working Papers

Publications in peer reviewed journals: Please see Annex III.

Training:

Objectives of the training programmes are:

- To increase capacity to conduct research in developing countries.
- To increase capabilities to manage programmes for the control of diarrhoeal disease and for family planning services.

- To improve clinical skill of health personnel through `hands on' training on specific aspects of diarrhoeal diseases, associated complications and nutritional problems.
- To improve response to new and emerging issues in health and population.

Core Donors

The Core Donors' Group (CDG) was established in 2007 to coordinate donor funding to ICDDR,B following the Paris Declaration on aid effectiveness. The Paris Declaration is a practical, action-orientated roadmap to improve the quality of aid and its impact on development. Currently there are five core donors providing unrestricted support to ICDDR,B:

- Australian Agency for International Development (AusAID)
- Government of the People's Republic of Bangladesh (GoB)
- Canadian International Development Agency (CIDA)
- Swedish International Development Cooperation Agency (Sida)
- The Department for International Development, UK (DFID)

The objective of the Core Donors' Group is to ensure and strengthen cooperation between these donors and ICDDR,B, by developing the Centre's capacity and resources to achieve the goals of its Strategic Plan. The CDG also ensures that this cooperation is based on a shared commitment to the values and principles expressed in the Centre's vision and mission, and a mutual respect for the autonomy, values and principles of all the core donors.

The CDG also ensures harmonization between our supporters in the provision of support and resources, and the reporting and monitoring of progress and performance by ICDDR,B, following the agreed Monitoring and Evaluation Framework.

The CDG nominates a rotating chair annually, alternating between the donors and ICDDR,B. The effective functioning of the group has been further strengthened through the signing of a Partnership Agreement between the CDG members, which provides the guidelines for a more effective relationship between ICDDR,B and its core donors.

Other Donors in 2010

- ACME laboratories Ltd.
- ActionAid International
- Akthelia Pharmaceuticals, Iceland
- Alliance for Health Policy and Systems Research, WHO
- AusAID, Australia
- AusAID, Bangladesh
- Bill & Melinda Gates Foundation, USA
- BRAC, Bangladesh
- BRAC Bank Limited, Bangladesh
- Canadian International Development Agency (CIDA), Canada
- CARE Bangladesh
- Centers for Disease Control and Prevention, USA
- Cincinnati Children's Hospital Medical Center, USA

- The City University of New York, USA
- Columbia University, USA
- CTK Biotech, Inc. USA
- Department for International Development (DFID), UK
- Professor Gudmundur Hrafn Gudmundsson, University of Iceland
- Dutch Bangla Bank Foundation, Bangladesh
- Embassy of the Kingdom of the Netherlands (EKN), Bangladesh
- Emory University, USA
- Food and Agriculture Organization of the United Nations (FAO)
- Global Fund for AIDS, TB and Malaria (GFATM)
- Government of the People's Republic of Bangladesh (GoB)
- GTZ, Germany
- Gynuity Health Projects
- Harvard Medical School, USA
- HarvestPlus, USA
- InBios International, Inc., USA
- IHSD - Institute for Health Sector Development Limited, UK
- International Atomic Energy Agency (IAEA), Austria
- International Vaccine Institute (IVI), South Korea
- Ipas, USA
- IZUMI Supporting Community (ISC), Japan
- Japan Food Hygiene Association (JFHA)
- Johns Hopkins Bloomberg School of Public Health, USA
- Johns Hopkins University (JHU), USA
- KNCV Tuberculosis Foundation, Netherlands
- London School of Hygiene & Tropical Medicine
- Lund University, Sweden
- Malaria Research Initiative Bandarban (MARIB)
- Malta Grants for Leprosy Research, France
- Massachusetts General Hospital (MGH), USA
- MP Biomedicals Asia Pacific Pte. Ltd.
- Napo India Private Limited, India
- National Heart Lung and Blood Institute (NHLBI), NIH
- National Institute of Infectious Diseases (NIID), Japan
- Nestec Ltd., Switzerland
- Novartis Consumer Health S.A., Switzerland
- PATH, USA
- Pathfinder International, USA
- Professor Ronald G. Barr, UBC, Canada
- Research Institute for Humanity and Nature (RIHN)
- Save the Children, USA
- Seattle Biomedical Research Institute, USA
- SmithBucklin Corporation
- Swedish International Development Cooperation Agency (Sida), Sweden
- TechLab, Inc., Virginia, USA
- INDEPTH Network

- The Oxford Health Alliance Vision 2020 (OxHA)
- The Rockefeller Foundation
- World Food Programmed (WFP)
- Wildlife Trust, USA
- Thrasher Research Fund, USA
- UNICEF, Bangladesh
- United Nations Development Programme (UNDP), Bangladesh
- United States Department of Agriculture (USDA)
- University of California, Berkeley, USA
- University of California, Davis, USA
- University of Chicago, USA
- University of Maryland, USA
- University of North Carolina at Chapel Hill, USA
- Utrecht University, Netherlands
- University of Virginia, USA
- UBS Optimus Foundation, Switzerland
- Vanderbilt University, USA
- Venture Strategies Innovations, USA
- Veolia EAU-Compagnie Generale des Eaux S.C.A., France
- World Health Organization (WHO), Geneva
- World Health Organization (WHO), Malaysia
- Zephyr Biomedicals, India

Principal investigators' details:

Institute's Profile	
Name	International Centre For Diarrhoeal Disease Research, bangladesh
Director	Dr. Alejandro Cravioto
Address	68 Shaheed Tajuddin Sarani, Mohakhali, Dhaka-1212
Telephone	++880-2-88160523-32
Email	acravito@icddr.org
Project Profile	
Number of projects on tropical disease in the last 10 years	About 50
Name of the tropical diseases	Diarrhoeal diseases (Cholera, ETEC, E. histolytica, Cryptosporidiosis); Malaria; Kala-azar; Dengue; Tuberculosis; Nipha virus encephalitis
Total number of scientist	Assistant scientist: 20; Associate scientist: 20; Scientist: 19; Senior scientist: 11
Number of scientist on tropical disease	Research Investigators: 3; Assistant scientist: 1; Associate scientist: 1; Scientist: 2; Senior scientist: 5
Infrastructure and services	Excellent field sites for tropical disease research; Well equipped laboratories including BSL-3 facilities

Funding (Core)	Between 2007 to 2010 about 145,213,000 USD
National	Government of Bangladesh
International	<ul style="list-style-type: none"> • Australian Agency for International Development (AusAID) • Canadian International Development Agency (CIDA) • Swedish International Development Cooperation Agency (Sida) • The Department for International Development, UK (DFID)
Total funding in the last 10 years	See all annual reports
Funding for tropical disease	To be estimated
Output of projects (Publications)	About 100 publications in peer reviewed national and international journals

Institute: icddr,b	
Principal Investigator	Investigator details
Dr. Md. Khalequzzaman	Address: Senior Scientist, Child Health Unit; icddr,b; e-mail: kzaman@icddr.org Number of project in the last 10 years: 60 Name of tropical disease: Tuberculosis (2) Title of the recent / ongoing project: 1. National Tuberculosis prevalence survey 2. Tuberculosis in urban and rural areas in Bangladesh Funding: WHO; GFATM Total publication (national/international): 90
Dr. Rashidul Haque	Address: Senior Scientist; Parasitology laboratory; icddr,b; e-mail: rhaque@icddr.org Number of total project in the last 10 years: 20 Name of tropical disease: Amebiasis; Malaria; Kala-azar; Title of recent / ongoing project: 1. Amebiasis in the first 2 years of life 2. Antimalarial drug resistance in Bangladesh 3. Azithromycin combination therapy for the treatment of uncomplicated falciparum malaria in Bangladesh: an open label, randomized controlled trial 4. Field studies of human immunity to amebiasis in Bangladesh 5. gamma delta T cells and the innate immune response to cryptosporidiosis 6. Malaria baseline survey in Bangladesh 7. New diagnostics for amebiasis 8. PCR-based micro titer plate-hybridization technique for the identification of malaria parasite infections in anopheles mosquitoes 9. Validation of diagnostic tests of some category B enteric pathogens and correlation of some protozoan genotypes with

	<p>virulence Funding: University of Virginia, USA; USAMC-AFRIMS, Thailand; NIH, USA; University of Vermont, USA; BRAC Total publication (national/international): about 100 publications Monograph: None Book: 2</p>
Dr. Ferdousi Qadri	<p>Address: Senior Scientist, Laboratory Sciences Division; icddr,b; e-mail: fqadri@icddr.org Number of project in the last 10 years: 60 Name of tropical disease: Cholera, ETEC, Typhoid fever Title of the project: 1. Protective immunity to cholera in Bangladesh 2. Introduction of cholera vaccine in Bangladesh: A cluster randomized-controlled community based trial. 3. Immune response to V. cholerae in Bangladesh Funding: BMGF; SIDA, Sweden; WHO; Others Total publication (national/international): 120 Monograph: 3 Book: 4</p>
Dr. ASM Faruque	<p>Address: Senior Scientist, LSD; icddr,b; e-mail: faruque@icddr.org Number of project in the last 10 years: 10 Name of tropical disease: Cholera Title of recent project: 1. Phages and genomic variation in vibrio cholerae evolution. 2. Genetic and Ecological Factors in Transmissibility and Epidemic Cycle of Cholera. Total publication (national/international): 66</p>
Dr. Tahmeed Ahmeed	<p>Address: Senior Scientist, CSD; icddr,b; e-mail: tahmeed@icddr.org Number of project in the last 10 years: 50 Name of tropical disease: Tuberculosis Title of the project: 10 1. Childhood tuberculosis Publication (national/international): 94</p>
Dr. Rubhana Raqib	<p>Address: Senior Scientist, LSD; icddr,b; e-mail: raqib@icddr.org Number of project in the last 10 years: 35 Name of tropical disease: Tuberculosis Title of the project: 1. Evaluation of the ALS (antibodies in lymphocyte secretions) method for diagnosis of tuberculosis in children. 2. Clinical trial of oral phenylbutyrate and vitamin D adjunctive therapy in pulmonary tuberculosis in Bangladesh: a pilot study Funding: ICDDR,B; SIDA-Sweden Total publication (national/international): 70</p>
Dr. Sayera Banu	<p>Address: Senior Scientist, LSD; icddr,b; e-mail: sbanu@icddr.org</p>

	<p>Number of project in the last 10 years: 25 Name of tropical disease: Tuberculosis; Leprosy Title of the project: 1. Initiative for diagnostic and epidemiological assays for leprosy. 2. Control and prevention of transmission of pulmonary tuberculosis in Dhaka Central jail, the largest prison in Bangladesh. Funding: GoB; ICDDR,B;WHO; GFATM Total publication (national/international): 45</p>
Dr. Md. Zeaur Rahim	<p>Address: Senior Scientist, LSD; icddr,b; e-mail: zeaur@icddrb.org Number of project in the last 10 years: 5 Name of tropical disease: Tuberculosis Title of the project: 1. Improving the diagnosis of Tuberculosis through bleach sedimentation sputum microscopy Funding: ICDDR,B Total publication (national/international): 30</p>
Dr. Wasif Ali Khan	<p>Address: Scientist, Clinical Sciences Division; icddr,b; e-mail: wakhan@icddrb.org Number of project in the last 10 years: 60 Name of tropical disease: Malaria; Cryptosporidiosis Title of the project: 15 1. Mapping Malaria Epidemiology in Bangladesh 2. Determining Local Conceptions of Malaria in Pregnancy in Bangladesh Funding: Johns Hopkins University, USA; PATH; Total publication (national/international): 50</p>
Dr. Dinesh Mondal	<p>Address: Scientist, LSD; icddr,b; e-mail: din63d@icddrb.org Number of project in the last 10 years: 13 Name of tropical disease: Kala-azar Title of recent project: 1. Community based VL vector control through impregnation of bed nets by insecticide: feasibility, cost and coverage 2. A randomized double blind, community trail to assess the efficacy of a combination of anti-helminth, and vitamin A, zinc and iron supplementation in preventing Visceral Leishmaniasis (VL) disease among asymptomatic individuals with VL Funding: TDR/WHO; BMGF; Total publication (national/international): 44 Monograph: 1 Book: None Technical Report: 3</p>
Dr. KMA Jamil	<p>Address: Associate Scientist, CSD; icddr,b; e-mail: jamil@icddrb.org Number of project in the last 10 years: 20 Name of tropical disease: Kala-azar Title of recent/ongoing project:</p>

	<ol style="list-style-type: none"> 1. Evaluation of new tests for early diagnosis of kala azar and its complications at the 'point-of-care' 2. An Effectiveness Study of Paromomycin IM Injection (PMIM) for the Treatment of Visceral Leishmaniasis (VL) in Bangladesh 3. A study of the effectiveness of outreach support on referrals for patients with Visceral Leishmaniasis (VL) in Bangladesh <p>Funding: JICA; OWH; GSK; ICDDR,B Total publication (national/international): 15 Monograph: 1</p>
Dr. SA Shahed Hossain,	<p>Address: Associate Scientist, Child Health Unit; icddr,b; e-mail: shahed@icddrb.org Number of project in the last 10 years: 3 Name of tropical disease: Tuberculosis Title of the project:</p> <ol style="list-style-type: none"> 1. Care seeking of adult chronic cougher in urban areas of Bangladesh 2. DOTS divide and informal providers <p>Funding: AUSAID; USAID Total funds: 555,413 Publication (national/international): 16 Monograph: Book: 1 Technical Report: 7</p>
Dr. Kazi Mijanur Rahman	<p>Address: Assistant Scientist, PHSD; icddr,b; e-mail: mizan@icddrb.org Number of project in the last 10 years: 3 Name of tropical disease: Kala-azar; Malaria; Dengue Title of the project:</p> <ol style="list-style-type: none"> 1. Effects of Climate change on major vector borne disease in Bangladesh 2. Operations research to identify major amenable barrier in kala-azar elimination in Bangladesh <p>Funding: ICDDR,B; AUSAID Total publication (national/international): 8 Monograph: Book: 1 Technical Report: 1</p>
Mr. Shafiul Alam	<p>Address: Research Investigator, LSD; icddr,b; e-mail: shafiul@icddrb.org Number of project in the last 10 years: 5 Name of tropical disease: Kala-azar; Malaria Title of the project:</p> <ol style="list-style-type: none"> 1. Allelic diversity in MSP1 and MSP2 gene of Plasmodium falciparum from malaria patients in Bangladesh 2. A pilot study to investigate animal reservoir of kala-azar in

	<p>Bangladesh Funding: ICDDR,B; SEARO/WHO Total publication (national/international): 9</p>
Mr. M. Mamun Huda	<p>Address: Research Investigator, LSD; icddr,b; e-mail: mhuda83@icddrb.org Number of project in the last 10 years: 3 Name of tropical disease: Kala-azar; Malaria Title of the project: 1. Detection of cryptic leishmania infection among the blood donors in kala-azar endemic areas of Bangladesh 2. Use of Earth Observing and Environmental Satellite data to Investigate Deforestation, Climatic Change and Spread of Malaria in Bangladesh Funding: ICDDR,B; SEARO/WHO Total publication (national/international): 12 Technical Report: 2</p>

8.7 Asian University For Women (AUW)

Profile of the institute

Name of the institute: Asian University for Women

Agency: It is an international university and established for Asian womens
Established: 2008

Address and contact information:

20/A M. M. Ali Road
Chittagong, Bangladesh
Tel:+880-31-2854980
Fax: +880-31-2854988
Website: www.asian-university.org

Vision and mission:

- To educate Asian women to become highly motivated and effective professionals, leaders, and service-oriented citizens of the region and thereby promote the development of and intercultural understanding among the peoples of Asia
- To provide a vibrant and diverse residential learning community where highly talented women and those with uncommon potential from many cultural and religious backgrounds can grow both intellectually and personally
- To create a student-focused learning environment where the humanities and natural and social sciences establish a broad base of inquiry, where disciplinary and independent studies provide learning depth, and where applied studies in both the general studies and majors' curricula require students to link theoretical understanding with contemporary issues and challenges facing Asia and the world

- To focus student learning on the acquisition of intellectual abilities, reflective personal growth, leadership abilities, and a service oriented outlook.

Contribution to tropical diseases: Since 2009 university received two research grants for World Health Organization Regional Office for South East-Asia under Joint SEARO/TDR Small Grants Programme to do research on visceral leishmaniasis vector control aspect. Professor Dr Qamar Banu is the Principal Investigator of the project.

Strengths

Expertise: The university basically teaching undergraduate students so that very limited scope to conduct research study. Professor Dr Qamar Banu conducting research studies collaboration with other experts in different institutes.

Infrastructure: The Asian University for Women is located on M.M. Ali Road in downtown Chittagong. The group of buildings contains classrooms, computer labs, science labs, dormitories, administrative offices, the library, gym, and the health center. The university also features various extracurricular spaces, including a cafe and venue for guest lectures.

Programme: There is no such type of training/courses/workshops has been conducted by the institute.

Basic Research: Students have to conduct a pilot basic research study as part of their syllabus to fulfill their academic curriculum. Professor Qamar Banu has conducted two operational research studies on visceral leishmaniasis vector control to support elimination programme, which are:

- Study to evaluate the effectiveness of long lasting insecticide treated bed net on Visceral leishmaniasis incidence in a highly endemic Upazilla of Bangladesh.
- Study of the effectiveness of long lasting insecticide treated mosquito net (LN) against visceral leishmaniasis vector *Phelobotomus argentipes* in highly endemic area of Bangladesh.

Product Development: No research has been carried out which is related to drug, diagnosis and vaccine development.

Clinical Trial: Not conducted any clinical trial.

Funding:

Grant: Two international research grants total amount of USD 15,000.00 (project-1 & 2 USD 7500 each) has been received from World Health Organization Regional Office from South East-Asia under Joint SEARO/TDR Small Grants Programme.

Output:

Publication: Not yet published any study findings, but some manuscript under preparation.

9. Comparative analysis

In this current project we mapped all possible institutions in Bangladesh which are involved in tropical disease research, training and services. We compared all institutions by their strength and output. According to our findings the International Centre For Diarrhoeal Disease Research, Bangladesh (ICDDR,B) is the strongest research institute in the country. Among the public institutions the Institute for Epidemiology Disease Control and Research (IEDCR) is the strongest institute for research. The additional strength of IEDCR is the national disease surveillance network funded by the institute's core fund and complemented by other national and international institutions as well as donor agencies. Both institutions are working together for investigating outbreaks in the country also. Both institutions and the National Institute of Preventive and Social Medicine (NIPSOM) are equally contributing in training of national students in research. In addition ICDDR,B trains international students in research. ICDDR,B, IEDCR and NIPSOM train national medical staff from the public health facilities of different levels as per need of the national programmes for national capacity build up. However, both ICDDR,B and IEDCR are mostly dependent on external funds for conducting research on tropical diseases. Except cholera, all other tropical diseases are still neglected by the national and international donor agencies. Although these two institutions have experts and infrastructure for tropical disease research, lack of funds does not permit to make tropical disease research activities on routine basis. Even some of the tropical disease like filariasis has never been researched by both the institutions. Some tropical disease research such as Dengue has to stop due to lack of funds.

The service activities on tropical diseases are solely dependent on non-government organization like Institute for Allergy and Clinical Immunology of Bangladesh (IACIB) mostly for filariasis; Bangladesh Rural Advancement Committee (BRAC) mostly for malaria and tuberculosis; Damien Foundation and LEPROA for tuberculosis and leprosy. Public health institutes are playing very little role (if any) for the services of these tropical diseases especially in the rural areas of the country. None of these organizations has adequate experts and infrastructure for tropical disease research and that is also not their main objective. Since research is the key for better health a sustainable collaboration between tropical disease service providing organizations and research institutes like ICDDR,B, IEDCR and other public health institutions is highly desirable. It is worth to mention that the public health system has to be empowered to provide services for the population affected by these tropical diseases. Otherwise there might be disasters if these private organizations have to stop their activities due to any reason.

The project found a very potential network for tropical diseases research in the country. This was the research cells in the eight medical colleges under the guidance and supervision of Bangladesh Medical and Research Council (BMRC). The Government of Bangladesh and the World Health Organization are the key donors to keep functional this network. However due to lack of experts and funds this potential research network is underutilized. It can be a wonderful resource for

tropical disease research in the country if sufficient attention is given by the GoB and the WHO. In spite of funding constraints the research cell in the Chittagong Medical College led by Prof. MA Faiz significantly contributed to malaria research and this group is the pioneer for malaria research in Bangladesh. This is a fantastic example which showed that how potential could be the research cell of a public medical college if they are nurtured properly.

10. Conclusion

ICDDR,B and IEDCR are the most strongest research institutions respectively in the private and public sectors in Bangladesh. However, neither ICDDR,B nor IEDCR can make sustainable tropical disease research if adequate funding is not available.

The situation in public medical institutions on tropical disease research is miserable. There is an urgent need for capacity build up for tropical disease research in the national institutions in Bangladesh. This hardly can be achieved by the support only from the Government of Bangladesh. Thus international donor agencies should come up with help to set up infrastructures and experts in tropical disease research in Bangladesh.

Annexes

Annex-1: Questionnaires to be used in the survey

Two sets of Questionnaires were prepared, one for Heads of Institutions and the other for Principal Investigators. These two types of Questionnaires are represented below.

1. Questionnaire for Institutional Head

Mapping of National Centers/Institutions on Tropical Diseases in Bangladesh

QUESTIONNAIRE

SECTION – A

INSTITUTE'S PROFILE

1. Name of the University:

2. Name of the Director

3. Present Address

4. Tel. No. :

5. E. mail:

SECTION – B

PROJECT PROFILE

1. Number of Project(s) handled in the Institute on Tropical Disease in last 10 years

2. Name of the Tropical Disease(s):

i) _____

ii) _____

iii) _____

3. Total number of Scientists in the institute

4. Number of Scientists working on Tropical Diseases

5. Infrastructure and services

SECTION – C

FUNDING PROFILE

1. Sources of Funding: _____

i. National: _____

ii. International: _____

iii. NGO: _____

2. Total Funding for the institute in the past 10 years (Rs in Lakhs):

3. Funding allotted for Tropical Diseases in the past 10 years (Rs in Lakhs):

SECTION – D

OUTPUT OF THE PROJECT

No. of Research Paper(s) published in the last 10 years:

	National	International
a) Published in Journals	<input type="text"/>	<input type="text"/>
b) Presented in conference(s)	<input type="text"/>	<input type="text"/>

<i>Item</i>	<i>Number</i>	<i>Details</i>
New Product(s) developed:	<input type="text"/>	Please attach separate sheets with complete details
New Process (es) developed:	<input type="text"/>	_____
New Instrument(s) developed:	<input type="text"/>	_____
Prototype(s) developed:	<input type="text"/>	_____
IPR's registered:	<input type="text"/>	Please attach separate sheet with complete details
Patents filed: National	<input type="text"/>	Please attach separate sheet with complete details
International	<input type="text"/>	Please attach separate sheet with complete details
Patents Sealed/granted: National	<input type="text"/>	Please attach separate sheet with complete details
	<input type="text"/>	

International

Please attach separate sheet with complete details

Copyright(s)

New Principle/Theory developed:

Clinical Trials completed
and ongoing

Please attach separate sheet with complete details

Brief Description of the problem(s)/constraints faced in implementing the project:

Any other specific comment(s)/suggestion(s) (please specify):

2. Questionnaire for Principal Investigator

Mapping of National Centers/Institutions on Tropical Diseases in Bangladesh

QUESTIONNAIRE

SECTION – A

PRINCIPAL INVESTIGATOR'S (P.I.) PROFILE

1. Name of the Principal Investigator:

2. Present Address of P.I.

3. Tel. No. : _____

4. E. mail: _____

SECTION – B PROJECT PROFILE

1. Number of Project(s) handled on Tropical Disease in last 10 years

2. Name of the Tropical Disease(s):

i) _____

ii) _____

iii) _____

3. Title of the project and its duration:

i. _____

ii. _____

iii. _____

iv. _____

v. _____

4. Department & Institute, where project was implemented:

SECTION – C

FUNDING PROFILE

2. Sources of Funding: _____

i. National: _____

ii. International: _____

iii. NGO: _____

2. Total Funding allotted for Tropical Diseases in the past 10 years (*Rs in Lakhs*):

SECTION – D

OUTPUT OF THE PROJECT

No. of Research Paper(s) published in the last 10 years:

	National	International
a) Published in Journals	<input type="text"/>	<input type="text"/>
b) Presented in conference(s)	<input type="text"/>	<input type="text"/>

c) Top 5 most cited papers

- i. _____
- ii. _____
- iii. _____
- iv. _____
- v. _____

Any Monograph /Book/Technical report produced out of the project (Please give numbers):

Monograph Book Technical report

<i>Item</i>	<i>Number</i>	<i>Details</i>
New Product(s) developed:	<input type="checkbox"/>	_____
New Process (es) developed:	<input type="checkbox"/>	_____
New Instrument(s) developed:	<input type="checkbox"/>	_____
Prototype(s) developed:	<input type="checkbox"/>	_____
IPR's registered:	<input type="checkbox"/>	_____
Patents filed: National	<input type="checkbox"/>	_____
International	<input type="checkbox"/>	_____
Patents	<input type="checkbox"/>	_____
Sealed/granted: National	<input type="checkbox"/>	_____
	<input type="checkbox"/>	_____
International		_____

Copyright(s)	<input type="checkbox"/>	_____
New Principle/Theory developed:	<input type="checkbox"/>	_____

Brief Description of the problem(s)/constraints faced in implementing the project:

Any other specific comment(s)/suggestion(s) (please specify):

Annex -2

List of institutes and allied information

Name	weblink
Public	
Bangladesh Medical Research Council (BMRC)	http://www.bmrcbd.org/
Bangabandhu Sheikh Mujib Medical University (BSMMU)	http://www.bsmmu.org/
Dhaka University (DU)	http://www.du.ac.bd/
Jahangir Nagar University (JU)	http://www.juniv.edu/
Bangladesh Agriculture University (BAU)	http://www.bau.edu.bd/
Dhaka Medical College (DMC)	http://www.dmc.edu.bd/
Sir Salimullah Medical College (SSMC)	http://www.ssmc.edu.bd/
Mymensingh Medical College (MMC)	http://www.mmc.gov.bd/
Chittagong Medical College (CMC)	http://www.cmc.edu.bd/
Rajshahi Medical College (RMC)	http://www.rmc.ac.bd/
Osmani Medical College, Sylhet	http://www.magosmanimedical.com/
Sher -e-Bangla Medical College, Barisal	http://www.sbcm.edu.bd/
Khulna Medical College, Khulna	http://www.kmc.edu.bd/
Rangpur Medical College, Rangpur	http://www.rangpurmedical.webs.com/
Institute for Epidemiology, Disease Control and Research (IEDCR)	http://www.iedrc.org/
National Institute for Social and Preventive Medicine (NIPSOM)	http://www.nipsom.org/
Private	
International Centre For Diarrhoeal Disease Research, Bangladesh (ICDDR,B)	http://www.icddrb.org/
Bangladesh Rural Advancement Committee (BRAC)	http://www.www.brac.net/
Malaria Research Initiative Bandarban (MARIB)	http://www.www.marib.org/
Asian University For Women (AUW)	http://www.asian-university.org
Damien Foundation Bangladesh (DF)	http://www.damienfoundation.org/
Leprosy Mission Bangladesh (LM)	http://www.leprosymission.org
Institute of Allergy and Clinical Immunology of Bangladesh (IACIB)	http://www.iacib.org/
Medicins Sans Frontiers Bangladesh (MSF)	http://www.msf.org.au/

Annex-3

ICDDR,B publications on tropical diseases

Cholera & Diarrheal Diseases

1. Akanda AS, Jutla AS, Alam M, de Magny GC, Siddique AK, Sack RB, Huq A, Colwell RR, Islam S. Hydroclimatic influences on seasonal and spatial cholera transmission cycles: Implications for public health intervention in the Bengal Delta. *Water Resour Res* 2011;47:1-11 (W00H07)
2. Bhuiyan NA, Nusrin S, Ansaruzzaman M, Islam A, Sultana M, Alam M, Islam MA, Cravioto A, Mukhopadhyay AK, Nair GB, Mwasna JCL, Endtz HP. Genetic characterization of *Vibrio cholerae* O1 strains isolated in Zambia during 1996–2004 possessing the unique VSP-II region of El Tor variant. *Epidemiol Infect* 2011 May 31:1-9
3. Alam DS, Yunus M, Arifeen SE, Chowdury HR, Larson CP, Sack DA, Baqui AH, Black RE. Zinc treatment for 5 or 10 days is equally efficacious in preventing diarrhea in the subsequent 3 months among Bangladeshi children. *J Nutr* 2011 Feb;141(2):312-5
4. Alam M, Islam A, Bhuiyan NA, Rahim N, Hossain A, Khan GY, Ahmed D, Watanabe H, Izumiya H, Faruque ASG, Akanda AS, Islam S, Sack RB, Huq A, Colwell RR, Cravioto A. Clonal transmission, dual peak, and off-season cholera in Bangladesh. *Infect Ecol Epidemiol* 2011;1:7273
5. Alam MM, Riyadh MA, Fatema K, Rahman MA, Akhtar N, Ahmed T, Chowdhury MI, Chowdhury F, Calderwood SB, Harris JB, Ryan ET, Qadri F. Antigen-specific memory B-cell responses in Bangladeshi adults after one- or two-dose oral killed cholera vaccination, and comparison with responses following natural cholera. *Clin Vaccine Immunol* 2011 May;18(5):844-50
6. Alam NH, Ashraf H, Olesen M, Salam MA, Gyr N, Meier R. Salovum egg yolk containing antisecretory factor as an adjunct therapy in severe cholera in adult males: a pilot study. *J Health Popul Nutr* 2011 Aug;29(4):297-302
7. Alam NH, Raqib R, Ashraf H, Qadri F, Ahmed S, Zasloff M, Agerberth B, Salam MA, Gyr N, Meier R. L-isoleucine-supplemented oral rehydration solution in the treatment of acute diarrhoea in children: a randomized controlled trial. *J Health Popul Nutr* 2011 Jun;29(3):183-90
8. Ali M, Emch M, Park JK, Yunus M, Clemens J. Natural cholera infection-derived immunity in an endemic setting. *J Infect Dis* 2011 Sep 15;204(6):912-8

9. Bhuiyan NA, Nusrin S, Ansaruzzaman M, Islam A, Sultana M, Alam M, Islam MA, Cravioto A, Mukhopadhyay AK, Nair GB, Mwasna JCL, Endtz HP. Genetic characterization of *Vibrio cholerae* O1 strains isolated in Zambia during 1996–2004 possessing the unique VSP-II region of El Tor variant. *Epidemiol Infect* 2011 May 31;1-9
10. Carrel M, Escamilla V, Messina J, Giebultowicz S, Winston J, Yunus M, Streatfield PK, Emch M. Diarrheal disease risk in rural Bangladesh decreases as tubewell density increases: a zero-inflated and geographically weighted analysis. *Int J Health Geogr* 2011;10:41
11. Carrel M, Escamilla V, Messina J, Giebultowicz S, Winston J, Yunus M, Streatfield PK, Emch M. Diarrheal disease risk in rural Bangladesh decreases as tubewell density increases: a zero-inflated and geographically weighted analysis. *Int J Health Geogr* 2011;10:41
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